

MARSHALL DIVISION

No. 2:23-CV-00640-JRG
(Lead Case)

CLAIM CONSTRUCTION ORDER

In these consolidated patent cases,¹ Pegasus Wireless Innovation LLC alleges infringement by Cellco Partnership (Verizon), AT&T Corporation, T-Mobile U.S.A., Inc., and various of their affiliates (together, “Defendants”) of claims from a number of patents that relate to wireless communication systems. Ericsson and Nokia have intervened in both cases, and Verizon, T-Mobile, and New Cingular Wireless PCS, LLC, have counterclaimed against Pegasus and asserted third-party claims against KT Corporation. For simplicity, the Court will refer to Verizon, AT&T, Ericsson, Nokia, T-Mobile, New Cingular Wireless, and their related entities as “Defendants,” and Pegasus and KT Corporation together as “Pegasus.”

¹ The member cases are No. 2:23-CV-00638-JRG and No. 2:23-CV-000639-JRG.

Together, the parties present eight claim-construction disputes, with Defendants challenging several terms or phrases as indefinite.² Having considered the parties' briefing, along with arguments of counsel at a March 13, 2025 hearing, the Court resolves those disputes as follows.

I. LEGAL STANDARDS

A. Generally

"[T]he claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*). As such, if the parties dispute the scope of the claims, the court must determine their meaning. *See, e.g., Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1317 (Fed. Cir. 2007) (Gajarsa, J., concurring in part); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996), *aff'g*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*).

Claim construction, however, "is not an obligatory exercise in redundancy." *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). Rather, "[c]laim construction is a matter of [resolving] disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims" *Id.* A court need not "repeat or restate every claim term in order to comply with the ruling that claim construction is for the court." *Id.*

When construing claims, "[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning." *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1312–13). Courts must therefore "look to the

² The parties' briefing presented eleven disputes. Since the hearing, however, the Court has granted the parties' joint motion to dismiss the infringement allegations and counterclaims relating to four of the patents. Dkt. No. 334. Accordingly, this Order will not address the disputes limited to those dismissed patents, which are now moot.

words of the claims themselves . . . to define the scope of the patented invention.” *Id.* (citations omitted). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313. This “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Intrinsic evidence is the primary resource for claim construction. *See Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips*, 415 F.3d at 1312). For certain claim terms, “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; *see also Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”). But for claim terms with less-apparent meanings, courts consider “those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean . . . [including] the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Phillips*, 415 F.3d at 1314.

B. Means-Plus-Function Claiming³

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112(f); *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Under 35 U.S.C. § 112(f), a structure may be claimed as a “means . . . for performing a specified function,” and an act may be claimed as a “step for performing a specified function.” *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002). When it applies, § 112(f) limits the scope of the functional term “to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.” *Williamson*, 792 F.3d at 1347.

But § 112(f) does not apply to all functional claim language. There is a rebuttable presumption that § 112(f) applies when the claim language includes “means” or “step for” terms, and a rebuttable presumption it does *not* apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. These presumptions stand or fall according to whether one of ordinary skill in the art would understand the claim with the functional language to denote sufficiently definite structure or acts for performing the function in the context of the entire specification. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (noting § 112(f) does not apply when “the claim language, read in light of the specification, recites sufficiently definite structure” (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Masco Corp.*, 303 F.3d at 1326 (noting § 112(f) does not apply when the claim includes an “act” corresponding to

³ U.S. Patent 11,219,000, which has a post-AIA effective filing date, is the only patent that potentially implicates means-plus-function claiming. Accordingly, the Court will refer to 35 U.S.C. § 112(f), even though the cases cited in this section refer to the pre-AIA version of the statute.

“how the function is accomplished”); *Personalized Media Commc’ns, LLC v. I.T.C.*, 161 F.3d 696, 704 (Fed. Cir. 1998) (noting § 112(f) does not apply when the claim includes “sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term ‘means’” (quotation marks and citation omitted)).

C. Indefiniteness

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the 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). The claims “must be precise enough to afford clear notice of what is claimed” while recognizing that “some modicum of uncertainty” is inherent due to the limitations of language. *Id.* at 909.

“Indefiniteness must be proven by clear and convincing evidence.” *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017). And in the context of § 112(f), “[t]he party alleging that the specification fails to disclose sufficient corresponding structure must make that showing by clear and convincing evidence.” *TecSec, Inc. v. IBM*, 731 F.3d 1336, 1349 (Fed. Cir. 2013) (quoting *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1380–81 (Fed. Cir. 2001)).

II. THE LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art is the skill level of a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In resolving the appropriate level of ordinary skill, courts consider the types of and solutions to problems encountered in the art, the speed of innovation, the sophistication of the technology, and the education of workers active in the field. *Id.* Importantly, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550

U.S. 398, 421 (2007).

Here, Pegasus contends a skilled artisan at the time of invention would have had “at least a bachelor’s degree in electrical engineering, computer engineering, computer sciences, physics or equivalent, and two years of experience with cellular telecommunications, radio-access architecture, protocols, and signal propagation in wireless networks.” Dkt. No. 218 at 2 (citing Feuerstein Decl., Dkt. No. 218-15 ¶ 23). Defendants propose a similar level of skill but say a skilled artisan would also have “knowledge of the relevant 3GPP standards.” Dkt. No. 232 at 1. Defendants, however, say this is not a meaningful dispute, and that their positions are appropriate under either level of skill. *Id.*

III. THE DISPUTED TERMS

A. “configured to” (’931 Patent, Claim 5; ’000 Patent, Claim 9; ’644 Patent, Claim 3; ’161 Patent, Claim 5)

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	Plain and ordinary meaning, which means “actually configured to and not merely capable of performing the claimed function”

Each of these claims concerns an apparatus with a structural limitation configured to perform some function. For example, Claim 5 of the ’931 Patent recites an MTC terminal comprising: (1) “a receiving unit *configured to* receive structural information . . .”; (2) “a controller *configured to* determine a resource allocated to the uplink control channel . . .”; and (3) “a transmitting unit *configured to* transmit the response information . . .” ’931 Patent at 16:48–65 (emphasis added). Claim 9 of the ’000 Patent has similar limitations. ’000 Patent at 22:21–32.

Defendants complain that Pegasus’s position on the meaning of “configured to” is inconsistent and unclear. Dkt. No. 232 at 2. They note Pegasus’s expert’s statement that “configured to”

means only “capable of performing the specified function without modification.” *Id.* (quoting Feuerstein Decl., Dkt. No. 218-19 ¶ 85). But at other times, they say, Pegasus has conceded that the phrase means “*not merely being capable of being configured but rather being actually configured.*” *Id.*

In reply, Pegasus accuses Defendants of confusing the issue. Dkt. No. 243 at 1. It “agrees that the plain meaning of ‘configured to’ requires more than mere capability of being configured, and that the device must be actually configured” to perform the recited function. *Id.* But Pegasus disputes “that ‘configured to’ requires *performing the claimed function.* Defendants argue that ‘the function must be performed.’” *Id.*

While Defendants’ construction does not make Pegasus’s last point clear, their briefing does. *See* Dkt. No. 232 at 2 (“A device that is *actually* configured to perform a function, or ‘in a state to perform a function,’ will perform that function absent modification when in operation.”). So did their argument at the hearing. *See* Hr’g Tr., Dkt. No. 270 at 18:22–23 (“for something to be configured to [perform a function], the function has to be performed in operation of the apparatus”); *see also id.* at 19:9–12 (similar).

Defendants cite two appellate cases they say support their position, but both cases are distinguishable. First, Defendants point to *INVT SPE LLC, v. Int’l Trade Comm’n*, 46 F.4th 1361 (Fed. Cir. 2022). Dkt. No 232 at 3. Specifically, they stress the appellate court’s explanation that “a computer-implemented claim drawn to a functional capability requires some showing that the accused computer-implemented device *is programmed or otherwise configured*, without modification, *to perform the claimed function when in operation.*” *Id.* (quoting *INVT*, 46 F.4th at 1365; Defendants’ emphasis). That language, however, comes from the court’s explanation of the requirement to show *infringement* of a “capability” claim—not how to first interpret the claim’s

scope. *See INVT*, 46 F.4th at 1365 (“For infringement purposes . . .”). In fact, the court noted that it has frequently construed “capability” claims as not requiring actual performance of those steps. *Id.* at 1372–73.

Second, Defendants cite *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376 (Fed. Cir. 2011), but that case concerned different language. Defendants suggest the appellate court affirmed a construction for “memory configured to,” Dkt. No. 232 at 3, but the “memory” was not “configured to” do anything. Rather, the limitation at issue was “a *memory for storing at least one data collection application* configured to determine contents and formats of said inquiries displayed on said screen.” *Typhoon Touch*, 659 F.3d at 1379 (emphasis added). This Court construed the claim to require:

A memory that must perform the recited function (*i.e.*, storing a plurality of data collection applications, an operating system and data/ at least one data collection application/ data collection application and various libraries/ functional libraries/ a data collection application and an operating system).

Id. at 1380. Even so, the appellate court interpreted the Court’s construction to mean “the device *is structured* to store at least one data collection application,” not that it had to be storing the application. *Id.* at 1381 (emphasis added).

In light of *INVT*, the Court rejects Defendants’ construction. “Actually” adds nothing to the meaning of “configured to” and could mislead a jury into thinking the claim requires performance rather than capability. So could the rest of the language, which is not clear that “configured to” means “not merely being capable *of being configured*.”

At the hearing, the Court offered a preliminary construction of “capable of performing the function without modification.” Because that is the ordinary meaning of “configured to,” the Court will adopt that construction.

- B. “a controller configured to determine one of UL control channel resource sets contained in the received UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set” (’000 Patent, Claim 9)**

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	Subject to 35 U.S.C. § 112(f). Function: “determine one of UL control channel resource sets contained in the received UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set” Structure: Indefinite In the alternative, to the extent not governed by § 112(f), plain and ordinary meaning of “configured to,” which means “actually configured to and not merely capable of performing the claimed function.”

U.S. Patent 11,219,000 concerns “a method of allocating an uplink control channel resource in a next-generation/5G radio access network.” ’000 Patent at 1:26–28. The patent explains the then-recent move to a new radio (NR) scheme “to provide an improved data transmission rate as compared with” existing systems. *Id.* at 1:33–44. The patent identifies three “representative usage scenarios of the NR”—“enhanced mobile broadband (eMBB), massive machine-type communication (mMTC), and ultra reliable and low latency communication (URLLC)”—and explains that to effectively implement these scenarios, the NR must have flexible frame structures⁴ compared to existing systems, because each of these scenarios have different requirements for data rates, latency, and the like. *Id.* at 1:45–51; *see also id.* at 5:59–67.

Claim 9 relates to the exchange of information between a user equipment (UE) and a base

⁴ In network communication, a “frame” is a fundamental unit of data transmission at the data link layer. *Id.*

station to implement this flexible frame structure. Each claim is directed to “[a] user equipment for transmitting uplink (UL) control information” comprising a controller “configured to,” after receiving UL control channel resource set configuration from a base station, “determine one of UL control channel resource sets contained in the UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set.” ’000 Patent at 22:19–29. This claim language tracks the steps of FIG. 4:

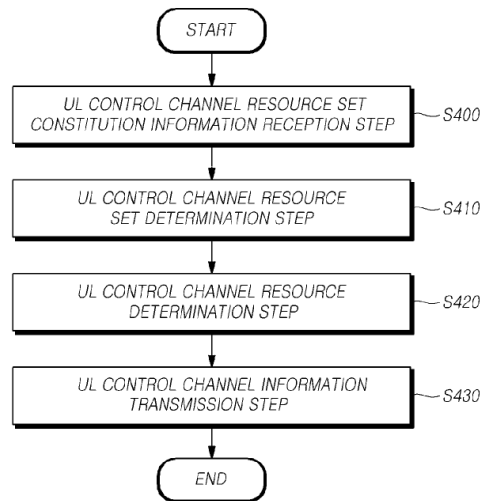


FIG. 4 of the '000 Patent

Defendants treat this “controller” limitation as a means-plus-function term. They say a general purpose “controller,” by itself, cannot perform the claimed determinations without special programming. They recognize “controller” is not necessarily a means-plus-function term, but contend the applicant here “walked away from any understanding as to what [the] structure might be for a controller.” Hr’g Tr., Dkt. No. 270 at 22:9–11. They focus on the last paragraph of the specification, which explains:

[T]he terms “system,” “processor,” “controller,” “component,” “module,” “interface,” “model,” “unit” or the like are generally intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, a controller, a control processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a controller or processor and the controller or processor can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers.

’000 Patent 20:62–21:8.

This contention is similar to the appellant’s argument in *WSOU Invs. LLC v. Google LLC*, Nos. 2022-1063, 2022-1065, 2023 WL 6889033 (Fed. Cir. 2023), in which the court considered whether “processor” was a means-plus-function term. Ultimately, the court concluded “the specification treats the word ‘processor’ so broadly as to generically be any structure that manipulates data. The specification states that ‘[i]mplementation of the processor 4 can be in hardware alone . . . , have certain aspects in software including firmware alone or can be a combination of hardware and software (including firmware).’” *WSOU*, 2023 WL 6889033, at *4. The appellate court accepted the district court’s position that “the language of the patent leads to the conclusion that ‘processors’ is meant to generically be anything that manipulates data.” *Id.* at *3–4.

But the language at issue in *WSOU* was different than the language here. For one, *WSOU*’s language appeared in the middle of the description of an embodiment, whereas the present language is in a “boilerplate” paragraph just before the claims. Also, *WSOU*’s language specifically applied to “processor” whereas the present language calls out eight different terms. The Court does not see this boilerplate language as undercutting the otherwise ordinary meaning of “controller.” Nor does the Court see this language as “describ[ing] a controller so generically to be equivalent to a system, a processor, component, module, interface, model, unit or anything else that’s a

computer-related entity,” as Defendants assert. Hr’g Tr., Dkt. No. 270 at 28:12–15. Accordingly, the Court concludes this is not a means-plus-function term and “controller” should be given a “plain and ordinary meaning” construction.

- C. **“controller for transmitting and receiving data, the controller comprising: a processor performs: to decide whether to perform a handover, to transmit a handover request message when it is decided to perform the handover, . . . to receive a handover request confirmation message in response to the handover request message . . .”** (’631 Patent, Claim 7)

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	Indefinite

U.S. Patent 11,627,631 relates “to a technology for providing services using network slicing to moving user equipments without interruption.” ’631 Patent at 1:22–24. According to the patent:

[N]etwork slicing is a technology for improving flexibility by dividing a network into multiple types of virtual networks using network virtualization technologies and configuring a separate logical network for each service or subscriber. With network slicing, a needed resource may be allocated from a virtualized network resource pool according to a service type. Therefore, when a new service is introduced, it is possible to provide the service rapidly without a physical network established, and to use efficiently limited physical network resources. Thus, the network slicing enables a logical network to be implemented in an infrastructure shared among multiple network slices, compared with establishing an independent network slicing infrastructure.

Id. at 7:44–57.

That’s sufficient background to resolve the dispute, which is less about the patent’s subject matter and more about Claim 7’s structure. The claim recites:

7. A controller for transmitting and receiving data, the controller comprising:
a processor performs:

to decide whether to perform a handover,
to transmit a handover request message when it is decided to perform the handover,
wherein the handover request message includes network slice information; and
to receive a handover request confirmation message in response to the handover request message,
wherein, if one or more protocol data unit (PDU) sessions are associated with one or more network slices that are not supported by a target BS, the handover request confirmation message includes information for indicating a rejection of the one or more PDU sessions by the target BS.

'631 Patent at 23:54–24:6. Defendants assert this claim is of a mixed-statutory class because its plain language requires actual performance of the transmitting and receiving steps. Dkt. No. 232 at 10. Pegasus responds that a skilled artisan would not think the limitations are a method or a function that can be used by a user. Rather, “performs” in Claim 7 signals that the controller is *capable* of certain functions. Dkt. No. 218 at 6.

The Court agrees with Pegasus. The language of the claim is grammatically incorrect, but the question is how a skilled artisan would understand it. Both the preamble and “processor” limitation suggest a device. The steps to be performed signal, in the context of an apparatus claim with a processor, how the processor is programmed or configured.

At the hearing, Defendants cited *Rembrandt Data Techs. v. AOL*, 641 F.3d 1331 (Fed. Cir. 2011), as particularly persuasive of this claim’s indefiniteness. *See* Hr’g Tr., Dkt. No. 270 at 32:21–33:5. In *Rembrandt*, the first four of five limitations of the claim at issue were all structural: “first buffer means for partitioning,” “fractional encoding means for receiving,” “second buffer means for combining,” and “trellis encoding means for trellis encoding.” *Rembrandt*, 641 F.3d at 1339.

The fifth limitation was “transmitting the trellis encoded frames,”⁵ yet none of the other limitations suggested any structure or function related to a transmitter. *Rembrandt* asked the court to insert “transmitter section for” at the beginning of the last limitation, which it declined to do. *Id.*

Here, Claim 7 is distinguishable from the claim at issue in *Rembrandt* in part because the alleged method steps all relate to the recited processor. *Rembrandt*’s claim clearly recited 4 structural limitations and then switched to a method step without any structure for performing that step. *Rembrandt* sought judicial correction, which both the district and appellate courts rejected on the basis that *Rembrandt* had “not demonstrated that a skilled artisan would have read its proposed language into the claim.” *Id.* at 1339–40.

Claim 7 is also distinguishable, ironically, because it’s less artfully drafted than *Rembrandt*’s claim. For example, reading the first step in combination with the preamble and processor language, the claim recites “the controller comprising: a processor performs: to decide whether to perform a handover.” As a result, while one could see “performs” as requiring action, “to decide . . .” suggests some configuration or instruction—for example, “*configured* to decide,” or a “*processor that performs instructions* to decide . . .” Either of those would lead a skilled artisan to read this as an apparatus claim without any steps that must be performed.

Defendants have the burden of showing indefiniteness by clear and convincing evidence. Because this claim is most reasonably read as an apparatus claim and not, as Defendants’ urge, a claim of mixed statutory class, that burden is not met. Accordingly, the Court holds this claim is not indefinite as a mixed-class claim.

⁵ The patent at issue concerned a modem using “trellis encoding,” which is a technique for reducing errors in data transmission. *Rembrandt*, 641 F.3d at 1333.

D. “Machine Type Communication (MTC) terminal” / “MTC terminal” (’931 Patent, Claims 1–7)

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	Plain and ordinary meaning, which means “a low capability terminal that has low performance hardware and software compared with a typical LTE/LTE-Advance terminal that performs data communication without human interaction.”

U.S. Patent 10,181,931 “relates to a method and apparatus of allocating resources of an uplink control channel for Hybrid Automatic Repeat Request (HARQ) ACK / NACK feedback of [a] Machine Type Communication terminal in a wireless communication system.” ’931 Patent at 1:18–22. Generally, HARQ ACK/NACK feedback refers to a process by which a device receiving a transmission performs error detection on the transmission and then acknowledges (ACKs) or “no acknowledges” (NACKs) the proper receipt of the transmission based on whether it detected an error.

The patent explains machine type communication (MTC) “is a type of data communication in which one or more machines or objects communicate with each other (e.g., machine to machine) without human interaction.” ’931 Patent at 1:26–29. “MTC terminals may be installed in an area where a radio wave environment is not good compared to general terminals,” which may require repeated transmission of control information or data to ensure receipt. *Id.* at 1:33–35. But this repeated transmission for an MTC terminal “may conflict with resources of an uplink control channel for a typical terminal.” *Id.* at 1:50–51. The patent teaches “allocating the PUCCH^[6] resources

⁶ The physical uplink control channel, or “PUCCH,” is the bandwidth used for uplink control information, which includes the HARQ feedback acknowledgments. ’931 Patent at 5:38; see also *id.* at 7:58–63 (noting “the PUCCH of the terminal through the plurality of subframes may cause a collision between the PUCCH resource of the MTC terminal and the PUCCH resource for the HARQ ACK/NAKC feedback of a general LTE terminal other than the MTC terminal”).

for the uplink HARQ ACK/NACK feedback of the MTC terminal” to reduce any such conflict. *Id.* at 7:64–67.

The parties dispute the ordinary meaning “MTC terminal.” Defendants accuse Pegasus of attempting to broaden this term to include any conventional LTE/LTE Advanced terminal, like smartphones. Dkt. No. 232 at 12. Their construction presents two somewhat related issues: (1) whether an MTC terminal must be a low-capability and low-performance terminal compared with typical LTE/LTE-Advanced terminals, and (2) whether the MTC terminal performs data communication without human interaction.

1. *Whether an “MTC terminal” must be a low-capability and low-performance terminal compared with typical LTE/LTE-Advanced terminals*

Defendants point to the specification’s assumption “that the MTC terminal is a low capability terminal that has low performance hardware and software compared with a typical LTE/LTE-Advanced terminal in order to reduce a unit price of the terminal.” Dkt. No. 232 at 13 (quoting ’931 Patent at 7:13–16). They also rely on their expert, who opines “MTC terminals have different requirements and capabilities than a typical LTE/LTE-Advanced terminal.” Dkt. No. 232 at 14.

Pegasus stresses the specification’s statement that “MTC refers to all communication systems that perform communication without a human’s intervention.” Dkt. No. 218 at 11 (quoting ’931 Patent at 1:24–32). As for Defendants’ remaining evidence, Pegasus stresses the permissive language of the specification and cited technical standards. *Id.* at 12.

The Court agrees with Pegasus. MTC is machine-to-machine communication. ’931 Patent at 1:26–29. To be sure, the specification strongly suggests less of a need for high performance and

high capability to, for example, communicate with sensors, pumps, or valves. But the background undercuts any temptation to impose that as a limitation by explaining “MTC refers to *all communication systems* that perform communication without a human’s intervention.” *Id.* at 1:31–32. The Court therefore rejects the first part of Defendant’s construction.

2. *Whether the terminal performs data communication without human interaction*

On this issue, the Court agrees with Defendants—not just that an MTC terminal performs data without human interaction, but that it is intended to do so as part of its ordinary operation. These are devices intended to communicate to and from sensors, pumps, and the like, and they are frequently used in areas “where a radio wave environment is not good compared to *general terminals*.” *Id.* at 1:33–35 (emphasis added); *see also id.* at 1:49–50 (noting that, in the prior art, “the resources of the uplink control channel for the MTC terminal may conflict with resources of an uplink control channel for a *typical terminal*” (emphasis added)), 17:13–15 (contrasting MTC terminals with “typical” LTE/LTE-Advanced terminals). And while the Court declines to impose a limitation on the complexity or capability of the MTC terminal, the patent’s focus on low-complexity devices shows these terminals are not devices intended for human use during normal operation. They are not, for example, smartphones that communicate data in the background to servers, but are primarily used for voice, texting, web-browsing, and the like. The very point of the patent is to change the resource allocation for MTC terminals to reduce collisions with non-MTC terminals. Accordingly, the Court construes these terms as “a terminal that performs data communication without human interaction, which in ordinary operation is machine-to-machine.” This

construction excludes smartphones.⁷

E. “separated from” and “terminal different from the MTC terminal” (’931 Patent, Claims 1, 3, 5, 7)

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	“terminal different from the MTC terminal”: Plain and ordinary meaning, which is “a non-MTC terminal” “separated from”: indefinite

Each of these claims recites “wherein the start offset information of the resource allocated to the uplink control channel is configured *separated from* offset information on a *terminal different from the MTC terminal*.” ’931 Patent at 16:45–48 (emphasis added); *see also id.* at 16:22–25, 17:1–4; 17:22–25. The parties dispute whether “terminal different from the MTC terminal” simply means a different terminal (regardless of whether it is also an “MTC terminal”) or whether it means a different *type* of terminal—that is, a non-MTC terminal. Defendants also contend “separated from” is indefinite.

Defendants point to the specification and prosecution history for support. From the specification, they point to the applicant’s reference to “a terminal (e.g., a non-MTC terminal).” Dkt. No. 232 at 15 (quoting ’931 Patent File History, Dkt. No. 232-3 at 52). They say the examiner understood the limitation the same way during prosecution. *Id.* at 16. And they note the specification’s reference to “collisions and undesirable consequences for ‘general LTE terminal other than

⁷ Supporting that exclusion, slide 43 of Pegasus’s hearing presentation categorized smartphones, tablets, and smart watches as “non-MTC terminals.” At the hearing, Pegasus attempted to shift the argument to one of “modes,” arguing that “[i]f a smartphone is operating in a mode that is MTC mode, then in those situations it could be performing data communication without human interaction.” Hr’g Tr., Dkt. No. 270 at 42:25–43:3. But this notion of an MTC “mode” (as opposed to an “MTC terminal”) is absent from Pegasus’s briefing, as is any evidence supporting such a concept.

the MTC terminal.” *Id.* at 16–17 (quoting ’931 Patent at 7:52–63). Pegasus responds this phrase simply refers to a terminal other than the particular MTC terminal recited in the preamble. Dkt. No. 218 at 13.

The Court agrees with Defendants that “terminal different from the MTC terminal” refers to a different *type* of terminal. Simply reading the claim language, a skilled artisan could understand this language either way, but the intrinsic record consistently supports Defendants’ position.

First, the specification supports that construction. In fact, that’s the focus of the technical improvement, as the specification frequently recognizes. For example, Figure 2 and the related text describe replacing N_{PUCCH} with N_{PUCCH-MTC} to create separation between the PUCCH resources of the MTC terminals and “general LTE terminal[s] other than the MTC terminal.” ’931 Patent at 7:62–63; *see also id.* at 8:6–27 (describing Figure 2). This suggests not only that “terminal different from the MTC terminal” refers to a different *type* of terminal, but that “separated from” refers to the separation between the PUCCH resources of the two types of terminals.

Second, the prosecution history supports Defendants’ position. In a final Office Action, the examiner cited a reference he thought taught this limitation by disclosing MTC terminals using “*a separate PUCCH region from standard terminals* and that the region may have a different frequency offset.” ’931 Patent File History, Dkt. No. 232-3 at 32–33. The examiner explained:

[S]ince the [reference] discloses the use of a separate PUCCH region for MTC terminals with a different frequency offset (and thereby a different starting offset) it would have been obvious to a [skilled artisan] to combine these separate PUCCH [regions] with the system of *Xia* as modified by *Dinan* by making a separate PUCCH region for MTC terminals.

Id. at 33. This shows the examiner interpreted “different from the MTC terminal” as “a different type of terminal than an MTC terminal.”

Notably, the applicants did nothing to dispel that interpretation in their next communication

to the Patent Office. Instead, they argued that the cited reference was not prior art because it post-dated the effective filing date of the application. *Id.* at 51–52. They did, however, imply that, even if the cited reference was *not* prior art, that reference did not disclose “the start offset information of the resource allocated to the uplink control channel is configured **separated** from **start offset information for a terminal** (e.g., a non-MTC terminal) **different from the MTC terminal**.” *Id.* at 52 (emphasis in original). Although it’s uncertain exactly what distinction the applicants were making,⁸ it clearly wasn’t that the examiner wrongly concluded “terminal different from the MTC terminal” meant “different type of terminal than an MTC terminal.”

Pegasus says one must “distort the plain meaning of the phrase” to reach this conclusion, Dkt. No. 243 at 5, but not really. In fact, the phrase is awkward for either meaning. For the meaning Pegasus wants, it would have been easier to just recite “a second terminal,” “another terminal,” or a “different terminal.” But by adding “different from the MTC terminal” after “a terminal,” the phrase becomes *less* clear if that’s the meaning the applicants intended. And if the applicants simply meant a different terminal, why add the parenthetical “(e.g., a non-MTC terminal)” in the prosecution-history argument? Collectively, this unlikely and unnecessary language for simply saying it’s a different terminal from the terminal in the preamble, which weighs in Defendants’ favor. Moreover, language from the specification tracks this limitation’s language. *See* ’931 Patent at 7:62–63 (referring to “general LTE terminal[s] other than the MTC terminal”).

Read this way, “separate from” is not indefinite. That language refers to the separation of PUCCH resources of non-MTC terminals from MTC terminals to help avoid collisions. The Court

⁸ The applicants didn’t explain the distinction, but based on the emphasis, it seems to relate to whether the cited reference disclosed *terminals* with offsets rather than just the idea of offsets in the abstract.

construes these terms together as “wherein the start offset information of the resource allocated to the uplink control channel is separately and differently defined from offset information of the resource on a non-MTC terminal.” *See* ’931 Patent at 8:6–8 (noting, with respect to Figure 2, “the base station defines a separate PUCCH resource start offset parameter $N_{\text{PUCCH-MTC}}$ for the MTC terminal”).

F. “access unit” (’932 Patent, Claims 1, 2, 8–14)

Pegasus’s Construction	Defendants’ Construction
“the node providing an RLC function, a MAC function, and a PHY function for the transmission of user plane data”	Plain and ordinary meaning.

This dispute concerns lexicography. Pegasus asserts the ’932 Patent explicitly defines “access unit.” Dkt. No. 218 at 15 (citing ’932 Patent at 8:52–63). In response, Defendants accuse Pegasus of ignoring critical parts of the specification that clearly indicate the applicant did not intend to define the term. Dkt. No. 232 at 19–20. Defendants also argue claim differentiation supports their position by reciting, in a dependent claim, the same functions Pegasus now seeks to include as part of its lexicography. *Id.* at 20. All parties rely on this language for their respective positions:

Herein, for convenience of description, the node providing a PDCP function for the transmission of user plane data is referred to as a central unit (CU). In addition, the node providing an RLC function, a MAC function, and a PHY function for the transmission of user plane data is referred to as an access unit (AU). However, these terms are only used for convenience of description and the present disclosure is not limited thereto.

’932 Patent at 8:52–63.

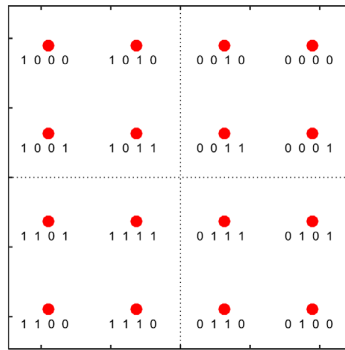
The Court agrees with Pegasus. Defendants do not contest that the second sentence is lexicography by itself, but instead say the last sentence explicitly says “access unit” “is not limited

to” the listed functions. Dkt. No. 233 at 20. But the excerpt actually says “the present disclosure” is not limited thereto. The Court sees this as simply saying *the present disclosure* is not limited to “central units” and “access nodes.” Regarding Defendants’ claim-differentiation argument, the Court is not aware of any authority that the “guideline” of claim differentiation can trump lexicography. *See Fiber Optic Designs, Inc. v. Seasonal Specialties, LLC*, 172 F. App’x 995, 999 (Fed. Cir. 2006) (“claim differentiation serves best as a guideline, rather than a rule”). Accordingly, the Court adopts Pegasus’s construction for “access unit” of “the node providing an RLC function, a MAC function, and a PHY function for the transmission of user plane data.”

G. “to have same difference within a predetermined error rate” (’161 Patent, Claims 2, 4, 6)

Pegasus’s Construction	Defendants’ Construction
Plain and ordinary meaning	Indefinite.

The ’161 Patent relates to transmitting and receiving “channel quality indicators (CQI) in order to support 256QAM in addition to three typical modulation methods”: quadrature phase shift keying (QPSK), 16-state quadrature amplitude modulation (QAM), and 64-state QAM. ’161 Patent at 1:19–29. Generally, digital QAM maps the combination of the amplitude and phase of a signal to a “constellation” in four quadrants. For example, the constellation for a 16QAM scheme might look like this, with each point in the constellation representing a specific combination of amplitude (measured from the origin, or center, of the graph) and phase (measured rotationally relative to the positive x-axis) of the signal:



Here, if the amplitude (represented as distance from the origin) is at its maximum and the phase is 45° counterclockwise relative to the positive x-axis, the receiver would interpret the symbol as “0000” (top right). Similarly, if the amplitude is at its maximum but the phase is 225° counterclockwise (or 135° clockwise) relative to the positive x-axis, the receiver would interpret the symbol as “1100” (bottom left). Using this scheme, for any single time slot, the receiver can “receive” (or more accurately, decode) 4 bits of information. For a 32QAM scheme, the receiver can decode 5 bits during any time slot. For a 64QAM scheme, the receiver can decode 6 bits. And so on. *See generally* Feuerstein Decl., Dkt. No. 218-15 ¶ 28.

At the time of the underlying application, systems were said to typically use either 4QAM, 16QAM or 64QAM. The patent, however, teaches adopting 256QAM as a new modulation method “due to [a] sharp increase in data traffic and data speed.” ’161 Patent at 2:3–4. 256QAM would allow the receiver to decode 8 bits during any time slot, providing much faster communication than the then-typical modulation methods.

To work, according to the specification, these systems require selecting a channel quality indicator (or CQI) index value, which represents a combination of certain modulation parameters, from a table, and then transmitting that index from the terminal to the base station to indicate the appropriate modulation parameters. Typically, a terminal will receive a reference signal from a

base station, which the terminal uses to measure channel quality. After it determines the channel's quality, the terminal sends a CQI index from a table to the base station, which uses that index from an identical table to determine which modulation scheme the terminal wants. '161 Patent at 1:65–2:3. For example, poor channel quality will generally cause the terminal to pick a slower scheme with more “space” between points on the constellation to allow for noise in the signal. For a channel with good quality (i.e., little noise), the terminal may choose a higher-bandwidth scheme.

The patent contemplates adding 256QAM to systems that only used the then-typical modulation methods, but those existing systems did not have CQI indexes for the new scheme. The claims specifically set forth the requirements for these new CQI index tables. Claim 1, for example, first recites a straight-forward four-step process from the perspective of the UE:

1. A method for transmitting channel state information by a User Equipment (UE), the method comprising:
 - [1] receiving a reference signal for measuring channel quality from a base station;
 - [2] measuring the channel quality based on the reference signal, and [3] selecting a channel quality indicator (CQI) index value from a predetermined CQI index table including CQI index values for [256QAM] modulation, based on the measurement result of the channel quality; and
 - [4] transmitting channel state information including the selected CQI index value to the base station . . .

'161 Patent at 19:6–17. The claim then specifies the requirements for the CQI index table, such as how many CQI index values are used for each type of modulation, values of code rates, and the like. *Id.* at 19:19–45. Claim 3 includes similar limitations from the perspective of the base station rather than the UE, such as “transmitting the reference signal to” a UE and receiving a CQI index “selected from a predetermined CQI index table.” *See id.* at 19:65–20:37. Claim 5 is directed to a

UE configured to implement the steps of Claim 1. *See id.* at 20:57–22:6.

The parties’ dispute concerns dependent Claims 2, 4 and 6, which are identical and depend from Claims 1, 3, and 5, respectively. Each claim recites “[t]he method of claim [1/3/5], wherein the five CQI index values for 64QAM modulation, respectively, *to have same difference within a predetermined error rate*, as shown in a table below

CQI index	modulation	code rate × 1024	efficiency
0		out of range	
1	QPSK	78	0.1523
2	QPSK	193	0.3770
3	QPSK	449	0.8770
4	16QAM	378	1.4766
5	16QAM	490	1.9141
6	16QAM	616	2.4063
7	64QAM	466	2.7305
8	64QAM	567	3.3223
9	64QAM	666	3.9023
10	64QAM	772	4.5234
11	64QAM	873	5.1152

’161 Patent at 19:46–64 (emphasis added); *see also id.* at 20:38–56, 22:7–25. Challenging “to have same difference within a predetermined error rate” as indefinite, Defendants stress that nothing about a “same difference” is “shown in a table below,” and the claims provide no guidance as to what should have the “same difference” or what that means. Dkt. No. 232 at 28. Thus, say Defendants, these dependent claims are indefinite.

Pegasus contends “same difference” refers to the difference in the required signal-to-noise ratio (SNR) between adjacent CQI index values, despite that SNR doesn’t appear in the tables. Dkt. No. 218 at 24. Saying a skilled artisan would understand the scope of the claims with complete certainty, Pegasus points to the specification’s explanation of how to calculate the required SNR from the code rate at a given block error rate (BLER), which it maps to the “predetermined error rate” of the claims. *Id.*

Defendants, however, emphasize that neither SNR nor BLER is in the claims, and question why the “same difference” could not refer to “transmission efficiency.” Dkt. No. 232 at 28. Moreover, the specification shows the difference in required SNR between any two adjacent CQI indices (the SNR gap) “varies from row-to-row.” *Id.* at 29 (citing Figures 11–16). Thus, even if “same difference” refers to the unshown-but-calculable SNR gap between adjacent rows of the table, the “differences” are not the “same.” *Id.*

The Court agrees with Defendants. First, and most obviously, the tables don’t refer to SNR. Nor does the rest of the claim language. Pegasus criticizes Defendants’ suggestion that “same difference” might refer to “transmission efficiency,” not because that doesn’t make sense, but because the specification never discusses the difference in transmission efficiency. Dkt. No. 218 at 24. But at least “transmission efficiency” is in the tables. In any event, the claim language suggests it’s the CQI values that need to have the “same difference,” not the SNR gap or the transmission efficiency, but that doesn’t make sense either.

Second, it’s unclear what “same difference” means. Defendants say “same difference” means that the difference between any two adjacent rows of the table must be the same. Dkt. No. 232 at 29. Pegasus, however, says “[s]ame’ cannot refer to each difference being exactly the same as the others because that it is inconsistent with the claimed table and therefore the claim itself.” Dkt. No. 218 at 24. Thus, Pegasus not only abandons the ordinary meaning of “same,” it introduces a term of degree—how close to “exactly the same” do they need to be? Interestingly, the Detailed Description never uses the phrase “same difference,” but frequently refers to differences that are “almost the same,” suggesting these phrases mean different things. *See, e.g.*, ’161 Patent at 11:67–12:3 (“FIG. 11 shows the transmission efficiencies from CQI index 11 to CQI index 15, which is defined so that differences of the required SNRs between adjacent CQI indexes are *almost the*

same . . .” (emphasis added)); *id.* at 12:13–17 (“In this case [of FIG. 12], the transmission efficiency of CQI index 11 to CQI index 15, which is defined in the same manner as the first detailed method in which differences of the required SNRs between adjacent CQI indexes are *almost the same . . .*” (emphasis added)); *id.* at 12:26–29 (“The MCS indexes may be selected so that differences of estimated required SNRs at a BLER of 10%, between the adjacent CQI indexes are *almost the same.*” (emphasis added)).

Finally, it’s not clear what “within a predetermined error rate” means. Pegasus suggests the target block error rate (or BLER) can meet that claim requirement. *See* Dkt. No. 218 at 24 (equating “predetermined error rate” with “a BLER of 10%”). BLER measures the frequency of block errors, which increases with a lower SNR. *Id.* at 22 (“Achieving a target BLER with a given combination of modulation order and code rate requires channel impairments, such as noise, to be below a particular level.”).

But the patent doesn’t use “predetermined error rate” in a way that suggests it means BLER. The specification uses the phrase twice, and both times precedes it with “almost the same.” *See* ’161 Patent at 15:27–33 (noting “the CQI index table may be configured so that differences of the required SNRs between adjacent CQI index values in . . . five CQI index values for 64QAM modulation, respectively, are *almost the same within a predetermined error rate* as in FIG. 16” (emphasis added)); *id.* at 16:56–62 (same). That suggests “within a predetermined error rate” might provide the leeway Pegasus seeks for “same difference,” but does not refer to the BLER, which undermines Pegasus’s explanation that a skilled artisan would understand the claim. *See* Dkt. No. 218 at 24 (asserting the specification provides equations for calculating the required SNR “given the modulation method and code rate at a ‘predetermined error rate’ (i.e., a BLER of 10%)”).

Pegasus may have the better argument between the two. There is, for example, evidence

the patentee intended that “same difference” compare SNR and not “efficiency.” But “[w]hat a patentee subjectively intended his claims to mean is largely irrelevant to the claim’s objective meaning and scope.” *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379 (Fed. Cir. 2000). At a minimum, to get there would require judicial correction, and there is certainly reasonable debate about what these claims mean. Accordingly, because a skilled artisan would not be reasonably certain of the scope of these claims, they are indefinite.

IV. CONCLUSION

Disputed Term	The Court’s Construction
“configured to” (’931 Patent, Claim 5; ’000 Patent, Claim 9; ’644 Patent, Claim 3; ’161 Patent, Claim 5)	“capable of performing the function without modification”
“a controller configured to determine one of UL control channel resource sets contained in the received UL control channel resource set configuration information, and determine one of UL control channel resources configuring the determined one UL control channel resource set” (’000 Patent, Claim 9)	Not subject to 35 U.S.C. § 112(f)
“controller for transmitting and receiving data, the controller comprising: a processor performs: to decide whether to perform a handover, to transmit a handover request message when it is decided to perform the handover, . . . to receive a handover request confirmation message in response to the handover request message . . .” (’631 Patent, Claim 7)	Not indefinite.

“Machine Type Communication (MTC) terminal” / “MTC terminal” (’931 Patent, Claims 1–7)	“a terminal that performs data communication without human interaction, which in ordinary operation is machine to machine”
“terminal different from the MTC terminal” (’931 Patent, Claims 1, 3, 5, 7)	“wherein the start offset information of the resource allocated to the uplink control channel is separately and differently defined from offset information of the resource on a non-MTC terminal”
“separated from” (’931 Patent, Claims 1, 3, 5, 7)	
“access unit” (’932 Patent, Claims 1, 2, 8–14)	“the node providing an RLC function, a MAC function, and a PHY function for the transmission of user plane data”
“to have [a] same difference within a predetermined error rate” (’161 Patent, Claims 2, 4, 6)	Indefinite

The Court **ORDERS** each party not to refer, directly or indirectly, to its own or any other party’s claim-construction positions in the presence of the jury. Likewise, the Court **ORDERS** the parties to refrain from mentioning any part of this opinion, other than the actual positions adopted by the Court, in the presence of the jury. Neither party may take a position before the jury that contradicts the Court’s reasoning in this opinion. Any reference to claim construction proceedings is limited to informing the jury of the positions adopted by the Court.

SIGNED this 3rd day of July, 2025.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE