

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

DALI WIRELESS, INC.,

Plaintiff,

v.

JOHN MEZZALINGUA ASSOCIATES  
LLC d/b/a JMA WIRELESS, a Delaware  
limited liability corporation; TEKNO  
TELECOM SRL, an Italian corporation; and  
JMA WIRELESS LIMITED, an Irish  
corporation,

Defendants.

Civil Action No. 19-2367-RGA

MEMORANDUM OPINION

David E. Moore, Bindu A. Palapura, Stephanie E. O’Byrne, POTTER ANDERSON & CORROON LLP, Wilmington, DE; David Schumann (argued), Cris Leffler (argued), Mike Saunders (argued), FOLIO LAW GROUP LLC, Lake Forest Park, WA, Attorneys for Plaintiff.

Pilar G. Kraman, Robert M. Vrana, Beth A. Swadley, YOUNG CONAWAY STARGATT & TAYLOR, LLP, Wilmington, DE; Douglas Nash (argued), BARCLAY DAMON LLP, Syracuse, NY, Attorneys for Defendants.

March 11, 2021

/s/ Richard G. Andrews

**ANDREWS, UNITED STATES DISTRICT JUDGE:**

Before me is the issue of claim construction of multiple terms in U.S. Patent Nos. 10,334,499 (“the ’499 patent”) and 9,820,171 (“the ’171 patent”). I have considered the Parties’ Joint Claim Construction Brief (D.I. 61), Appendix (D.I. 62), and supplemental letters (D.I. 74, 75). I held remote oral argument on March 1, 2021. (D.I. 73).

## **I. LEGAL STANDARD**

“It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). “[T]here is no magic formula or catechism for conducting claim construction.’ Instead, the court is free to attach the appropriate weight to appropriate sources ‘in light of the statutes and policies that inform patent law.’” *SoftView LLC v. Apple Inc.*, 2013 WL 4758195, at \*1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977–80 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). Of these sources, “the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315 (internal quotation marks omitted).

“[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.” *Id.* at 1312–13 (citations and internal quotation marks omitted). “[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent.” *Id.* at 1321

(internal quotation marks omitted). “In 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.” *Id.* at 1314.

When a court relies solely upon the intrinsic evidence—the patent claims, the specification, and the prosecution history—the court’s construction is a determination of law. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Phillips*, 415 F.3d at 1317–19 (internal quotation marks omitted). Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

“A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that “a claim interpretation that would exclude the inventor’s device is rarely the correct interpretation.” *Osram GMBH v. Int’l Trade Comm’n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation and internal quotation marks omitted).

## II. BACKGROUND

This case is about wireless technology, and more specifically, a system of reconfigurable antennas that can be used to automatically manage and redistribute network load, optimize radio resources, and, in doing so, increase the efficiency of a wireless network.

The application for the '499 patent was filed on August 9, 2018, and the application for the '171 patent was filed on July 8, 2016. (D.I. 62, '499 patent, Cover; '171 patent, Cover). The priority dates applicable to these patents appear to be 2011 and 2010 respectively. The following claims are the most relevant for the purposes of this Markman:

### Claim 1 of the '499 Patent

1. A system for transporting wireless communications, comprising:

*a baseband unit;*

*a plurality of signal sources, including at least a first signal source and a second signal source;*

*wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources;*

*wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;*

*wherein the baseband unit is configured to send a digital representation of a second set of radio resources to the first remote unit at a second point in time, the second set of radio resources for transmission at the antenna of the first remote unit;*

*wherein a number of radio resources in the first set of radio resources is different from a number of radio resources in the second set of radio resources; and*

*wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units.*

(D.I. 62-1, '499 Patent, claim 1) (emphasis added).

### Claim 15 of the '171 Patent

15. A system for transmitting signals, comprising:

a plurality of remote radio units; and

at least one *digital access unit* configured to communicate with the plurality of remote radio units, wherein the plurality of remote radio units are each configured to *packetize uplink signals* for transmission to the at least one *digital access unit*, and the at least one *digital access unit* is configured to *packetize downlink signals* for transmission to the plurality of remote radio units, wherein the *packetized* signals correspond to a plurality of *carriers*, and each of the plurality of remote radio units is configured to receive or transmit a respective subset of the plurality of *carriers*,

wherein during a first time period, each of the plurality of remote radio units is configured to receive or transmit the respective subset of the plurality of *carriers*,

*wherein during a second time period, at least one remote radio unit of the plurality of remote radio units is reconfigured to increase or decrease the number of carriers in a first subset of the plurality of carriers, and the at least one remote radio unit is configured to receive or transmit the first subset of the plurality of carriers according to the reconfiguration.*

(*Id.*, '171 patent, claim 15) (emphasis added).

### Claim 17 of the '171 Patent

17. The system of claim 15 wherein the at least one remote radio unit is reconfigured to increase or decrease the number of carriers in the first subset of the plurality of carriers based on a *load* on the a[sic] least one remote radio unit.

(*Id.*, claim 17) (emphasis added).

## III. CONSTRUCTION OF AGREED-UPON TERMS

I adopt the following agreed-upon constructions:

Claim Term	Construction
“increase[e/ing] or decrease[e/ing] the number of carriers in the [first/respective] subset” ('171 patent, claims 1, 3, 4, 15, 17, 18)	No construction necessary beyond the construction for “carrier[s]”

“[first/second] set of radio resources” (’499 patent, claims 1, 4, 8, 11, 14, 16)	No construction necessary beyond the construction for “radio resources”
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#### IV. CONSTRUCTION OF DISPUTED TERMS<sup>1</sup>

##### A. “signal source[s]” (’499/1, 4, 8, 11, 14, 16)

- a. *Plaintiff’s proposed constructions:*
  - i. an operator’s network
- b. *Defendants’ proposed construction:*
  - i. the sources of the analog radiofrequency (“RF”) signals
- c. *Court’s construction:*
  - i. no construction necessary

The parties dispute whether the term “signal sources” should be construed to mean only sources of analog RF signals.

Plaintiff argues that the claims are “agnostic to what signal type is sent to the DAS from the mobile network operator” and that the term “signal sources,” therefore, should be construed broadly. (D.I. 61 at 5). Specifically, Plaintiff asserts that the claimed invention has to do with “distributing radio resources” in a system, which involves communication between digital access units (“DAUs”) in order to distribute the radio resources the DAUs receive to “address capacity and load issues within the system.” (D.I. 73 at 15:23–16:7). Because the purpose of the claimed load-sharing mechanism is simply to distribute incoming resources regardless of their type, Plaintiff argues that the invention is agnostic as to what kinds of signals constitute “signal sources.” (*Id.* at 16:14–20). Plaintiff maintains, moreover, that several dependent claims (*e.g.*, claim 5) in the ’499 patent require some signal sources be part of or sent between baseband units, which send digital rather than analog RF signals. (D.I. 61 at 5–6). Taken together, Plaintiff

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<sup>1</sup> I ruled on some of the disputes at the claim construction hearing. For those, I merely repeat the ruling without any further explanation.

essentially argues that, given the absence of clear disclaimer in the intrinsic evidence, there is no reason to construe “signal sources” as limited to analog RF signals. (D.I. 73 at 23:23–24:6).

Defendants, on the other hand, argue that because the asserted claims “are directed to distributed antenna systems (“DAS”) that translate between analog RF signals and digital baseband signals,” the relevant “signal sources” must be analog RF signals. (D.I. 61 at 6). Defendants specifically assert that the “context of the claims shows that ‘radio resources’ and ‘digital representations of radio resources’ are different things, and that the ‘radio resources’ received from the ‘signal sources’ are not themselves digital representations.” (*Id.* at 9). Defendants therefore maintain that the structure of the claim dictates the proper construction of “signal sources” must be analog RF signals and not digital signals. (*Id.*). Defendants also argue that embodiments in the specification—such as the “RF Input Port[s]” of the DAU/baseband unit in Figures 1, 2, and 3 of the ’499 patent—support disclaimer of signals other than analog RF. (*Id.*).

I agree with Plaintiff that a broad construction of “signal sources” is appropriate. Disavowal of claim scope requires “clear and unmistakable” disclaimer. *Cont’l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 797 (Fed. Cir. 2015). Embodiments showing that the DAUs have analog RF input signals do not clearly and unmistakably discount the possibility of non-analog RF input signals or, more importantly, indicate the patentee’s intent to limit itself to only analog RF signals as “signal sources.” The embodiments are uses of the claimed invention—not limitations on the invention itself.

With regard to whether the structure of the claims limits the proper construction of “signal sources” to analog RF signals, I disagree with Defendants that the relevant signals must only be analog RF signals. The claimed invention does more than convert analog RF signals into

digital signals; by way of features including “automatic traffic load-balancing, network and radio resource optimization, [and] network calibration,” the claimed invention “can increase the efficiency and traffic capacity of the operator’s wireless network.” (D.I. 62-1, ’499 patent, Abstract). The asserted claims recite a system that optimizes load-sharing of incoming input signals. (*Id.*, claims 1, 8). Nothing in the language of the claims indicates that the “signal sources” must be analog RF signals; distinctions between “radio resources” and “digital representations” similarly do not clearly indicate that the “radio resources” cannot include *any* digital signals.

I therefore find that no construction of “signal sources” is necessary. The term is not limited to analog RF signals.

**B. “radio resource[s]” (’499/1, 2, 4, 8, 9, 11, 14, 16, 19)**

- a. *Plaintiff’s proposed constructions:*
  - i. wireless resources such as RF carriers, CDMA codes or TDMA time slots
- b. *Defendants’ proposed construction:*
  - i. RF carriers, CDMA codes, TDMA time slots, and other information used to subdivide or apportion RF signals in order to transmit underlying data to and from an antenna of a remote radio unit, but do not include the underlying data that is transmitted
- c. *Court’s construction:*
  - i. RF carriers, CDMA codes, TDMA time slots, and other information used by the remote radio units to apportion RF signals in order to transmit underlying data to and from an antenna of a remote radio unit, but do not include the underlying data that is transmitted (D.I. 73 at 53:13–23).

**C. “baseband unit is configured to send a digital representation of a [first/second] set of radio resources” (’499/1, 8)**

- a. *Plaintiff’s proposed construction:*
  - i. baseband unit allocates radio resources for the communication of digital baseband data
- b. *Defendants’ proposed construction:*
  - i. baseband unit digitizes, down-converts and delivers a [first/second] set of radio resources



- c. *Court's construction:*
  - i. no construction necessary

Defendants' arguments here are essentially identical to those presented for "signal sources," namely that a "digital representation" sent by the "baseband unit" must necessarily be a conversion of an analog RF signal to a digital signal. (D.I. 61 at 23–24). As support for their proposed construction, Defendants point to a section in the Summary of the Invention that notes the "data received from the base stations is down-converted, digitized and converted to baseband with the DAU." (D.I. 62-1, '499 patent, Summary of the Invention). Plaintiff argues, as it did with regard to "signal sources," that radio resource allocations as "digital representation[s]" do not necessarily have to be analog RF signals. (D.I. 61 at 36).

I agree with Plaintiff for the same reason that I found "digital representation" to not necessarily require analog RF signal inputs with regard to "signal sources." Although Defendants' reference to the Summary of the Invention section is noted, the description that the "data . . . is down-converted, digitized and converted to baseband with the DAU" is not part of the description of the "present invention" (the description occurs in the following paragraph) and therefore does not amount to a limitation of the invention. (D.I. 62-1, '499 patent, Summary of the Invention).

Although I agree with Plaintiff that "digital representation" is not limited to allocation of "radio resources" that are solely analog RF signals, I do not think a construction of "digital representation" in words different from that of the claim language is warranted here. I therefore find no construction of "baseband unit is configured to send a digital representation of a [first/second] set of radio resources" is necessary.

**D. “baseband unit” (’499/1, 2, 6, 8, 9, 12, 14, 19) / “digital access unit” (’171/15, 19)**

- a. *Plaintiff’s proposed construction:*
  - i. a unit that manages baseband communications between an operator network and one or more remote radio units
- b. *Defendants’ proposed construction:*
  - i. a device that converts between analog radiofrequency (RF) signals and digital baseband signals
- c. *Court’s construction:*
  - i. no construction necessary

I apply the same reasoning to find here, as with the prior term, that a “baseband unit” does not have to send a “digital representation” limited to allocation of “radio resources” that are analog RF signals. The parties agree that “baseband unit” and “digital access unit” are used interchangeably between the ’499 and ’171 patents. (D.I. 61 at 29, 32).

In this case, the scope of the term “baseband unit” is adequately defined by the claim limitations, which delineate in multiple places the various functions that a “baseband unit” accomplishes in the context of the claimed invention. (D.I. 62-1, ’499 patent at 14:12–14, 14:15–19, 14:20–24, 14:28–29). The scope of the term “digital access unit” is similarly set forth by the claim limitations in the ’171 patent. (D.I. 62-1, ’171 patent at 12:52–53, 13:1–3, 15:9–18). Neither term needs additional construction beyond what the claims already provide to the meaning of “baseband unit” and “digital access unit” in the context of their respective patents.

I therefore find no construction is necessary for “baseband unit” or “digital access unit.”

**E. “packetize/packetizing” (’499/2, 9, 19; ’171/15)**

- a. *Plaintiff’s proposed construction:*
  - i. creating digital data packets
- b. *Defendants’ proposed construction:*
  - i. form/forming into packets that have source information, destination information and contents
- c. *Court’s construction:*
  - i. creating digital data packets that have destination information and contents

The parties agree that “packetize/packetizing” involves digital data packets and that these packets have contents. (D.I. 73 at 100:4–8; D.I. 61 at 40). The parties dispute whether the packets must have both source and destination information.

Plaintiff argues that the DAU may “frame the individual data packets . . . using the Common Public Radio Interface (CPRI) standard,” but also, “Other Interface standards are applicable provided they uniquely identify data packets with respective RRUs [Remote Radio Head Units].” (D.I. 61 at 40) (citing D.I. 62-1, ’499 patent at 10:47–51; ’171 patent at 9:6–10). Although these standards require transmission of “[h]eader information” with the data packet to identify the RRU and DAU, Plaintiff asserts that this can be accomplished by inclusion of either source or destination information but does not require both. (D.I. 73 at 99:7–17). Plaintiff also contends that for CPRI, source and destination information included would not be in the CPRI packet itself, so limiting the construction of “packetize/packetizing” to packets with source and destination information would be inappropriate. (*Id.* at 90:17–91:1).

Defendants, on the other hand, maintain that prosecution history estoppel for U.S. Patent No. 9,531,473 (“the ’473 patent”)—a sibling to the ’171 patent sharing the same specification—applies to the ’171 patent. (D.I. 61 at 41). During IPR of the ’473 patent, in arguing for validity, the patentee maintained that “any construction of ‘packetizing’ must include destination information, such as within a packet header.” (D.I. 62, Ex. 6, IPR2018-00571, Patent Owner’s Preliminary Response at 8 (May 6, 2018) (A0500)). Defendants assert that Plaintiff should be held to its representations at IPR for construction of “packetizing.” (D.I. 61 at 42). Defendants further contend that because there is two-way communication between the DAU and the RRU, there must be both source and destination information included in data packets for the packets to know where to go as they traverse back and forth. (D.I. 73 at 93:2–95:3).

At oral argument, Plaintiff stated that, in the interest of keeping a single definition, it would be willing to apply the inclusion of “destination information” in “packetize” during IPR of the ’473 patent to both the ’171 and ’499 patents. (*Id.* at 97:12–23). The construction of “packetize” therefore includes destination information. The remaining question is whether “packetize” should be construed to include source information as well.

Given the patentee’s clear disclaimer with regards to “destination information,” absent affirmative evidence that the patentee intended to include “source information,” I do not think that “source information” should be included in the construction of “packetize.” Defendants’ argument that packets must include source information to facilitate back-and-forth communication does not constitute such evidence in light of Plaintiff’s assertions that the DAU can have readily available to it the addresses of the RRUs, so it does not need to rely on source information for a signal to know where to return something. (*Id.* at 102:24–103:6).

I therefore construe “packetize/packetizing” to mean “creating digital data packets that have destination information and contents.”

**F. “carriers” (’171/15–18)**

- a. *Plaintiff’s proposed construction:*
  - i. signals each having a unique frequency within a composite signal
- b. *Defendants’ proposed construction:*
  - i. radiofrequency (RF) signal[s] having specific carrier frequenc[ies]
- c. *Court’s construction:*
  - i. radiofrequency (RF) signal[s] having specific carrier frequenc[ies] (D.I. 73 at 103:18–25).

**G. “wherein during a second time period, at least one remote radio unit of the plurality of remote radio units is reconfigured” (’171/15)**

- a. *Plaintiff’s proposed construction:*
  - i. adaptively readjusting the radio capacity of a remote radio unit by changing the configuration parameters of the remote radio unit during a second time period

- b. *Defendants' proposed construction:*
  - i. wherein the configuration of at least one remote radio unit of the plurality of remote radio units is changed
- c. *Court's construction:*
  - i. wherein during a second time period the configuration of at least one remote radio unit of the plurality of remote radio units is changed (D.I. 73 at 105:16–106:11).

#### H. “load” (’171/17)

- a. *Plaintiff's proposed construction:*
  - i. the amount of available capacity currently used
- b. *Defendants' proposed construction:*
  - i. the number of subscribers
- c. *Court's construction:*
  - i. the amount of available capacity currently used (D.I. 73 at 106:12–22).

#### I. “downlink signals” and “uplink signals” (’171/15)

- a. *Plaintiff's proposed construction:*
  - i. adaptively readjusting the radio capacity of a remote radio unit by changing the configuration parameters of the remote radio unit during a second time period
- b. *Defendants' proposed construction:*
  - i. wherein the configuration of at least one remote radio unit of the plurality of remote radio units is changed
- c. *Court's construction:*
  - i. plain and ordinary meaning (D.I. 73 at 108:4–22).

#### V. CONCLUSION

Within five days the parties shall submit a proposed order consistent with this

Memorandum Opinion suitable for submission to the jury.