IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

DALI WIRELESS, INC.,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 19-952 (MN)
	)	
COMMSCOPE TECHNOLOGIES LLC and COMMSCOPE HOLDING COMPANY, INC.,	)	
	)	
Defendants.	)	

MEMORANDUM ORDER

At Wilmington this 3rd day of March 2022:

As announced at the hearing on February 24, 2022, IT IS HEREBY ORDERED that the disputed claim terms of U.S. Patent No. 8,682,338 ("the '338 Patent") are construed as follows:

1. "translating the uplink and downlink signals between RF and base band as appropriate" recites "as appropriate" to mean the amount of translation necessary to produce a baseband signal from an RF signal[1] ('338 Patent, claim 1)

2. "packetizing the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers" refers to "the uplink and downlink base band signals" that were produced in the "translating" step ('338 Patent, claim 1)

3. "routing and switching the packetized signals among the one or more remote radio units via the at least one digital access unit" refers to "the packetized signals" produced by the "packetizing" step and includes both uplink baseband signals and downlink baseband signals that were previously packetized ('338 Patent, claim 1)

[1] To be clear, the Court is not excluding translation from a baseband signal to an RF signal, but the crux of current dispute between the parties is focused on the next step – the "packetizing" step. That is, the fundamental dispute is whether the baseband signals that get packetized were previously translated.

4. "routing and switching . . . via the at least one digital access unit" means "routing and switching . . . through the at least one digital access unit" ('338 Patent, claim 1)

The Court carefully reviewed all submissions in connection with the parties' contentions regarding the disputed claim terms (*see* D.I. 305, 306, 307, 310, 311, 312, 313 & 316), heard oral argument (*see* D.I. 318 & 320) and applied the following legal standards in reaching its decision:

I. LEGAL STANDARDS

"[T]he ultimate question of the proper construction of the patent [is] a question of law," although subsidiary fact-finding is sometimes necessary. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837-38 (2015). "[T]he words of a claim are generally given their ordinary and customary meaning [which 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 v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc) (internal citations and quotation marks omitted). Although "the claims themselves provide substantial guidance as to the meaning of particular claim terms," the context of the surrounding words of the claim also must be considered. *Id.* at 1314. "[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted).

The patent specification "is always highly relevant to the claim construction analysis . . . [as] it is the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). It is also possible that "the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316. "Even when the specification describes only a single embodiment, [however,] the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to

limit the claim scope using words or expressions of manifest exclusion or restriction." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014) (internal quotation marks omitted) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)).

In addition to the specification, a court "should also consider the patent's prosecution history, if it is in evidence." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). The prosecution history, which is "intrinsic evidence, . . . consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In some cases, courts "will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva*, 135 S. Ct. at 841. Extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980. Expert testimony can be useful "to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Phillips*, 415 F.3d at 1318. Nonetheless, courts must not lose sight of the fact that "expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Id.* Overall, although extrinsic evidence "may

be useful to the court," it is "less reliable" than intrinsic evidence, and its consideration "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

II. THE COURT'S RULING

The Court's ruling regarding the disputed claim terms of the '338 Patent was announced from the bench at the conclusion of the hearing as follows:

> This is our second round of claim construction. I previously construed a number of disputed terms of three patents.[2] Now we have another four disputes on one of those patents – disputes that arose during the summary judgment briefing. I am prepared to rule on the disputes. As with my prior ruling, I will not be issuing a written opinion, but I will issue an order stating my rulings. I want to emphasize before I announce my decisions that although I am not issuing a written opinion, we have followed a full and thorough process before making the decisions I am about to state. I have reviewed the patent in dispute anew. I have also reviewed the materials submitted with the summary judgment motions and the supplemental claim construction submissions. We had some

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2 The Court previously construed the terms "downlink signals" and "downlink channel signals" during the original claim construction proceedings, when there were three patents at issue – *i.e.*, the '338 Patent at issue here today, as well as two other unrelated patents (the '178 and '314 Patents). (*See* D.I. 122). The parties agreed that whatever meaning was given to these terms applied across the three patents, even though the patents did not share a specification. The Court construed those terms according to their plain meaning, which was "signals transmitted in the downlink direction" without necessarily being limited to radiofrequency (RF) signals. (*Id.* at 1; *see also id.* at 8-9). Dali argues that that construction is dispositive of the issues raised in these supplemental proceedings. (*See* D.I. 305 at 9-13 & 16-19). The Court disagrees. Construction of these "downlink" terms does not resolve the parties' dispute over the meaning of "as appropriate" in the "translating" step, nor does it resolve the disputes over the related processing steps of claim 1. In any event, claim construction is rolling and it is within the Court's discretion to clarify and revise claim constructions at any point before the case goes to the jury. *See Jack Guttman, Inc. v. Kopykake Enterprises, Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002); *see also Pressure Prod. Med. Supplies, Inc. v. Greatbatch Ltd.*, 599 F.3d 1308, 1315-16 (Fed. Cir. 2010); *CytoLogix Corp. v. Ventana Med. Sys., Inc.*, 424 F.3d 1168, 1172 (Fed. Cir. 2005).

argument last week and there has been argument here today. All of that has been carefully considered.

Now as to my rulings. As an initial matter, I am not going to read into the record my understanding of claim construction law generally. I have a legal standard section that I have included in earlier opinions, including my prior opinion in this case. I incorporate that law and adopt it into my ruling today and will also set it out in the order that I issue.

The parties have proposed similar, though not identical, proposals for the definition of a person of ordinary skill in the art.[3] Neither party has argued that the differences in the proposals are relevant to the issues before me today.

The first term is "translating the uplink and downlink signals between RF and base band as appropriate" which appears in claim 1 of the '338 Patent. Immediately after that term, claim 1 recites "packetizing the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers." That is the second disputed term here. I think it makes sense to address these two terms together.

The parties dispute whether the "translating" step is conditional. As I understand the argument as refined through last week's discussion and today, Dali's position is that if the signal is at the DAU already in baseband format, then it does not need to be translated again to then be packetized. And if the signal is at the DAU in RF, then it does need to be translated to baseband before packetizing. If at the RRU the signal is in baseband, it also must be translated to RF before traveling in the downlink direction towards a mobile phone.

Essentially, as Dali sees it, "[t]he point is simply that at some point in the system certain signals going in a downlink direction will need to be translated before R[F] and baseband and at other points in the system they will need to be translated between RF and

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3 During the original claim construction proceedings, Plaintiff's expert, Dr. Bims, opined that "a person of ordinary skill in the art in the field of these patents would have had a bachelor's in computer science, computer engineering, electrical engineering, or their equivalent, and at least three years' experience working with wireless technology." (D.I. 105 at A082). Defendants' expert, Dr. Acampora, opined that a person of skill in the art "would have a Bachelor's Degree in Electrical Engineering or equivalent field of study, with 2-3 years of work experience in the field of wireless communications." (*Id.* at A0394). Neither side submitted anything different for these supplemental proceedings.

baseband in the uplink direction."[4] As such, the "uplink and downlink signals" in the "translating" step can really be in either RF format or baseband format and the translation can happen at the DAU or RRU as necessary. The conditional nature of the limitation is not so much that the "translating" step can be skipped altogether, but rather that the requisite "translating" step sometimes occurs at the DAU and sometimes at the RRU depending on where the signal is received and in what format. This is the concept captured by the "as appropriate" language in Dali's view.

CommScope disagrees. CommScope argues that Dali's position does not make sense in the context of the claim. In particular, because the next step – *i.e.*, "packetizing the uplink and downlink base band signals" – builds off the "translating" step, translation at the RRU would not flow through the remainder of the claim. That is, there would not be any "downlink base band signals" created from translation of downlink RF signals at the RRU because the RRU is configured to "transmit downlink RF signals," which everyone seemed to agree last week means transmission from RRU to mobile phone in the context of claim 1. So in the context of the claim, the RRUs would never be ***required*** to translate downlink RF signals to downlink baseband signals to then be packetized, routed and switched. CommScope's position is largely premised upon a finding that "the uplink and downlink base band signals" that are packetized in the "packetizing" step are the particular baseband signals created from RF signals in the prior "translating" step. In CommScope's view, the "as appropriate" language in the "translating" step just refers to the amount of translation necessary – how much or how little you need to translate to get to the desired format for packetizing, et cetera.

Here, I agree with CommScope. Starting with the claim language itself, the "packetizing" step recites "packetizing the uplink and downlink base band signals." A person of ordinary skill reading this language would understand the article "the" applies to both uplink and downlink signals, *i.e.*, the term is understood as "packetizing the uplink base band signals and the downlink base band signals." There is only one other reference to "base band" in all of claim 1 and it is in the "translating" step that immediately precedes the "packetizing" step. And that step requires translating between RF and baseband. A person of ordinary skill would therefore understand "the uplink and downlink base band signals" to be those baseband signals ***produced by*** the prior "translating" step. So although Dali argues that the baseband signal in the

4 (D.I. 318 at 41:24-42:4).

"packetizing" step can be any baseband signal without first having been translated, the claim language requires otherwise. Use of the article "the" indicates the downlink baseband signal is one that finds antecedent basis earlier in the claim – where baseband signals are created from translation of RF signals.

I think this conclusion is the one that most naturally aligns with the specification. One of the stated objects of the present invention is "to facilitate conversion and transport of several discrete relatively narrow RF bandwidths."[5] RF bandwidths require conversion to baseband first before transport, which occurs in packetized form. So requiring a translation from RF to baseband makes sense in the context of one of the objects of the present invention.[6] The specification also states that "[f]or the downlink (DL) path, RF signals received from the [base station] are separately down-converted, digitized, and converted to base band (using a Digital Down-Converter). Data streams are then I/Q mapped and framed. Specific parallel data streams are then independently serialized and translated to optical signals using pluggable SFP modules, and delivered to different RRUs over optical fiber cable."[7] Again, this suggests that if a downlink signal is in RF format, it must be translated to baseband before transport. A person of ordinary skill would understand that, in the context of the invention, translation of signals from RF to baseband is an integral part of the claimed method because that is what facilitates the transport.

So when the "packetizing" step refers to "the uplink and downlink base band signals," I think a person of ordinary skill would understand the term to be referring to those baseband signals that were created by translation. And as for the meaning of "as appropriate" in the "translating" step, it seems like that gets at the amount of translation necessary to yield a baseband signal ready for

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5 ('338 Patent at 4:20-22; *see also id.* at 5:5-6 ("[T]he present invention facilitates conversion and transport of several discrete relatively narrow RF bandwidths.")).

6 Although neither side argues that it is limiting, the preamble similarly suggests that the invention is about facilitating the transport of RF signals. (*See* '338 Patent at Claim 1 ("A method for routing and switching RF signals comprising . . . ." (preamble))).

7 ('338 Patent at 5:64-6:4; *see also id*. at 6:4-9 (uplink path) & 8:24-32 ("[T]he system and method of the present invention readily supports configurations where one or more of the carriers which are part of base station signals 107 and 108 and are identical frequencies, since the base station signals are digitized, packetized, routed and switched to the desired RRU.")).

packetization – not that the translation can occur at various places in the system depending on what type of signal is at issue.

I also don't think that the claim differentiation argument that Dali is making changes the analysis. Those claims are not simply adding a source of the signal as Dali suggests. Claims 6 and 7 add multiple limitations to claim 1 – for example, claim 6 adds that there are two DAUs rather than one or more in claim 1 and that there are two base stations. Claim 7 adds that each base station transmits or receives RF signals from multiple carriers.

As to Dali's argument that translation can also occur at the RRU, I don't think that is excluded by the claim. Nor is a scenario where signals already in baseband (*i.e.*, without needing translation) get packetized, routed and switched. The claim is a comprising claim and those situations are not ***excluded*** by the construction today. But when it comes to what is ***required*** by the claim, I find that a person of ordinary skill would understand that claim 1 does require translation of uplink and downlink RF signals to baseband, where the resulting baseband signals then get packetized, routed and switched. I am also unpersuaded by Dali's argument that "uplink and downlink signals" are so well-known that there is an inherent antecedent basis such that any person of ordinary skill would know what these terms mean. I disagree that the statements by CommScope's expert and attorneys during the IPR make clear that there is an inherent antecedent basis. It appears that those statements were interpreting the claim as Dali had in connection with its infringement contentions in this case. And as I read those statements, they are asserting that a particular piece of prior art disclosed or inherently disclosed the translation from RF to baseband, not that what was packetized was not a translated signal. I also note the testimony of Dali's own expert who testified that there is no antecedent basis for "the uplink and downlink base band signals."[8]

The next term at issue goes along with the previous two. The claim term is "routing and switching the packetized signals among the one or more remote radio units via the at least one digital access unit," which also appears in claim 1 of the '338 Patent. The dispute here is whether the term "the packetized signals" refers to the particular uplink and downlink baseband signals that were produced by the prior packetizing step. Although Dali's expert seemingly

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8 (*See* D.I. 252, Ex. 3 at 106:16-20 ("Q. Is there an antecedent basis in the claim for the phrase 'the uplink and downlink baseband signals in the packetizing step' as a yes-or-no question. A. No.")).

agreed with that premise,[9] Dali now resists it for two reasons. First, Dali does not believe that CommScope's proposed chain of antecedent bases is proper – *i.e.*, that the routed and switched packetized signals recited here are packetized uplink and downlink baseband signals that were made in the "packetizing" step from uplink and downlink baseband signals, the baseband signals having been made in the "translating" step before that. That is, Dali takes issue with the packetized signal being one that must have been translated previously in the "translating" step. I have already rejected Dali's argument. Dali also now argues that a person of ordinary skill would know that only packetized signals in the downlink direction are routed and switched.[10] As to this latter argument, I don't think that there is support for this position in the specification, and Dali's argument is undermined by the language of the claim. "The packetized signals" refers back to "the packetized signals" that were produced by the "packetizing" step, a step where both uplink and downlink baseband signals were packetized. So "the packetized signals" that are recited in both the "packetizing" step and the "routing and switching" step are both uplink and downlink baseband signals. This is how a person of ordinary skill would understand "the packetized signals" in the context of the related processing steps. I see no basis for a person of ordinary skill to know that the uplink baseband signals are just not a part of that and not routed and switched. It may be that there is little sense in routing and switching packetized uplink baseband signals, but that is not my concern when the claim language is clear.[11]

In sum, I think that a person of ordinary skill would understand that "the packetized signals" that are routed and switched in this step are "the packetized signals" that "correspond to a plurality of carriers" that were created by packetizing "the uplink and downlink base band signals." And this means that "the

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9 (*See id.* at 107:21-108:2 ("Q. Is there an antecedent basis in the claim for the phrase 'the packetized signals in the routing and switching step' as a yes-or-no question? A. So for the routing and switching step, the packetized signals refers back to the packetizing claim element.")).

10 (*See* D.I. 305 at 15).

11 *See Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 782 (Fed. Cir. 2010) ("Haemonetics argues, and the district court concluded, that because the vessel with the tubing is larger than the vessel alone, construing 'centrifugal unit' in the context of the dimensional limitations to include the tubing 'would yield an absurdity.' Maybe so, but we do not redraft claims to contradict their plain language in order to avoid a nonsensical result." (citation omitted)); *see also Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373-74 (Fed. Cir. 2004).

packetized signals" includes both uplink and downlink baseband signals that were previously packetized (and translated before that).

The last term at issue appears in the processing step I just addressed – *i.e.*, the "routing and switching the packetized signals" step. That step requires "routing and switching the packetized signals . . . via the at least one digital access unit" and the parties dispute the meaning of "via." Dali argues that the plain meaning of "via" in context is "through the agency of/by means of," though today during the argument Dali agreed that "through" is an appropriate construction. CommScope argues that "via" means the digital access unit (or units) must perform the switching. The crux of the dispute is thus whether the digital access unit must physically do the switching of packetized signals, as CommScope argues, or whether another component may perform the switching as long as it occurs through or through the agency of the digital access unit, as Dali suggests.

Here, I think the correct construction is "through." The plain meaning of "via" is "through" and, as such, a person of ordinary skill reading this term would understand that the packetized signals must pass through the "at least one digital access unit" in the routing and switching step. As to CommScope's proposal, nothing in the claim language requires that the "at least one digital access unit" actually make the decisions as to where the packetized signals are going among the remote radio units. And nothing in the specification limits the claim in this way either. Although CommScope makes much of the fact that prior art employed network switches to do the switching – something that the specification criticized – I am ultimately unpersuaded that the claim is so limited that it requires the digital access unit to decide the routes each packet must take and perform the switching all on its own. The same is true for the amendment made during prosecution. A change in claim language from "among . . . radio units and the at least one digital access units" to "among . . . remote radio units via the at least one digital access unit" does not indicate to a person of ordinary skill that the patentee clearly and unmistakably surrendered embodiments where the DAU is not itself making and performing the routing and switching decisions.

Maryellen Noreika

The Honorable Maryellen Noreika
United States District Judge