IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

DALI WIRELESS, INC., Plaintiff, v. CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, VERIZON CORPORATE SERVICES GROUP INC., VERIZON ONLINE LLC, COMMSCOPE HOLDING COMPANY, INC., COMMSCOPE, INC., COMMSCOPE TECHNOLOGIES LLC, ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON, CORNING INC., and CORNING OPTICAL COMMUNICATIONS LLC, Defendants.	)	Case No. _____ **JURY TRIAL DEMANDED**

COMPLAINT

Plaintiff Dali Wireless, Inc. ("Dali") files this Complaint against Defendants Cellco Partnership D/B/A Verizon Wireless, Verizon Corporate Services Group Inc., Verizon Online LLC (collectively, "Verizon"), CommScope Holding Company, Inc., CommScope Inc., CommScope Technologies LLC (collectively, "CommScope"), Ericsson Inc., Telefonaktiebolaget LM Ericsson (collectively, "Ericsson"), Corning Inc., and Corning Optical Communications LLC (collectively, "Corning").

NATURE OF THE CASE

1. This is an action for the infringement of four United States Patents: (1) United States Patent No. 11,026,232 (the "'232 patent"), (2) United States Patent No. 10,334,499 (the "'499 patent"), (3) United States Patent No. 11,006,343 (the "'343 patent"), and (4) United

T-Mobile v. Dali Wireless Inc.
T-Mobile Ex. 1049

States Patent No. 8,682,338 (the "'338 patent") collectively referred to as the "Patents-in-Suit."

2. Verizon has been infringing the '232 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using CommScope's ION®-E/ERA platform[1] in its LTE and 5G networks. CommScope has also been infringing the '232 patent through use of its ION®-E/ERA platform both in Verizon's LTE and 5G networks and in connection with CommScope's course-of-business operations.

3. Verizon has been infringing the '232 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Ericsson's Radio Dot system[2] in its LTE and 5G networks. Ericsson has also been infringing the '232 patent through use of its Radio Dot system both in Verizon's LTE and 5G networks and in connection with Ericsson's course-of-busines operations.

4. Verizon has been infringing the '232 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Corning's Everon™ 6000 DAS solutions[3]

[1] *See* https://www.commscope.com/press-releases/2015/verizon-wireless-vets-ion-e-enterprise-wireless-solution-from-commscope/ (last visited January 27, 2022). According to publicly available documents from CommScope, ION®-E and ERA share the same hardware modules, system software, and management systems: "ERA is an extension of the hardware and software architecture that CommScope originally introduced as ION-E. Going forward, all new systems are ERA. Since ION-E and ERA share the same hardware modules, system software and management systems, existing ION-E systems can be updated and expanded using ERA components." https://www.commscope.com/product-type/in-building-cellular-systems/distributed-antenna-systems-das/era/ (last visited January 27, 2022).

[2] *See* https://news.cision.com/ericsson/r/verizon-first-in-the-us-with-ericsson-radio-dot-system,c2245413 (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

[3] *See* https://inbuildingtech.com/5g/corning-launches-new-solution-for-indoor-5g-coverage/ (last visited January 27, 2022); *see also* https://www.fiercewireless.com/5g/verizon-to-deploy-indoor-5g-mmwave-sites-corning-samsung (last visited January 27, 2022); *see also*

in its LTE and 5G networks. Corning has also been infringing the ’232 patent through use of its Everon™ 6000 DAS solutions both in Verizon’s LTE and 5G networks and in connection with Corning’s course-of-busines operations.

5. Verizon and Ericsson have been infringing the ’343 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which include Ericsson’s Radio Dot System.[4]

6. Verizon and Corning have been infringing the ’343 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which include Corning’s Everon™ 6000 DAS solutions.[5]

7. Verizon has been infringing the ’338 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Ericsson’s Radio Dot system[6] in its LTE and 5G networks. Ericsson has also been infringing the ’338 patent through use of its Radio Dot System both in Verizon’s LTE and 5G networks and in connection with Ericsson’ course-of-business operations.

https://www.verizon.com/about/news/verizon-corning-launch-commercial-indoor-5g (last visited January 27, 2022).

[4] *See* https://news.cision.com/ericsson/r/verizon-first-in-the-us-with-ericsson-radio-dot-system,c2245413 (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

[5] *See* https://inbuildingtech.com/5g/corning-launches-new-solution-for-indoor-5g-coverage/ (last visited January 27, 2022); *see also* https://www.fiercewireless.com/5g/verizon-to-deploy-indoor-5g-mmwave-sites-corning-samsung (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-corning-launch-commercial-indoor-5g (last visited January 27, 2022).

[6] *See* https://news.cision.com/ericsson/r/verizon-first-in-the-us-with-ericsson-radio-dot-system,c2245413 (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

8. Verizon and CommScope have been infringing the ’499 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which include CommScope’s ION®-E/ERA platform.[7]

9. Verizon and Ericsson have been infringing the ’499 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which include Ericsson’s Radio Dot System[8].

10. Verizon and Corning have been infringing the ’499 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which include Corning’s Everon 6000 DAS.

11. Plaintiff Dali seeks appropriate damages, injunctive relief, and prejudgment and post-judgment interest for Defendants’ infringement of the Patents-in-Suit.

THE PARTIES

12. Plaintiff Dali is a Delaware corporation having its center of operations in Burnaby, British Columbia, Canada, where all its technical and financial employees, documents, engineering, and product development are based. It also has an address in Menlo Park, California for forwarding of domestic mail and telephone calls to its center of operations.

13. Founded in 2006, Dali began as a designer and manufacturer of power amplifiers used in radio frequency (“RF”) communications. Dali is known within the industry as an innovator in providing end-to-end, software defined digital radio distribution solutions that can be implemented in Distributed Antenna Systems (“DAS”) used for cellular, public safety, and

[7] *See* https://www.commscope.com/press-releases/2015/verizon-wireless-vets-ion-e-enterprise-wireless-solution-from-commscope/ (last visited January 27, 2022).
[8] *See* https://news.cision.com/ericsson/r/verizon-first-in-the-us-with-ericsson-radio-dot-system,c2245413 (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

other RF communications. Dali is a world-wide innovator in digital radio distribution systems and digital predistortion technology that revolutionized in-building and outdoor wireless coverage and capacity. Dali's groundbreaking products have been consistently recognized by industry publications. For example, Dali has been recognized as a "Hot Tech Innovator" by ABI Research and was ranked No. 1 in innovation in the latest ABI Research report, "In-Building Wireless, DAS Vendor Competitive Assessment." Dali's systems improve upon traditional DAS by allowing the dynamic allocation of wireless coverage and capacity.

14. Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") is a Delaware partnership with its principal place of business at One Verizon Way, Basking Ridge, NJ 07920. On information and belief, Verizon Wireless is a wholly owned subsidiary of Verizon Communications, Inc.

15. Verizon Corporate Services Group Inc. ("Verizon Corporate Services") is a corporation organized and existing under the laws of the State of New York, with a principal place of business at One Verizon Way, Basking Ridge, NJ 07920. On information and belief, Verizon Corporate Services is a wholly owned subsidiary of Verizon Communications, Inc.

16. Verizon Online LLC ("Verizon Online") is a limited liability company organized and existing under the laws of the State of Delaware, with a principal place of business at 22001 Loudoun County Parkway, Ashburn, VA 20147. On information and belief, Verizon Online is a wholly owned subsidiary of Verizon Communications, Inc.

17. On information and belief, Verizon's operations in the Western District of Texas are substantial and varied.

18. Verizon operates one or more wireless telecommunications networks to provide wireless telecommunications services, including within the Western District of Texas, under

brand names including "Verizon Wireless."

19. On information and belief, Verizon—either directly or through those acting on its behalf—offers infringing communications networks and services in the Western District of Texas, as shown[9]:

As another example, Verizon—either directly or through those acting on its behalf—has stores and/or authorized retailers in the Western District of Texas in which infringing communications networks and services are offered for sale.[10] Those stores include at least Verizon Wireless Company Stores located at each of 2812 W Loop 340, Waco, Texas, 76711; 1820 S Valley Mills Dr, Waco, Texas 76711; 9705 Research Blvd D, Austin, Texas 78759; and 3718 N Lamar Blvd, Austin, Texas 78705.

20. On information and belief, Verizon has other places of business within the Western District of Texas as well, including data centers at 222 Rotary, San Antonio, Texas,

[9] https://www.verizonwireless.com/featured/better-matters/ (last visited January 27, 2022).

[10] *See* https://www.verizonwireless.com/stores/texas/ (last visited January 27, 2022).

78202 and 2525 Ridgepoint Drive, Austin, Texas, 78754. Verizon also has a facility in El Paso.[11] Verizon also offers enterprise products and services to Texas "[s]tate agencies, cities, counties, public school districts, and universities" through the Texas Department of Information Resources in Austin.[12]

21. By registering to conduct business in Texas and by maintaining facilities in at least the cities of Austin, Waco, and El Paso, Verizon has multiple regular and established places of business within the Western District of Texas.

22. CommScope Holding Company, Inc. is a corporation organized and existing under the laws of the State of Delaware, with a place of business at 1100 CommScope Place, SE, Hickory, North Carolina 28602, and can be served through its registered agent, Corporation Service Company, 251 Little Falls Drive, Wilmington, DE 19808.

23. CommScope Technologies LLC is a limited liability company organized and existing under the laws of the State of Delaware with a principal place of business at 1100 CommScope Place SE, Hickory, North Carolina, 28602. On information and belief, CommScope Technologies LLC is registered to conduct business in the state of Texas and has appointed the United Agent Group Inc., located at 5444 Westheimer #1000, Houston, TX, 77056, as its agent for service of process.

24. CommScope Inc. is a corporation organized and existing under the laws of the

[11] *See* https://www.verizon.com/about/work/search/el-paso-tx/jobs. (last visited January 27, 2022).

[12] *See, e.g.*, https://enterprise.verizon.com/solutions/public-sector/state-local/contracts/texas/ (last visited January 27, 2022); https://dir.texas.gov/; *see also* https://www.prnewswire.com/news-releases/verizon-invested-more-than-348-million-in-texas-wireline-telecommunications-infrastructure-in-2013-253262201.html ("Verizon Enterprise Solutions oversees all of Verizon's solutions for large-business and government customers in Texas and globally . . .") (last visited January 27, 2022).

State of Delaware with a principal place of business at 1100 CommScope Place SE, Hickory, North Carolina, 28602. On information and belief, CommScope Inc. is registered to conduct business in the state of Texas and has appointed the United Agent Group Inc., located at 5444 Westheimer #1000, Houston, TX, 77056, as its agent for service of process.

25. On information and belief, CommScope Technologies LLC and CommScope Inc. are wholly owned subsidiaries of CommScope Holding Company.

26. On information and belief, CommScope Technologies LLC, CommScope Inc., and CommScope Holding Company, Inc. operate in the ordinary course of business as a single combined "CommScope" company.

27. On information and belief, CommScope's operations in Austin, Texas are substantial and varied. For example, CommScope employees in Austin, Texas, list varied job titles on LinkedIn such as "Lead Counsel," "Director of Sales," "System Engineer," "Principal Software Engineer," "Senior Global Account Manager," and many others.[13]

28. CommScope advertises that it is currently hiring multiple positions in Austin, Texas, including "Systems Engineer," "Sr. Principal Software Engineer," and "Software Engineer- Platform Backend."[14]

29. On information and belief, CommScope operates a facility at 4516 Seton Center Pkwy, Austin, Texas, 78759.

30. On information and belief, CommScope is doing business, either directly or through its agents, on an ongoing basis in this judicial district and has a regular and established

[13] *See*, e.g., https://www.linkedin.com/search/results/people/?keywords=commscope%20austin%20texas&origin=CLUSTER_EXPANSION&sid=p8I (last visited January 27, 2022).

[14] *See* https://careers.commscope.com/location/austin-texas-united-states-jobs/8610/6252001-4736286-4671654/4 (last visited January 27, 2022).

place of business in this judicial district. For example, CommScope maintains and offers the CommScope web domain (www.commscope.com) that advertises the accused products and directs customers and/or potential customers in this district as to where to purchase those products.

31. By registering to conduct business in Texas and by maintaining facilities in Austin, Texas, CommScope has a permanent and continuous presence in the state of Texas and a regular and established place of business in the Western District of Texas.

32. Ericsson Inc. ("Ericsson") is a Delaware corporation with its principal place of business at 6300 Legacy Drive, Plano, Texas 75024.

33. Telefonaktiebolaget LM Ericsson ("LM Ericsson"), the parent corporation of Ericsson, is a company organized under the laws of Sweden with its principal place of business at Torshamsgatan 23, Kista, 164 83 Stockholm, Sweden.

34. Ericsson Inc. maintains a significant physical presence in this judicial district. Ericsson Inc. maintains a research and development facility at 1703 W 5th St, Austin, Texas 78703, which is within this judicial district. Ericsson Inc. is wholly-owned and controlled by LM Ericsson and acts as the agent for LM Ericsson in making sales, servicing equipment, and otherwise carrying out the operations of LM Ericsson in North America. LM Ericsson and/or its affiliates manufacture wireless telecommunications equipment and then arrange with Ericsson to import those products into the United States for installation in Verizon's network. Upon information and belief, representatives of LM Ericsson regularly visit this district in their supervisory capacity over Ericsson. At all times relevant hereto, Ericsson was acting as the agent of LM Ericsson.

35. Ericsson employees in Austin, Texas, list varied job titles on LinkedIn such as

"SoC Architect," "Physical Design Engineer," "Deputy Head of ASIC & FPGA," and "Senior Manager, Strategy" among others.[15]

36. By registering to conduct business in Texas and by maintaining facilities in Austin Texas, Ericsson has a permanent and continuous presence in the state of Texas and a regular and established place of business in the Western District of Texas.

37. Corning, Inc. is a New York Corporation with offices at 8201 North FM 620, Austin, Texas, 78726. Corning, Inc. is registered to conduct business in the state of Texas and has appointed the Corporation Service Company, located at 211 E. 7th St., Suite 620, Austin, Texas 78701, as its agent for service of process.

38. Corning Optical Communications LLC, is a North Carolina Limited Liability Company. On information and belief, Corning Optical Communications LLC is a wholly owned subsidiary of Corning, Inc.

39. On information and belief, Corning, Inc.'s operations in Austin, Texas are substantial and varied. For example, Corning, Inc. employees in Austin, Texas, list varied job titles on LinkedIn such as "Corporate eDiscovery Advisor," "Sales Executive – In-Building Networks," "Global Contract Manufacturing Manager," "Network Operations Engineer," and many others.[16]

40. A significant part of Corning's operations in Austin, Texas, involves networking and communications. In 2017, Corning Inc. announced the acquisition of virtually all of 3M's

[15] https://www.linkedin.com/search/results/people/?keywords=ericsson%2C%20austin%20texas&origin=CLUSTER_EXPANSION&page=3&sid=a%40v (last visited January 27, 2022).

[16] *See*, e.g., https://www.linkedin.com/search/results/all/?keywords=corning%2C%20inc.%20Austin%20texas&origin=GLOBAL_SEARCH_HEADER&sid=9Fn (last visited January 27, 2022).

Communication Markets Division that was headquartered in Austin, Texas.[17] The acquired division is in the business of providing optical fiber and copper passive connectivity solutions for the telecommunications industry and structured cabling solutions for telecommunications system integration services; the business had annual global sales of approximately $400 million.[18]

41. A search on LinkedIn.com confirms that Corning's business operations in Austin, Texas involve networking and communication. Corning Optical Communications employees in Austin, Texas, list varied job titles such as "Federal Account Manager," "Sales Director," and "Channel Marketing Manager, Carrier Networks" among others.[19]

42. On information and belief, Corning operates at least two additional campuses in Texas, one in McAllen, Texas in the Southern District, and another in Keller, Texas in the Northern District.

43. By registering to conduct business in Texas and by maintaining facilities in Austin, Texas, Corning has a permanent and continuous presence in the state of Texas and a regular and established place of business in the Western District of Texas.

JURISDICTION AND VENUE

44. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code.

45. This Court has original subject matter jurisdiction under 28 U.S.C. §§ 1331 and

[17] *See* https://www.corning.com/worldwide/en/about-us/news-events/news-releases/2017/12/corning-to-acquire-substantially-all-of-3ms-communication-markets-division.html (last visited Jan. 27, 2021).

[18] *See* https://investors.3m.com/news/news-details/2017/3M-to-Sell-Substantially-All-of-Its-Communication-Markets-Division/default.aspx (last visited Jan. 27, 2021).

[19] *See* https://www.linkedin.com/search/results/people/?keywords=corning%20optical%20communications%20austin&origin=CLUSTER_EXPANSION&sid=YH%3A (last visited Jan. 27, 2021).

1338(a).

46. This Court has personal jurisdiction over Verizon because, *inter alia*, Verizon has a continuous presence in, and systematic contact with, this District and has registered to conduct business in the state of Texas.

47. Verizon has committed and continues to commit acts of infringement of Dali's Patents-in-Suit in violation of the United States Patent Laws, and has used infringing products within this District. Verizon's infringement has caused substantial injury to Dali, including within this District.

48. This Court has personal jurisdiction over CommScope because, *inter alia*, CommScope has a continuous presence in, and systematic contact with, this District and has registered to conduct business in the state of Texas.

49. CommScope has committed and continues to commit acts of infringement of Dali's Patents-in-Suit in violation of the United States Patent Laws, and has used and sold infringing products within this District. CommScope's infringement has caused substantial injury to Dali, including within this District.

50. This Court has personal jurisdiction over Ericsson because, *inter alia*, Ericsson has a continuous presence in, and systematic contact with, this District and has registered to conduct business in the state of Texas.

51. Ericsson has committed and continues to commit acts of infringement of Dali's Patents-in-Suit in violation of the United States Patent Laws, and has used and sold infringing products within this District. Ericsson's infringement has caused substantial injury to Dali, including within this District.

52. This Court has personal jurisdiction over Corning because, *inter alia*, Corning has

a continuous presence in, and systematic contact with, this District and has registered to conduct business in the state of Texas.

53. Corning has committed and continues to commit acts of infringement of Dali's Patents-in-Suit in violation of the United States Patent Laws, and has used and sold infringing products within this District. Corning's infringement has caused substantial injury to Dali, including within this District.

54. Joinder of Verizon, CommScope, Ericsson, and Corning in this action is proper under 35 U.S.C. § 299(a). Dali's right to relief against Verizon, CommScope, Ericsson, and Corning for their infringement of the Patents-in-Suit arises out of the same series of transactions or occurrences, namely their cooperation in planning, developing, testing, operating, and maintaining Verizon's Long Term Evolution ("LTE") and 5G networks. No claim is made in this complaint against CommScope, Ericsson, or Corning in relation to products or services sold to other wireless carriers.

55. Venue is proper in this judicial district. All of the relevant defendants reside in this judicial district within the meaning of 28 U.S.C. § 1400(b). Verizon, CommScope, Ericsson, and Corning have committed acts of infringement within this district and have regular and established places of business here. LM Ericsson is a foreign corporation, and pursuant to 28 U.S.C. § 1391(c)(3), may be sued in any judicial district. The residency of LM Ericsson is disregarded under § 1391(c)(3) when determining where the action may be brought.

THE PATENTS-IN-SUIT

56. The '232 patent is titled "Remotely Reconfigurable Distributed Antenna System and Methods" and was issued by the United States Patent and Trademark Office to inventors Paul Lemson, Shawn Patrick Stapleton, Sasa Trajkovic, and Albert S. Lee on June 1, 2021, and

assigned to Dali.

57. Dali is the owner of all right, title, and interest in and to the ’232 patent with the full and exclusive right to bring suit to enforce the ’232 patent.

58. The ’232 patent is valid and enforceable under the United States Patent Laws.

59. The ’499 patent is titled “Distributed Antenna System” and was issued by the United States Patent and Trademark Office to inventors Shawn Patrick Stapleton, Paul Lemson, Bin Lin, and Albert S. Lee on June 25, 2019, and assigned to Dali.

60. Dali is the owner of all right, title, and interest in and to the ’499 patent with the full and exclusive right to bring suit to enforce the ’499 patent.

61. The ’499 patent is valid and enforceable under the United States Patent Laws.

62. The ’343 patent is titled “Distributed Antenna System” and was issued by the United States Patent and Trademark Office to inventors Shawn Patrick Stapleton, Paul Lemson, Bin Lin, and Albert S. Lee on May 11, 2021, and assigned to Dali.

63. Dali is the owner of all right, title, and interest in and to the ’343 patent with the full and exclusive right to bring suit to enforce the ’343 patent.

64. The ’343 patent is valid and enforceable under the United States Patent Laws.

65. The ’338 patent is titled “Remotely Reconfigurable Distributed Antenna System and Methods” and was issued by the United States Patent and Trademark Office to inventors Paul Lemson, Shawn Patrick Stapleton, Sasa Trajkovic, and Albert S. Lee on March 25, 2014, and assigned to Dali.

66. Dali is the owner of all right, title, and interest in and to the ’338 patent with the full and exclusive right to bring suit to enforce the ’338 patent.

67. The ’338 patent is valid and enforceable under the United States Patent Laws.

FIRST CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY VERIZON'S USE OF COMMSCOPE'S ION®-E/ERA PLATFORM)

68. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

69. On information and belief, Verizon has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the '232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon's LTE and 5G networks which include CommScope's ION®-E/ERA platform[20].

70. Claim 12 of the '232 patent provides:

> [Preamble] A method comprising:
>
> [12A] receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol;
>
> [12B] assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset;
>
> [12C] and in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point.

71. On information and belief, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks performs each and every step recited in at least claim 12 of the '232 patent as stated below.

72. On information and belief, and to the extent the preamble is limiting, Verizon's

[20] *See e.g.*, https://www.commscope.com/press-releases/2015/verizon-wireless-vets-ion-e-enterprise-wireless-solution-from-commscope (last visited January 27, 2022).

use of CommScope's ION®-E/ERA platform in its LTE and 5G networks meets the preamble of claim 12 of the '232 patent. The preamble of claim 12 refers to "[a] method comprising . . .".

73. For example, CommScope's ION®-E/ERA platform provides an "all-digital in-building wireless solution" and allows users to "[t]ake advantage of an all-digital CPRI baseband interface that eliminates the need for analog-to-digital conversions."[21]

74. On information and belief, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks meets element [12A] of claim 12 of the '232 patent. Element [12A] requires, "receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol . . .".

75. According to publicly available documents, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[22] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[23] Accordingly, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks includes receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol.

76. On information and belief, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks meets element [12B] of claim 12 of the '232 patent. Element [12B] of claim 12 requires "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access

[21] https://www.commscope.com/product-type/in-building-cellular-systems/distributed-antenna-systems-das/era/ (last visited January 27, 2022).

[22] *Id.*

[23] *Id.*

points, the first subset including more radio resources than the second subset . . .".

77. According to publicly available documents, CommScope's ION®-E/ERA assigns different subsets of radio resources to different access points:[24]

Assign Signal Sets (Direct signal traffic to TENs and UAPs)

Signal Sets, which are a user-defined set of channels, can be quickly assigned to CANs and all UAPs assigned to them, TENs and all UAPs assigned to them, or to individual UAPs on the *Signal Distribution* page.

1. Click on the *Signal Distribution* tab to open the page.
2. Assign a signal set by:
   - Clicking on a signal set and dragging it onto the a TEN or UAP (set icons adjacent to the device name indicate the sets assigned to a TEN or UAP)
   - Clicking on a signal set to select it (green highlight) and then clicking on each TEN or UAP to which you wish to assign the signal set.

3. Click the *Save* button after you've assigned each signal set

78. Publicly available documents further explain that CommScope's ION®-E/ERA provides customizable signal sets with different numbers of channels.[25] Further, different numbers of signal sets can be assigned to different UAPs or access points:[26]

[24] https://fccid.io/BCR-IONEUAP/User-Manual/user-manaul-2552804.pdf at 14 (last visited January 27, 2022) (annotation in original).

[25] *Id.*

[26] *Id* at 13-14.

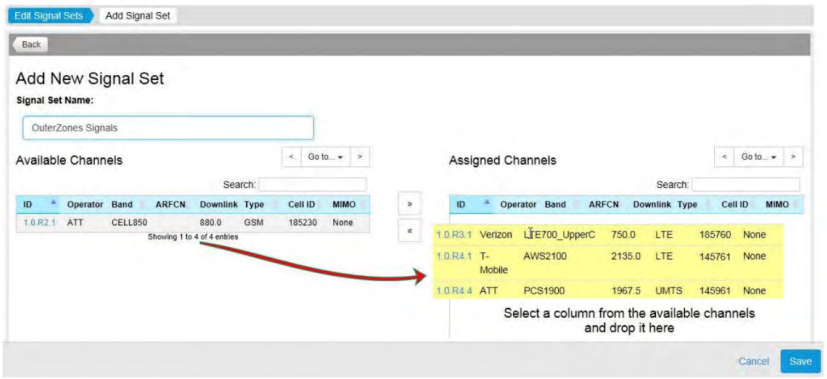
5.5. Signal Distribution

The ION-E uses signal sets to group the detected signals to simplify signal routing to the radiating elements throughout the system. First the user must create and define the signal sets by assigning channels to the sets. The signal sets are then assigned as needed using drag and drop functionality to route the signals to the TENs and UAPs.

Create and Edit Signal Sets

1. Click on the *Signal Distribution* tab to open the page.
2. Select a set from the *Signal Sets* list and click the *Edit* button to edit an existing set.
3. Click on the *Add a New Signal Set* link to open the Add *Signal Set* page to create a new set.

4. Enter a Name for the signal set in the *Signal Set Name* field.
5. Click to select a channel from the *Available Channels* list or shift click to select multiple channels and drag them onto the *Assigned Channels* list.

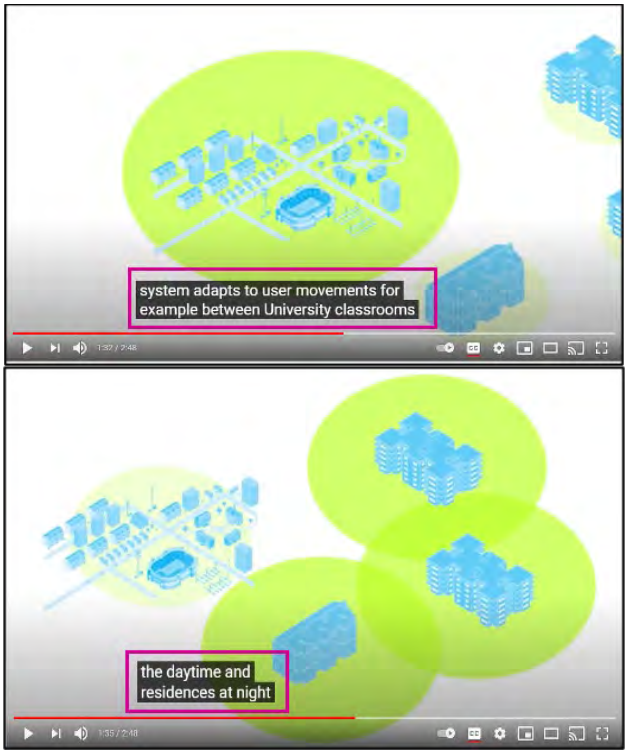


On information and belief, the first subset of the plurality of radio resources includes more radio resources than the second subset. Accordingly, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks includes assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset.

79. On information and belief, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks meets element [12C] of claim 12 of the '232 patent. Element [12C] of claim 12 requires "in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a

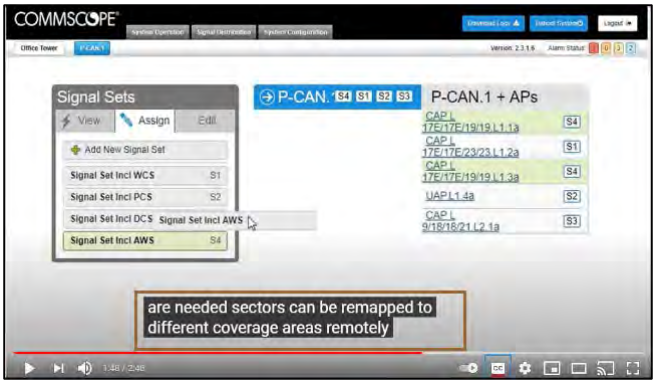
threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point."

[27]



[27] https://www.youtube.com/watch?v=uBRDL7a8_8g (last visited January 27, 2022) (emphasis added).

Moreover, the same marketing materials describe how sectors can be remapped where resources are needed most:[28]



On information and belief, CommScope's ION®-E/ERA assigns additional radio resources to an access point when it is loaded beyond a threshold. Accordingly, Verizon's use of CommScope's ION®-E/ERA platform includes assigning one or more additional radio resources of the plurality of radio resources to the second access point in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold.

82. As a result, on information and belief, Verizon's use of CommScope's ION®-E/ERA platform in its LTE and 5G networks meets all elements of, and therefore infringes, at least claim 12 of the '232 patent.

83. As a result of Verizon's infringement of the '232 patent by use of CommScope's ION®-E/ERA platform in its LTE and 5G networks, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon's wrongful conduct.

[28] *Id.* (emphasis added).

84. Dali has no adequate remedy at law to prevent future infringement of the ’232 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon’s patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon’s wrongful conduct.

SECOND CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE ’232 PATENT BY COMMSCOPE’S USE OF ITS ION®-E/ERA PLATFORM)

85. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

86. On information and belief, CommScope has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the ’232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, maintaining, testing, and using CommScope’s ION®-E/ERA platform both in Verizon’s LTE and 5G networks and in connection with CommScope’s course-of-business operations.

87. As explained above in paragraphs 70-82, use of CommScope’s ION®-E/ERA platform meets all elements of, and therefore infringes, at least claim 12 of the ’232 patent.

88. As a result of CommScope’s infringement of the ’232 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by CommScope’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for CommScope’s wrongful conduct.

89. Dali has no adequate remedy at law to prevent future infringement of the ’232 patent. Dali suffers and continues to suffer irreparable harm as a result of CommScope’s patent infringement and is, therefore, entitled to injunctive relief to enjoin CommScope’s wrongful conduct.

THIRD CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY VERIZON'S USE OF ERICSSON'S RADIO DOT SYSTEM)

90. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

91. On information and belief, Verizon has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the '232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Ericsson's Radio Dot System in its LTE and 5G networks.[29]

92. Claim 12 of the '232 patent provides:

> [Preamble] A method comprising:
>
> [12A] receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol;
>
> [12B] assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset;
>
> [12C] and in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point.

93. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks performs each and every element recited in at least claim 12 of the '232 patent as stated below.

94. On information and belief, and to the extent the preamble is limiting, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets the preamble of claim 12

[29] https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

of the ’232 patent. The preamble of claim 1 refers to “[a] method comprising . . .”.

95. For example, according to Ericsson the Radio Dot System “combines centralized baseband and radio units with visually low-impact antennas. Ericsson innovations enable RF signal, power and control over standard shielded LAN cables for cost-effective deployment with minimal business disruption.”[30] Moreover, Ericsson's Radio Dot System includes “centralized radios [which] provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system.”[31]

96. On information and belief, Verizon’s use of Ericsson’s Radio Dot System in its LTE and 5G networks meets element [12A] of claim 12 of the ’232 patent. Element [12A] requires, “receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol . . .”.

97. According to Ericsson’s marketing material, The Radio Dot System (RDS) “is a complete end-to-end solution including the RF signal source. RDS consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU). The DU and IRU can be connected by fiber or co-located and connected through Digital CPRI cable.”[32] Moreover, “[t]he Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area.”[33]

[30] *See e.g.*, https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[31] *Id.*

[32] *See* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[33] *Id.*

98. Accordingly, on information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol.

99. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets element [12B] of claim 12 of the '232 patent. Element [12B] of claim 12 requires "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset . . .".

100. According to Ericsson's marketing materials, the Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[34] "The Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[35] Moreover, Ericsson's Radio Dot System assigns subsets of resources to different access points depending on traffic: "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[36] Ericsson materials explains that "[t]he capability to configure, scale, and reconfigure logical nodes through software commands enables the RAN to dynamically adjust to changing traffic conditions, hardware faults, as well as new service requirements."[37] Ericsson also states that "[w]ithout RDS, high traffic demand generated

[34] *Id.*

[35] *Id.*

[36] *Id.*

[37] https://www.ericsson.com/en/reports-and-papers/ericsson-technology-review/articles/4g5g-ran-architecture-how-a-split-can-make-the-difference (last visited January 27, 2022).

indoors consumes a substantial amount of the radio resources of the surrounding outdoor macro cells. Deploying RDS in large high-traffic enterprises offloads the macro layer and serves the indoor users more efficiently."[38] On information and belief, the first subset of radio resources includes more resources than the second subset of radio resources.

101. Accordingly, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset.

102. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets element [12C] of claim 12 of the '232 patent. Element [12C] of claim 12 requires "in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point."

103. On information and belief, Ericsson's Radio Dot System comprises software that can configure access points by increasing or decreasing the number of resources in the plurality of resources. For example, Ericsson's materials explain that the Radio Dot System includes "centralized radios [to] provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the

[38] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

system."[39]

104. By way of further example, Ericsson materials explain that "[t]he capability to configure, scale, and reconfigure logical nodes through software commands enables the RAN to dynamically adjust to changing traffic conditions, hardware faults, as well as new service requirements."[40] Ericsson also states that "[w]ithout RDS, high traffic demand generated indoors consumes a substantial amount of the radio resources of the surrounding outdoor macro cells. Deploying RDS in large high-traffic enterprises offloads the macro layer and serves the indoor users more efficiently."[41]

105. On information and belief, Ericsson's Radio Dot System assigns additional radio resources to an access point when it is loaded beyond a threshold.

106. Accordingly, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes assigning one or more additional radio resources of the plurality of radio resources to the second access point in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold.

107. As a result, on information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets all elements of, and therefore infringes, at least claim 12 of the '232 patent.

108. As a result of Verizon's infringement of the '232 patent by use of Ericsson's

[39] *Id.*

[40] https://www.ericsson.com/en/reports-and-papers/ericsson-technology-review/articles/4g5g-ran-architecture-how-a-split-can-make-the-difference (last visited January 27, 2022).

[41] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

Radio Dot Systems in its LTE and 5G networks, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon's wrongful conduct.

109. Dali has no adequate remedy at law to prevent future infringement of the '232 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon's wrongful conduct.

FOURTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY ERICSSON'S USE OF ITS RADIO DOT SYSTEM)

110. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

111. On information and belief, Ericsson has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the '232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, maintaining, testing, and using its Radio Dot System both in Verizon's LTE and 5G networks and in connection with Ericsson's course-of-business operations.

112. As explained above in paragraphs 92-107, use of Ericsson's Radio Dot System in Verizon's LTE and 5G meets all elements of, and therefore infringes, at least claim 12 of the '232 patent.

113. As a result of Ericsson's infringement of the '232 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Ericsson's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Ericsson's wrongful conduct.

114. Dali has no adequate remedy at law to prevent future infringement of the '232

patent. Dali suffers and continues to suffer irreparable harm as a result of Ericsson's patent infringement and is, therefore, entitled to injunctive relief to enjoin Ericsson's wrongful conduct.

FIFTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY VERIZON'S USE OF CORNING'S EVERON™ 6000 DAS SOLUTIONS)

115. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

116. On information and belief, Verizon has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the '232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks.

117. Claim 12 of the '232 patent provides:

> [Preamble] A method comprising:
>
> [12A] receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol;
>
> [12B] assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset;
>
> [12C] and in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point.

118. On information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks performs each and every element recited in at least claim 12 of the '232 patent as stated below.

119. On information and belief, and to the extent the preamble is limiting, Verizon's

use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks meets the preamble of claim 12 of the '232 patent. The preamble of claim 1 refers to "[a] method comprising . . .".

120. For example, according to Corning's publicly available documents, the Everon™ 6000 DAS "is an advanced inbuilding cellular service solution for small, medium and large size venues, supporting a broad range of cellular generations: 3G, 4G and 5G."[42] Corning further explains that the Everon™ DAS "is based on digital distribution architecture, advanced digital processing, and channelized implementation, enabling efficient utilization of digital links. The solution is designed to support multiband, multi-technology and multi-operator networks over a single fibre-based infrastructure."[43] Moreover, "Due to its modular design and configuration flexibility, Corning Everon 6000 is highly scalable in terms of supported capacity (number of sectors, frequency bands, channels) and remote units (coverage), and can be easily configured to support a large variety of deployment scenarios including single and multi-building ('Campus') network topologies."[44]

121. On information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks meets element [12A] of claim 12 of the '232 patent. Element [12A] requires, "receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol . . .".

122. According to Corning's publicly available documents, "Radio Interface frames

[42] https://fccid.io/OJFDLRU1719235/User-Manual/User-manual-5093731.pdf (the "Everon User Manual"), at 2 (last visited January 27, 2022).

[43] *Id.*

[44] *Id.*

are modular chassis used for interface between the base stations and the Everon 6000."[45] Corning further explains that the "DCM (Digital Conversion Module)" is a module that is used with radio interface frames.[46] The DCM "[p]rovides RF to CPRI (Downlink) and CPRI to RF (Uplink) conversion, where the well-known CPRI (Common Public Radio Interface) standard is used for representing the RF signals."[47]

123. Accordingly, on information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks includes receiving a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol.

124. On information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks meets element [12B] of claim 12 of the '232 patent. Element [12B] of claim 12 requires "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset . . .".

125. According to Corning's publicly available documents, Everon™ 6000 DAS solutions "offer[] multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per band to 43 dBm per band."[48] Moreover, Corning's Everon™ 6000 DAS solutions assigns subsets of resources to different digital remote units depending on traffic: "[a]dvanced network

[45] *Id.* at 3.

[46] *Id.*

[47] *Id.*

[48] *Id.* at 1

configuration and management capabilities enable on-site as well as remote end-to-end configuration, system diagnostics, maintenance and support operators NOC connectivity."[49] Corning's publicly available documents further explain that the Everon™ 6000 DAS solutions are "Highly modular/ Highly scalable" and "[c]an be easily expanded to support additional capacity: sectors, frequency bands, channels and coverage areas via extending the number of remotes."[50] On information and belief, a first subset of radio resources includes more resources than a second subset of radio resources.

126. Accordingly, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks includes assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless access points and a second subset of the plurality of radio resources to a second access point included in the plurality of wireless access points, the first subset including more radio resources than the second subset.

127. On information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks meets element [12C] of claim 12 of the '232 patent. Element [12C] of claim 12 requires "in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point."

128. According to Corning's publicly available documents, Everon™ 6000 DAS solutions "offer[] multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per

[49] *Id.*

[50] *Id.*

band to 43 dBm per band."[51] Moreover, Corning's Everon™ 6000 DAS solutions assigns subsets of resources to different digital remote units depending on traffic: "[a]dvanced network configuration and management capabilities enable on-site as well as remote end-to-end configuration, system diagnostics, maintenance and support operators NOC connectivity."[52] Corning's publicly available documents further explain that the Everon™ 6000 DAS solutions are "Highly modular/ Highly scalable" and "[c]an be easily expanded to support additional capacity: sectors, frequency bands, channels and coverage areas via extending the number of remotes."[53] On information and belief, Corning's Everon™ 6000 DAS solutions assign additional radio resources to an access point when it is loaded beyond a threshold.

129. Accordingly, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks includes assigning one or more additional radio resources of the plurality of radio resources to a second access point in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold.

130. As a result, on information and belief, Verizon's use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks meets all elements of, and therefore infringes, at least claim 12 of the '232 patent.

131. As a result of Verizon's infringement of the '232 patent by use of Corning's Everon™ 6000 DAS solutions in its LTE and 5G networks, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon's infringement

[51] *Id.* at 1

[52] *Id.*

[53] *Id.*

to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon's wrongful conduct.

132. Dali has no adequate remedy at law to prevent future infringement of the '232 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon's wrongful conduct.

SIXTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY CORNING'S USE OF ITS EVERON™ 6000 DAS SOLUTIONS)

133. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

134. On information and belief, Corning has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 12, of the '232 patent in violation of 35 U.S.C. § 271, et seq., by deploying, maintaining, testing, and using its Everon™ 6000 DAS solutions both in Verizon's LTE and 5G networks and in connection with Corning's course-of-business operations.

135. As explained above in paragraphs 117-130, use of Corning's Everon™ 6000 DAS solutions in Verizon's LTE and 5G meets all elements of, and therefore infringes, at least claim 12 of the '232 patent.

136. As a result of Corning's infringement of the '232 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Corning's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Corning's wrongful conduct.

137. Dali has no adequate remedy at law to prevent future infringement of the '232 patent. Dali suffers and continues to suffer irreparable harm as a result of Corning's patent infringement and is, therefore, entitled to injunctive relief to enjoin Corning's wrongful conduct.

SEVENTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '343 PATENT BY VERIZON AND ERICSSON)

138. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

139. On information and belief, Verizon and Ericsson have directly infringed and continue to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the '343 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon's LTE and 5G networks which include Ericsson's Radio Dot System.[54] Ericsson also infringes the '343 patent, in violation of 35 U.S.C. § 271, et seq., by selling, or offering for sale, to Verizon, Ericsson's Radio Dot System.

140. Claim 1 of the '343 patent provides:

> [Preamble] A system for transporting wireless communications, comprising:
>
> [1A] a digital access unit;
>
> [1B] a plurality of signal sources, including at least a first signal source and a second signal source;
>
> [1C] a plurality of remote units, including at least a first remote unit and a second remote unit;
>
> [1D] wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources;
>
> [1E] wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;

[54] *See e.g.*, https://www.fiercewireless.com/private-wireless/at-t-teams-ericsson-for-private-wireless-networks-cbrs-spectrum (last visited January 27, 2022); *see also* https://www.lightreading.com/mobile/small-cells/ericsson-unveils-radio-dot-system-/d/d-id/705843 (last visited January 27, 2022).

> [1F] wherein the digital access unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit;
>
> [1G] wherein the digital access 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;
>
> [1H] 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 at least based on dynamic load balancing and resource management; and
>
> [1I] wherein the digital access unit is configured to receive digital signals from each of the plurality of remote units.

141. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, satisfy each and every element recited in at least claim 1 of the '343 patent as stated below.

142. On information and belief, and to the extent the preamble is limiting, Verizon's LTE and 5G networks meet the preamble of claim 1 of the '343 patent because Ericsson's Radio Dot System is a system for transporting wireless communications. For example, according to Ericsson the Radio Dot System "combines centralized baseband and radio units with visually low-impact antennas. Ericsson innovations enable RF signal, power and control over standard shielded LAN cables for cost-effective deployment with minimal business disruption."[55] Moreover, Ericsson's Radio Dot System includes "centralized radios [which] provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[56]

[55] *See e.g.*, https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[56] *Id.*

143. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1A] of claim 1 of the '343 patent. Claim element [1A] requires "a digital access unit."

144. Verizon's LTE and 5G networks include a digital access unit. For example, Ericsson's Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU). The DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable."[57]

145. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1B] of claim 1 of the '343 patent. Claim element 1[B] requires "a plurality of signal sources, including at least a first signal source and a second signal source."

146. For example, Ericsson's Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[58] Ericsson describes the DU as the "signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[59] The "DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable."[60] In certain circumstances, the "the digital unit is centrally located and the IRUs are distributed."[61] Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a plurality of signal sources, including at least a first signal source

[57] *Id.*

[58] *Id.*

[59] *Id.*

[60] *Id.*

[61] *Id.*

and a second signal source.

147. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1C] of claim 1 of the '343 patent. Claim element [1C] requires "a plurality of remote units, including at least a first remote unit and a second remote unit."

148. For example, Ericsson's Radio Dot System includes "Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[62] Further, the IRU "is frequency independent and supports remote software upgrades. It supports and provides power for up to eight Radio Dots, corresponding to an equivalent of 70,000 square feet of floor space coverage in a typical office building. Individual Dots can be connected with up to 650 feet of LAN cable."[63] Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a plurality of remote units, including at least a first remote unit and a second remote unit.

149. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1D] of claim 1 of the '343 patent. Claim element [1D] requires "wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources."

150. For example, Ericsson's Radio Dot System includes "Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[64] Ericsson's literature further explains that the DU includes a plurality of interfaces to communicatively couple the digital access unit to the

[62] *Id.*

[63] *Id.*

[64] *Id.*

plurality of signal sources:[65]

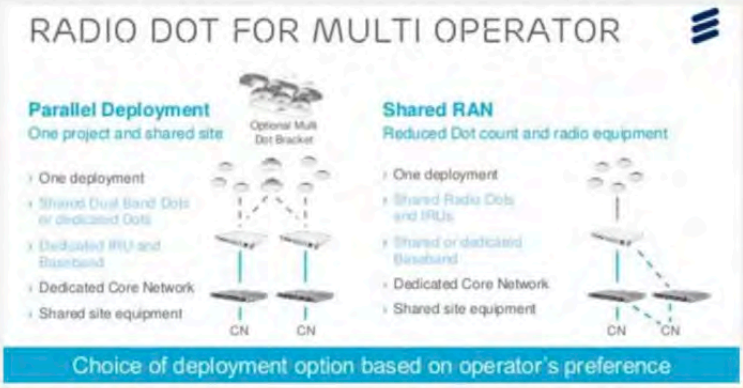
> The Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area. The DU delivers feature parity and roadmap evolution with the macro network and supports key coordination features such as Carrier Aggregation and Combined Cell, vital for multi-antenna indoor deployments. As new features are added to the Ericsson RAN software, they are automatically available in every radio dot system deployment. The Baseband also provides synchronization and transport security functionality, and aggregates the RDS traffic onto a common backhaul connection.

151. Moreover, Ericsson has announced that the Radio Dot System supports multi-operator service in three ways:[66]

[65] *Id.*

[66] https://the-mobile-network.com/2017/08/ericssons-multi-operator-radio-dot-matrix/ (last visited January 27, 2022).

First – parallel deployments with each operator using its own dedicated baseband, IRU and Dots. These Dots can be housed in the same enclosures (the new enclosures known as the multi-dot bracket) to tidy things up a bit.



Parallel or shared RAN options

Secondly – a multi-operator deployment using a shared baseband and IRU, over the same network of distributed radio heads, using MORAN (Multi Operator Radio Access Network) or MOCN (Multi Operator Core Network) network sharing capabilities.

Thirdly, a multi-operator Dot solution where operators provide multiple RF sources to the same Dot system. They do this by feeding baseband capacity to a new access unit from Ericsson, the RF Access Unit (RAU). This new RAU can support three 2×2 MIMO RF inputs, and can be connected on the other side to four IRUs, which then feed the shared Dot remote radioheads.

Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a digital access unit, wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources.

152. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1E] of claim 1 of the '343 patent. Claim element [1E] requires "wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source."

153. For example, as explained above in paragraphs 144-146, Ericsson's Radio Dot System includes a digital access unit, wherein the digital access unit is configured to receive a

plurality of radio resources from the first signal source and the second signal source.

154. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1F] of claim 1 of the '343 patent. Claim element [1F] requires "wherein the digital access unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit."

155. For example, Ericsson's marketing materials explain that the DU of the Ericsson Radio Dot system "is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[67] These materials further explain that "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[68] On information and belief, the DU is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet element [1F] of claim 1 of the '343 patent.

156. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[G] of claim 1 of the '343 patent. Claim element [1G] requires "wherein the digital access 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."

[67] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[68] *Id.*

157. For example, as explained above in paragraph 155, the DU is configured to send digital representations of radio resources to a remote unit. On information and belief, the DU 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. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[G] of claim 1 of the '343 patent.

158. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[H] of claim 1 of the '343 patent. Claim element [1H] requires "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 at least based on dynamic load balancing and resource management."

159. For example, as explained above in paragraph 155, the DU is configured to send digital representations of radio resources to a remote unit. On information and belief, the DU is configured to send a number of radio resources in the first set of radio resources that is different from a number of radio resources in the second set of radio resources.

160. Moreover, Ericsson's Radio Dot System can dynamically adjust to maintain efficiency: "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[69] For example, Ericsson explains that "[t]he capability to configure, scale, and reconfigure logical nodes through software commands enables the RAN to dynamically adjust to changing traffic conditions, hardware faults, as well as new service

[69] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

requirements."[70] Ericsson also states that "[w]ithout RDS, high traffic demand generated indoors consumes a substantial amount of the radio resources of the surrounding outdoor macro cells. Deploying RDS in large high-traffic enterprises offloads the macro layer and serves the indoor users more efficiently."[71] Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[H] of claim 1 of the '343 patent.

161. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[I] of claim 1 of the '343 patent. Claim element [1I] requires "wherein the digital access unit is configured to receive digital signals from each of the plurality of remote units."

162. For example, as explained above in paragraph 155, the DU is configured to send digital representations of radio resources to a remote unit. On information and belief, the DU is also configured to receive digital signals from each of the plurality of remote units. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1I] of claim 1 of the '343 patent.

163. As a result, on information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet all elements of, and therefore infringe, at least claim 1 of the '343 patent.

164. As a result of Verizon and Ericsson's infringement of the '343 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon and Ericsson's infringement to the fullest extent permitted by the Patent Act, together

[70] https://www.ericsson.com/en/reports-and-papers/ericsson-technology-review/articles/4g5g-ran-architecture-how-a-split-can-make-the-difference (last visited January 27, 2022).

[71] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

with prejudgment interest and costs for Verizon and Ericsson's wrongful conduct.

165. Dali has no adequate remedy at law to prevent future infringement of the '343 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon and Ericsson's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon and Ericsson's wrongful conduct.

EIGHTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '343 PATENT BY VERIZON AND CORNING)

166. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

167. On information and belief, Verizon and Corning have directly infringed and continue to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the '343 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon's LTE and 5G networks which include Corning's Everon™ 6000 DAS solutions. Corning also infringes the '343 patent, in violation of 35 U.S.C. § 271, et seq., by selling, or offering for sale, to Verizon, Corning's Everon™ 6000 DAS solutions.

168. Claim 1 of the '343 patent provides:

> [Preamble] A system for transporting wireless communications, comprising:
>
> [1A] a digital access unit;
>
> [1B] a plurality of signal sources, including at least a first signal source and a second signal source;
>
> [1C] a plurality of remote units, including at least a first remote unit and a second remote unit;
>
> [1D] wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources;

> [1E] wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;
>
> [1F] wherein the digital access unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit;
>
> [1G] wherein the digital access 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;
>
> [1H] 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 at least based on dynamic load balancing and resource management; and
>
> [1I] wherein the digital access unit is configured to receive digital signals from each of the plurality of remote units.

169. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, satisfy each and every element recited in at least claim 1 of the '343 patent as stated below.

170. On information and belief, and to the extent the preamble is limiting, Verizon's LTE and 5G networks meet the preamble of claim 1 of the '343 patent because Corning's Everon™ 6000 DAS solutions provide a system for transporting wireless communications. For example, according to Corning's publicly available documents, "Corning Everon 6000 DAS is an advanced inbuilding cellular service solution for small, medium and large size venues, supporting a broad range of cellular generations: 3G, 4G and 5G."[72] Corning Everon™ 6000 DAS solutions are "based on digital distribution architecture, advanced digital processing, and

[72] Everon User Manual at 1.

channelized implementation, enabling efficient utilization of digital links."[73] Moreover, Corning's Everon™ 6000 DAS solutions include "is highly scalable in terms of supported capacity (number of sectors, frequency bands, channels) and remote units (coverage), and can be easily configured to support a large variety of deployment scenarios including single and multi-building ('Campus') network topologies."[74] Accordingly, and to the extent the preamble is limiting, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, a system for transporting wireless communications.

171. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1A] of claim 1 of the '343 patent. Claim element [1A] requires "a digital access unit."

172. On information and belief, Verizon's LTE and 5G networks include a digital access unit. For example, Corning's Everon™ 6000 DAS solutions include "Radio Interface frames" that "are modular chassis used for interface between the base stations and the Everon 6000."[75] Corning's publicly available documents explain that "[a] system may be comprised of two types of Chassis: IHU (Integrated Head-end Unit) and HEU (Head End Unit). The IHU can interface up to 8 RF duplexed ports (or 16 UL/DL simplex ports) and can be expanded by an HEU radio interface frame which provides interface capabilities for additional 12 RF duplexed ports (or 24 UL/DL simplex ports)."[76] Corning's Everon™ 6000 DAS solutions also include a

[73] *Id.*

[74] *Id.*

[75] *Id.* at 3.

[76] *Id.*

"DRU - Digital Routing Unit" that is the "Everon 6000 central Hub and Distribution element."[77] "The DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[78]

173. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1B] of claim 1 of the '343 patent. Claim element [1B] requires "a plurality of signal sources, including at least a first signal source and a second signal source."

174. For example, Corning's publicly available documents explain that Everon™ 6000 DAS solutions "[s]upport[] multi-operator, multi-band, multi-technology services over a single infrastructure. Supports single and multi-building ('campus') network architectures."[79] Further, "The DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[80] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, include a plurality of signal sources, including at least a first signal source and a second signal source.

175. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1C] of claim 1 of the '343 patent. Claim element [1C] requires "a plurality of remote units, including at least a first remote unit and

[77] *Id.* at 4.

[78] *Id.*

[79] *Id.* at 1.

[80] *Id.* at 4.

a second remote unit."

176. For example, due to its modular design and configuration, Corning's Everon™ 6000 DAS solutions are "highly scalable in terms of supported capacity (number of sectors, frequency bands, channels) and remote units (coverage), and can be easily configured to support a large variety of deployment scenarios including single and multi-building ('Campus') network topologies."[81] Further, Corning's Everon™ 6000 DAS solutions "offer[] multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per band to 43 dBm per band."[82] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, include a plurality of remote units, including at least a first remote unit and a second remote unit.

177. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1D] of claim 1 of the '343 patent. Claim element [1D] requires "wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources."

178. For example, Corning's Everon™ 6000 DAS solutions provide a "Multi-X system" which "[s]upports multi-operator, multi-band, multi-technology services over a single infrastructure."[83] Moreover, "[t]he DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[84] Accordingly, Verizon's LTE and 5G networks,

[81] *Id.* at 1.

[82] *Id.*

[83] *Id.*

[84] *Id.* at 4.

which include Corning's Everon™ 6000 DAS solutions, provide a digital access unit, wherein the digital access unit comprises a plurality of interfaces to communicatively couple the digital access unit to the plurality of signal sources.

179. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1E] of claim 1 of the '343 patent. Claim element [1E] requires "wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source."

180. For example, as explained above in paragraphs 172-174, Corning's Everon™ 6000 DAS include a digital access unit, wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source. Further, Corning's Everon™ 6000 DAS solutions provide "[a]dvanced network configuration and management capabilities [that] enable on-site as well as remote end-to-end configuration, system diagnostics, maintenance and support operators NOC connectivity."[85] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, include a digital access unit, wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source.

181. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1F] of claim 1 of the '343 patent. Claim element [1F] requires "wherein the digital access unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit."

182. As explained above in paragraphs 172-174, Corning's Everon™ 6000 DAS

[85] *Id.* at 1.

solutions include a digital access unit, wherein the digital access unit is configured to receive a plurality of radio resources from the first signal source and the second signal source. Moreover, Corning's Everon™ 6000 DAS solutions include "Radio Interface frames," which are "modular chassis used for interface between the base stations and the Everon 6000."[86] The "DCM (Digital Conversion Module)" is a module that is used with Radio Interface frames.[87] The DCM "[p]rovides RF to CPRI (Downlink) and CPRI to RF (Uplink) conversion, where the well-known CPRI (Common Public Radio Interface) standard is used for representing the RF signals."[88] Corning's publicly available documents further explain that "Corning Everon 6000 DAS is based on digital distribution architecture, advanced digital processing, and channelized implementation, enabling efficient utilization of digital links."[89] On information and belief, Corning's Everon™ 6000 DAS solutions are configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit. Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet element [1F] of claim 1 of the '343 patent.

183. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[G] of claim 1 of the '343 patent. Claim element 1[G] requires "wherein the digital access 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,

[86] *Id.* at 3.

[87] *Id.*

[88] *Id.*

[89] *Id.* at 1.

the second set of radio resources for transmission at the antenna of the first remote unit."

184. For example, as explained above in paragraph 182, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of a first set of radio resources to a remote unit. Further, Corning's publicly available documents explain that the Everon™ 6000 DAS solutions "[e]nable[] advanced capacity and coverage management through flexible routing configuration management."[90] On information and belief, Corning's Everon™ 6000 DAS solutions are further 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. Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[G] of claim 1 of the '343 patent.

185. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[H] of claim 1 of the '343 patent. Claim element [1H] requires "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 at least based on dynamic load balancing and resource management."

186. For example, as explained above in paragraph 182, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of radio resources to a remote unit. On information and belief, Corning's Everon™ 6000 DAS solutions are also configured to send a number of radio resources in a first set of radio resources that is different from a number of radio resources in a second set of radio resources. For example, as a part of Corning's Everon DAS solution, the Building Wireless System (BWS) features "[f]lexible and economic traffic

[90] *Id.*

management; Optimized network utilization" that employs a "smart traffic management techniques, allowing load reduction based [optimizations] . . . e.g., Dynamic routing; . . . [and] capacity steering techniques."[91] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[H] of claim 1 of the '343 patent.

187. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[I] of claim 1 of the '343 patent. Claim element [1I] requires "wherein the digital access unit is configured to receive digital signals from each of the plurality of remote units."

188. For example, as explained above in paragraph 182, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of radio resources to a remote unit. On information and belief, Corning's Everon™ 6000 DAS solutions are also configured to receive digital signals from each of the plurality of remote units. Further, Corning's Everon™ 6000 DAS solutions offer "multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per band to 43 dBm per band."[92] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1I] of claim 1 of the '343 patent.

189. As a result, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet all claim elements of claim 1 of the '343 patent and, therefore, infringe at least claim 1 of the '343 patent.

190. As a result of Verizon and Corning's infringement of the '343 patent, Dali has

[91] Building Wireless System (BWS) v1.0 Low Power Radio (LPR) User Manual, p. 16, *available at* https://fccid.io/OJF1LPR/User-Manual/User-Manual-4615900 (last visited January 27, 2022).

[92] Everon User Manual at 1.

suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon and Corning's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon and Corning's wrongful conduct.

191. Dali has no adequate remedy at law to prevent future infringement of the '343 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon and Corning's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon and Corning's wrongful conduct.

NINTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '338 PATENT BY VERIZON'S USE OF ERICSSON'S RADIO DOT SYSTEM)

192. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

193. On information and belief, Verizon has directly infringed and continues to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the '338 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Ericsson's Radio Dot System in its LTE and 5G networks.[93]

194. Claim 1 of the '338 provides:

> [Preamble] A method for routing and switching RF signals comprising:
>
> [1A] providing one or more remote radio units, each remote radio unit configured to transmit one or more downlink RF signals and to receive one or more uplink RF signals;
>
> [1B] providing at least one digital access unit configured to communicate with the one or more remote radio units;

[93] *See* https://news.cision.com/ericsson/r/verizon-first-in-the-us-with-ericsson-radio-dot-system,c2245413 (last visited January 27, 2022); *see also* https://www.verizon.com/about/news/verizon-and-ericsson-showcase-technology-milestones-and-use-cases-demonstrating-continued (last visited January 27, 2022).

T-Mobile v. Dali Wireless Inc.
T-Mobile Ex. 1049

> [1C] translating the uplink and downlink signals between RF and base band as appropriate;
>
> [1D] packetizing the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers;
>
> [1E] configuring each remote radio unit to receive or transmit a respective subset of the plurality of carriers, each respective subset of the plurality of carriers including a number of carriers;
>
> [1F] reconfiguring each remote radio unit by: determining a load percentage for each remote radio unit; and increasing or decreasing the number of carriers in the respective subset of the plurality of carriers based on the load percentage; and
>
> [1G] routing and switching the packetized signals among the one or more remote radio units via the at least one digital access unit according to a result of the reconfiguring.

195. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks performs each and every limitation recited in at least claim 1 of the '338 patent as stated below.

196. On information and belief, and to the extent the preamble is limiting, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets the preamble of claim 1 of the '338 patent because Ericsson's Radio Dot System routs and switches RF signals. For example, according to Ericsson the Radio Dot System "combines centralized baseband and radio units with visually low-impact antennas. Ericsson innovations enable RF signal, power and control over standard shielded LAN cables for cost-effective deployment with minimal business disruption."[94] Moreover, Ericsson's Radio Dot System includes "centralized radios [which] provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs

[94] *See e.g.*, https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

in real time while increasing spectral and hardware efficiency of the system."[95]

197. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1A] of claim 1 of the '338 patent. Element [1A] of the '338 patent recites "providing one or more remote radio units, each remote radio unit configured to transmit one or more downlink RF signals and to receive one or more uplink RF signals."

198. Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes providing one or more remote radio units, each remote radio unit configured to transmit one or more downlink RF signals and to receive one or more uplink RF signals. For example, Ericsson's Single Band Radio Dot includes RF hardware that provides "2x2 MIMO, Tx/Rx diversity" and Ericsson's Dual Band Radio Dot includes RF hardware that provides "2x2 MIMO, Tx/Rx diversity (per band)."[96] The functionality of Ericsson's Radio Dot RF hardware includes transmitting downlink RF signals and receiving uplink RF signals.

199. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1B] of claim 1 of the '338 patent. Element [1B] of the '338 patent recites "providing at least one digital access unit configured to communicate with the one or more remote radio units."

200. Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes providing at least one digital access unit configured to communicate with the one or more remote radio units. For example, Ericsson's Radio Dot System "consists of the Radio Dots,

[95] *Id.*

[96] *Id.*

Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[97] Ericsson describes the DU as the "signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[98] The "DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable." In certain circumstances, the "the digital unit is centrally located and the IRUs are distributed."[99] On information and belief, the DU is configured to communicate with remote radio units, including Radio Dots and IRUs.

201. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1C] of claim 1 of the '338 patent. Element [1C] of the '338 patent recites "translating the uplink and downlink signals between RF and base band as appropriate."

202. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes translating the uplink and downlink signals between RF and base band as appropriate. For example, Ericsson's Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[100] Ericsson describes the DU as the "signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[101] Ericsson's Single Band Radio Dot includes RF hardware that provides "2x2 MIMO, Tx/Rx diversity" and Ericsson's Dual Band Radio Dot includes RF hardware that

[97] *Id.*

[98] *Id.*

[99] *Id.*

[100] *Id.*

[101] *Id.*

provides "2x2 MIMO, Tx/Rx diversity (per band)."[102] The functionality of Ericsson's Radio Dot RF hardware includes transmitting downlink RF signals and receiving uplink RF signals. On information and belief, the DU, Radio Dots, and IRU translate uplink and downlink signals between RF and base band as appropriate.

203. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1D] of claim 1 of the '338 patent. Element [1D] of the '338 patent recites "packetizing the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers."

204. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes packetizing the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers. For example, Verizon's use of Ericsson's Radio Dot System within its LTE and 5G networks includes packetizing signals for transport over CAT6/CAT6A LAN cables to the Radio Dots.[103]

205. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1E] of claim 1 of the '338 patent. Element [1E] of the '338 patent recites "configuring each remote radio unit to receive or transmit a respective subset of the plurality of carriers, each respective subset of the plurality of carriers including a number of carriers."

206. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes configuring each remote radio unit to receive or transmit a respective subset of the plurality of carriers, each respective subset of the plurality of carriers

[102] *Id.*

[103] *Id.*

including a number of carriers. For example, Ericsson's Radio Dot System supports LTE and 5G technologies.[104] "Ericsson has addressed the 5G mid-band and high-band coverage limitations by developing a flexible 5G Carrier Aggregation solution which supports control and data traffic on the uplink using a lower frequency band which increases coverage, and on the downlink with a mid or high-frequency band which increases capacity and data throughput."[105] As a result, Ericsson's Radio Dot System can be configured to receive or transmit a respective subset of the plurality of carriers, with each respective subset of the plurality of carriers including a number of carriers.

207. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1F] of claim 1 of the '338 patent. Element [1F] of the '338 patent recites "reconfiguring each remote radio unit by: determining a load percentage for each remote radio unit; and increasing or decreasing the number of carriers in the respective subset of the plurality of carriers based on the load percentage."

208. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes reconfiguring each remote radio unit by: determining a load percentage for each remote radio unit; and increasing or decreasing the number of carriers in the respective subset of the plurality of carriers based on the load percentage. For example, Ericsson's Radio Dot System can dynamically adjust to maintain efficiency: "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs

[104] *See e.g.*, https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022); *see also* https://mediabank.ericsson.net/deployedFiles/ericsson.com/Taking%20the%20next%20step%20in%20the%20indoor%20revolution.pdf (last visited January 27, 2022).

[105] https://www.ericsson.com/en/ran/carrier-aggregation (last visited January 27, 2022); *see also* https://www.ericsson.com/en/news/2020/2/radio-dot-update (last visited January 27, 2022).

in real time while increasing spectral and hardware efficiency of the system."[106] Moreover, Ericsson explains that "[t]he capability to configure, scale, and reconfigure logical nodes through software commands enables the RAN to dynamically adjust to changing traffic conditions, hardware faults, as well as new service requirements."[107] Ericsson also states that "[w]ithout RDS, high traffic demand generated indoors consumes a substantial amount of the radio resources of the surrounding outdoor macro cells. Deploying RDS in large high-traffic enterprises offloads the macro layer and serves the indoor users more efficiently."[108] Consequently, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes reconfiguring each remote radio unit by: determining a load percentage for each remote radio unit; and increasing or decreasing the number of carriers in the respective subset of the plurality of carriers based on the load percentage.

209. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets claim element [1G] of claim 1 of the '338 patent. Element [1G] of the '338 patent recites "routing and switching the packetized signals among the one or more remote radio units via the at least one digital access unit according to a result of the reconfiguring."

210. On information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks includes routing and switching the packetized signals among the one or more remote radio units via the at least one digital access unit according to a result of the

[106] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited Oct. 15, 2021).

[107] https://www.ericsson.com/en/reports-and-papers/ericsson-technology-review/articles/4g5g-ran-architecture-how-a-split-can-make-the-difference (last visited January 27, 2022).

[108] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

reconfiguring. For example, Ericsson's Radio Dot System provides pooled capacity that is managed by the DU and which can be reassigned based on network requirements: "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[109] Moreover, the DU "is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[110] This allows for reconfiguring the routing and switching of packetized signals among the one or more Radio Dots through the DU.

211. Accordingly, on information and belief, Verizon's use of Ericsson's Radio Dot System in its LTE and 5G networks meets all elements of, and therefore infringes at least claim 1 of the '338 patent.

212. As a result of Verizon's infringement of the '338 patent by use of Ericsson's Radio Dot Systems in its LTE and 5G networks, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon's wrongful conduct.

213. Dali has no adequate remedy at law to prevent future infringement of the '338 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon's wrongful conduct.

TENTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '338 PATENT BY ERICSSON'S USE OF ITS RADIO DOT SYSTEM)

214. Dali re-alleges and incorporates by reference all of the foregoing paragraphs.

215. On information and belief, Ericsson has infringed and continues to infringe, either

[109] *Id.*

[110] *Id.*

literally or under the doctrine of equivalents, one or more claims, including at least claim 1, of the ’338 patent in violation of 35 U.S.C. § 271, et seq., by deploying, maintaining, testing, and using its Radio Dot System both in Verizon’s LTE and 5G networks and in connection with Ericsson’s course-of-business operations.

216. As explained above in paragraphs 194-211, use of Ericsson’s Radio Dot System in Verizon’s LTE and 5G networks meets all elements of, and therefore infringes, at least claim 1 of the ’338 patent.

217. As a result of Ericsson’s infringement of the ’338 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Ericsson’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Ericsson’s wrongful conduct.

218. Dali has no adequate remedy at law to prevent future infringement of the ’338 patent. Dali suffers and continues to suffer irreparable harm as a result of Ericsson’s patent infringement and is, therefore, entitled to injunctive relief to enjoin Ericsson’s wrongful conduct.

ELEVENTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE ’499 PATENT BY VERIZON AND ERICSSON)

219. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

220. On information and belief, Verizon and Ericsson have directly infringed and continue to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the ’499 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon’s LTE and 5G networks which

include Ericsson's Radio Dot System.[111] Ericsson also infringes the '499 patent, in violation of 35 U.S.C. § 271, et seq., by selling, or offering for sale, to Verizon, Ericsson's Radio Dot System.

221. Claim 1 of the '499 patent provides:

> [Preamble] A system for transporting wireless communications, comprising:
>
> [1A] a baseband unit;
>
> [1B] a plurality of signal sources, including at least a first signal source and a second signal source;
>
> [1C] a plurality of remote units, including at least a first remote unit and a second remote unit;
>
> [1D] wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources;
>
> [1E] wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;
>
> [1F] wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit;
>
> [1G] 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;
>
> [1H] 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
>
> [1I] wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units.

[111] *See e.g.*, https://www.fiercewireless.com/private-wireless/at-t-teams-ericsson-for-private-wireless-networks-cbrs-spectrum (last visited January 27, 2022); *see also* https://www.lightreading.com/mobile/small-cells/ericsson-unveils-radio-dot-system-/d/d-id/705843 (last visited January 27, 2022).

222. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, satisfy each and every element recited in at least claim 1 of the '499 patent as stated below.

223. On information and belief, and to the extent the preamble is limiting, Verizon's LTE and 5G networks meet the preamble of claim 1 of the '499 patent because Ericsson's Radio Dot System is a system for transporting wireless communications. For example, according to Ericsson the Radio Dot System "combines centralized baseband and radio units with visually low-impact antennas. Ericsson innovations enable RF signal, power and control over standard shielded LAN cables for cost-effective deployment with minimal business disruption."[112] Moreover, Ericsson's Radio Dot System includes "centralized radios [which] provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[113]

224. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1A] of claim 1 of the '499 patent. Claim element [1A] requires "a baseband unit."

225. Verizon's LTE and 5G networks include a baseband unit. For example, Ericsson's Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU). The DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable."[114]

226. On information and belief, Verizon's LTE and 5G networks, which include

[112] *See e.g.*, https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[113] *Id.*

[114] *Id.*

Ericsson's Radio Dot System, meet claim element [1B] of claim 1 of the '499 patent. Claim element 1[B] requires "a plurality of signal sources, including at least a first signal source and a second signal source."

227. For example, Ericsson's Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[115] Ericsson describes the DU as the "signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[116] The "DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable."[117] In certain circumstances, the "the digital unit is centrally located and the IRUs are distributed."[118] Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a plurality of signal sources, including at least a first signal source and a second signal source.

228. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1C] of claim 1 of the '499 patent. Claim element [1C] requires "a plurality of remote units, including at least a first remote unit and a second remote unit."

229. For example, Ericsson's Radio Dot System includes "Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[119] Further, the IRU "is frequency independent and supports remote software upgrades. It supports and provides power for up to eight Radio Dots,

[115] *Id.*

[116] *Id.*

[117] *Id.*

[118] *Id.*

[119] *Id.*

corresponding to an equivalent of 70,000 square feet of floor space coverage in a typical office building. Individual Dots can be connected with up to 650 feet of LAN cable."[120] Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a plurality of remote units, including at least a first remote unit and a second remote unit.

230. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1D] of claim 1 of the '499 patent. Claim element [1D] requires "wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources."

231. For example, Ericsson's Radio Dot System includes "Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[121] Ericsson's literature further explains that the DU includes a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources:[122]

> The Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area. The DU delivers feature parity and roadmap evolution with the macro network and supports key coordination features such as Carrier Aggregation and Combined Cell, vital for multi-antenna indoor deployments. As new features are added to the Ericsson RAN software, they are automatically available in every radio dot system deployment. The Baseband also provides synchronization and transport security functionality, and aggregates the RDS traffic onto a common backhaul connection.

232. Moreover, Ericsson has announced that the Radio Dot System supports multi-

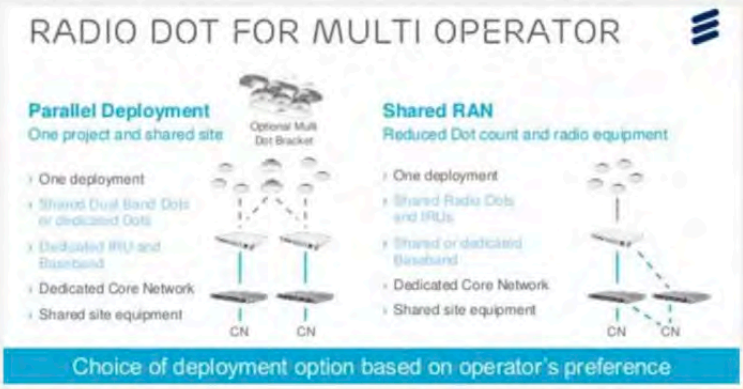
[120] *Id.*

[121] *Id.*

[122] *Id.*

operator service in three ways:[123]

First – parallel deployments with each operator using its own dedicated baseband, IRU and Dots. These Dots can be housed in the same enclosures (the new enclosures known as the multi-dot bracket) to tidy things up a bit.



Parallel or shared RAN options

Secondly – a multi-operator deployment using a shared baseband and IRU, over the same network of distributed radio heads, using MORAN (Multi Operator Radio Access Network) or MOCN (Multi Operator Core Network) network sharing capabilities.

Thirdly, a multi-operator Dot solution where operators provide multiple RF sources to the same Dot system. They do this by feeding baseband capacity to a new access unit from Ericsson, the RF Access Unit (RAU). This new RAU can support three 2×2 MIMO RF inputs, and can be connected on the other side to four IRUs, which then feed the shared Dot remote radioheads.

Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, include a baseband unit, wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources.

233. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1E] of claim 1 of the '499 patent. Claim element [1E] requires "wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source."

[123] https://the-mobile-network.com/2017/08/ericssons-multi-operator-radio-dot-matrix/ (last visited January 27, 2022).

234. For example, as explained above in paragraphs 231-232, Ericsson's Radio Dot System includes a baseband unit, wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source.

235. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1F] of claim 1 of the '499 patent. Claim element [1F] requires "wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit."

236. For example, Ericsson's marketing materials explain that the DU of the Ericsson Radio Dot system "is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[124] These materials further explain that "centralized radios provide pooled capacity and design flexibility, dynamically meeting demand wherever it occurs in real time while increasing spectral and hardware efficiency of the system."[125] On information and belief, the DU is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet element [1F] of claim 1 of the '499 patent.

237. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[G] of claim 1 of the '499 patent. Claim element [1G] requires "wherein the baseband unit is configured to send a digital representation

[124] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 27, 2022).

[125] *Id.*

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."

238. For example, as explained above in paragraph 236, the DU is configured to send digital representations of radio resources to a remote unit. On information and belief, the DU 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. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[G] of claim 1 of the '499 patent.

239. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[H] of claim 1 of the '499 patent. Claim element [1H] requires "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."

240. For example, as explained above in paragraph 236, the DU is configured to send digital representations of radio resources to a remote unit. On information and belief, the DU is configured to send a number of radio resources in the first set of radio resources that is different from a number of radio resources in the second set of radio resources. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[H] of claim 1 of the '499 patent.

241. On information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element 1[I] of claim 1 of the '499 patent. Claim element [1I] requires "wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units."

242. For example, as explained above in paragraph 236, the DU is configured to send

digital representations of radio resources to a remote unit. On information and belief, the DU is also configured to receive digital signals from each of the plurality of remote units. Accordingly, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1I] of claim 1 of the '499 patent.

243. Accordingly, on information and belief, Verizon's LTE and 5G networks, which include Ericsson's Radio Dot System, meet all elements of, and therefore infringe at least claim 1 of the '499 patent.

244. As a result of Verizon and Ericsson's infringement of the '499 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon and Ericsson's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon and Ericsson's wrongful conduct.

245. Dali has no adequate remedy at law to prevent future infringement of the '499 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon and Ericsson's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon and Ericsson's wrongful conduct.

TWELFTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '499 PATENT BY VERIZON AND CORNING)

246. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

247. On information and belief, Verizon and Corning have directly infringed and continue to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the '499 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon's LTE and 5G networks which include Corning's Everon™ 6000 DAS solutions. Corning also infringes the '499 patent, in

violation of 35 U.S.C. § 271, et seq., by selling, or offering for sale, to Verizon, Corning's Everon™ 6000 DAS solutions.

248. Claim 1 of the '499 patent provides:

> [Preamble] A system for transporting wireless communications, comprising:
>
> [1A] a baseband unit;
>
> [1B] a plurality of signal sources, including at least a first signal source and a second signal source;
>
> [1C] a plurality of remote units, including at least a first remote unit and a second remote unit;
>
> [1D] wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources;
>
> [1E] wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;
>
> [1F] wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit;
>
> [1G] 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;
>
> [1H] 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
>
> [1I] wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units.

249. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, satisfy each and every element recited in at least claim 1 of the '499 patent as stated below.

250. On information and belief, and to the extent the preamble is limiting, Verizon's LTE and 5G networks meet the preamble of claim 1 of the '499 patent because Corning's Everon™ 6000 DAS solutions provide a system for transporting wireless communications. For example, according to Corning's publicly available documents, "Corning Everon 6000 DAS is an advanced inbuilding cellular service solution for small, medium and large size venues, supporting a broad range of cellular generations: 3G, 4G and 5G."[126] Corning Everon™ 6000 DAS solutions are "based on digital distribution architecture, advanced digital processing, and channelized implementation, enabling efficient utilization of digital links."[127] Moreover, Corning's Everon™ 6000 DAS solutions include "is highly scalable in terms of supported capacity (number of sectors, frequency bands, channels) and remote units (coverage), and can be easily configured to support a large variety of deployment scenarios including single and multi-building ('Campus') network topologies."[128] Accordingly, and to the extent the preamble is limiting, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, a system for transporting wireless communications.

251. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1A] of claim 1 of the '499 patent. Claim element [1A] requires "a baseband unit."

252. On information and belief, Verizon's LTE and 5G networks include a baseband unit. For example, Corning's Everon™ 6000 DAS solutions include "Radio Interface frames"

[126] Everon User Manual at 1.

[127] *Id.*

[128] *Id.*

that "are modular chassis used for interface between the base stations and the Everon 6000."[129] Corning's publicly available documents explain that "[a] system may be comprised of two types of Chassis: IHU (Integrated Head-end Unit) and HEU (Head End Unit). The IHU can interface up to 8 RF duplexed ports (or 16 UL/DL simplex ports) and can be expanded by an HEU radio interface frame which provides interface capabilities for additional 12 RF duplexed ports (or 24 UL/DL simplex ports)."[130] Corning's Everon™ 6000 DAS solutions also include a "DRU - Digital Routing Unit" that is the "Everon 6000 central Hub and Distribution element."[131] "The DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[132]

253. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1B] of claim 1 of the '499 patent. Claim element [1B] requires "a plurality of signal sources, including at least a first signal source and a second signal source."

254. For example, Corning's publicly available documents explain that Everon™ 6000 DAS solutions "[s]upport[] multi-operator, multi-band, multi-technology services over a single infrastructure. Supports single and multi-building ('campus') network architectures."[133] Further, "The DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing

[129] *Id.* at 3.

[130] *Id.*

[131] *Id.* at 4.

[132] *Id.*

[133] *Id.* at 1.

to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[134] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, include a plurality of signal sources, including at least a first signal source and a second signal source.

255. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1C] of claim 1 of the '499 patent. Claim element [1C] requires "a plurality of remote units, including at least a first remote unit and a second remote unit."

256. For example, due to its modular design and configuration, Corning's Everon™ 6000 DAS solutions are "highly scalable in terms of supported capacity (number of sectors, frequency bands, channels) and remote units (coverage), and can be easily configured to support a large variety of deployment scenarios including single and multi-building ('Campus') network topologies."[135] Further, Corning's Everon™ 6000 DAS solutions "offer[] multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per band to 43 dBm per band."[136] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, include a plurality of remote units, including at least a first remote unit and a second remote unit.

257. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1D] of claim 1 of the '499 patent.

[134] *Id.* at 4.
[135] *Id.* at 1

[136] *Id.*

Claim element [1D] requires "wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources."

258. For example, Corning's Everon™ 6000 DAS solutions provide a "Multi-X system" which "[s]upports multi-operator, multi-band, multi-technology services over a single infrastructure."[137] Moreover, "[t]he DRU interfaces between the DCM modules and the IHU Radio Interface Frames, allowing to receive the operators service signals in CPRI format, and to route these signals to the remote antenna units."[138] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, provide a baseband unit, wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources.

259. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1E] of claim 1 of the '499 patent. Claim element [1E] requires "wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source."

260. For example, as explained above in paragraphs 251-258, Corning's Everon™ 6000 DAS include a baseband unit, wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source. Further, Corning's Everon™ 6000 DAS solutions provide "[a]dvanced network configuration and management capabilities [that] enable on-site as well as remote end-to-end configuration, system diagnostics, maintenance and support operators NOC connectivity."[139] Accordingly, Verizon's LTE and 5G

[137] *Id.*

[138] *Id.* at 4.

[139] *Id.* at 1.

networks, which include Corning's Everon™ 6000 DAS solutions, include a baseband unit, wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source.

261. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1F] of claim 1 of the '499 patent. Claim element [1F] requires "wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit."

262. As explained above in paragraphs 251-258, Corning's Everon™ 6000 DAS solutions include a baseband unit, wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source. Moreover, Corning's Everon™ 6000 DAS solutions include "Radio Interface frames," which are "modular chassis used for interface between the base stations and the Everon 6000."[140] The "DCM (Digital Conversion Module)" is a module that is used with Radio Interface frames.[141] The DCM "[p]rovides RF to CPRI (Downlink) and CPRI to RF (Uplink) conversion, where the well-known CPRI (Common Public Radio Interface) standard is used for representing the RF signals."[142] Corning's publicly available documents further explain that "Corning Everon 6000 DAS is based on digital distribution architecture, advanced digital processing, and channelized implementation, enabling efficient utilization of digital links."[143] On information and belief, the Corning's

[140] *Id.* at 3.

[141] *Id.*

[142] *Id.*

[143] *Id.* at 1.

Everon™ 6000 DAS solutions are configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit. Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet element [1F] of claim 1 of the '499 patent.

263. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[G] of claim 1 of the '499 patent. Claim element 1[G] requires "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."

264. For example, as explained above in paragraph 262, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of a first set of radio resources to a remote unit. Further, Corning's publicly available documents explain that the Everon™ 6000 DAS solutions "[e]nable[] advanced capacity and coverage management through flexible routing configuration management."[144] On information and belief, Corning's Everon™ 6000 DAS solutions are further 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. Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[G] of claim 1 of the '499 patent.

265. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[H] of claim 1 of the '499 patent.

[144] *Id.*

Claim element [1H] requires "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."

266. For example, as explained above in paragraph 262, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of radio resources to a remote unit. On information and belief, Corning's Everon™ 6000 DAS solutions are also configured to send a number of radio resources in a first set of radio resources that is different from a number of radio resources in a second set of radio resources. Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[H] of claim 1 of the '499 patent.

267. On information and belief, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element 1[I] of claim 1 of the '499 patent. Claim element [1I] requires "wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units."

268. For example, as explained above in paragraph 262, Corning's Everon™ 6000 DAS solutions are configured to send digital representations of radio resources to a remote unit. On information and belief, Corning's Everon™ 6000 DAS solutions are also configured to receive digital signals from each of the plurality of remote units. Further, Corning's Everon™ 6000 DAS solutions offer "multiple types of digital remote units, supporting a variety of frequency band combinations, SISO/MIMO configurations, with different power levels ranging from 20 dBm per band to 43 dBm per band."[145] Accordingly, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet claim element [1I] of claim 1 of the '499 patent.

[145] *Id.* at 1.

269. As a result, Verizon's LTE and 5G networks, which include Corning's Everon™ 6000 DAS solutions, meet all claim elements of claim 1 of the '499 patent and, therefore, infringe at least claim 1 of the '499 patent.

270. As a result of Verizon and Corning's infringement of the '499 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon and Corning's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon and Corning's wrongful conduct.

271. Dali has no adequate remedy at law to prevent future infringement of the '499 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon and Corning's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon and Corning's wrongful conduct.

THIRTEENTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '499 PATENT BY VERIZON AND COMMSCOPE)

272. Dali re-alleges and incorporates by reference all the foregoing paragraphs.

273. On information and belief, Verizon and CommScope have directly infringed and continue to directly infringe either literally or under the doctrine of equivalents, one or more claims, including at least claim 1 of the '499 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using Verizon's LTE and 5G networks which include solutions for in-building wireless coverage, such as CommScope's ION®-E/ERA platform.[146] CommScope also infringes the '499 patent, in violation of 35 U.S.C. § 271, et seq., by selling, or offering for sale, to Verizon, CommScope's ION®-E/ERA platform.

274. Claim 1 of the '499 patent provides:

[146] *See e.g.*, https://www.commscope.com/press-releases/2015/verizon-wireless-vets-ion-e-enterprise-wireless-solution-from-commscope (last visited January 27, 2022).

> [Preamble] A system for transporting wireless communications, comprising:
>
> [1A] a baseband unit;
>
> [1B] a plurality of signal sources, including at least a first signal source and a second signal source;
>
> [1C] a plurality of remote units, including at least a first remote unit and a second remote unit;
>
> [1D] wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources;
>
> [1E] wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source;
>
> [1F] wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit;
>
> [1G] 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;
>
> [1H] 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
>
> [1I] wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units.

275. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, satisfy each and every element recited in at least claim 1 of the '499 patent as stated below.

276. On information and belief, and to the extent the preamble is limiting, Verizon's LTE and 5G networks meet the preamble of claim 1 of the '499 patent because CommScope's ION®-E/ERA platform is a system for transporting wireless communications. For example,

according to CommScope the "all-digital ERA distributed antenna system makes in-building wireless simpler and more economical. Operating on standard IT infrastructure—Category 6A and fiber—these solutions allow operators, neutral hosts and enterprises to provide high capacity with 'five bars' of in-building coverage."[147] Moreover, "ERA's all-digital, frequency-agnostic system architecture ensures that the system will be able to support new services in existing and new bands including CBRS and sub-6 GHz 5G NR. ERA's multiplexed fiber fronthaul can also be shared with other communication services. And as usage patterns change, capacity can be re-allocated through a web-based drag-and-drop software GUI rather than physical re-wiring."[148]

277. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1A] of claim 1 of the '499 patent.

278. Verizon's LTE and 5G networks include a baseband unit. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[149] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[150] Further, CommScope explains that the ION®-E/ERA platform "[t]ake[s] advantage of an all-digital CPRI baseband interface that eliminates the need for analog-to-digital conversions, further reducing head-end size and power requirements."[151] Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, include a baseband unit.

279. On information and belief, Verizon's LTE and 5G networks, which include

[147] https://www.commscope.com/product-type/in-building-cellular-systems/distributed-antenna-systems-das/era/ (last visited January 27, 2022).

[148] *Id.*

[149] *Id.*

[150] *Id.*

[151] *Id.*

CommScope's ION®-E/ERA platform, meet claim element [1B] of claim 1 of the '499 patent.

280. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[152] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[153] Further, CommScope explains that the ION®-E/ERA platform "[t]ake[s] advantage of an all-digital CPRI baseband interface that eliminates the need for analog-to-digital conversions, further reducing head-end size and power requirements."[154] CommScope also explains that the ION® E/ERA platform includes a "central area node (CAN)," which "digitizes baseband RF signals, combines signals from different operators and distributes them throughout a building or campus."[155] Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, include a plurality of signal sources, including at least a first signal source and a second signal source.

281. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1C] of claim 1 of the '499 patent.

282. For example, CommScope's ION®-E/ERA platform includes "[a] range of remote access points that convert the digital signal back to radio frequency (RF) for over-the-air transmission."[156] These remote units include "the carrier access point (CAP)" and "the universal access point (UAP)."[157] Accordingly, Verizon's LTE and 5G networks, which include

[152] *Id.*

[153] *Id.*

[154] *Id.*

[155] *Id.*

[156] *Id.*

[157] *Id.*

CommScope's ION®-E/ERA platform, include a plurality of remote units, including at least a first remote unit and a second remote unit.

283. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1D] of claim 1 of the '499 patent.

284. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[158] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[159] Further, CommScope explains that the ION®-E/ERA platform "[t]ake[s] advantage of an all-digital CPRI baseband interface that eliminates the need for analog-to-digital conversions, further reducing head-end size and power requirements."[160] CommScope also explains that the ION® E/ERA platform includes a "central area node (CAN)," which "digitizes baseband RF signals, combines signals from different operators and distributes them throughout a building or campus."[161] Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, include a baseband unit, wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources.

285. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1E] of claim 1 of the '499 patent.

286. For example, as explained above in paragraphs 283-284, CommScope's ION®-E/ERA platform includes a baseband unit, wherein the baseband unit comprises a plurality of interfaces to communicatively couple the baseband unit to the plurality of signal sources. On

[158] *Id.*

[159] *Id.*

[160] *Id.*

[161] *Id.*

information and belief, the baseband unit is configured to receive radio resources from the plurality of signal sources. Accordingly, CommScope's ION®-E/ERA platform includes a baseband unit, wherein the baseband unit is configured to receive a plurality of radio resources from the first signal source and the second signal source.

287. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1F] of claim 1 of the '499 patent.

288. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[162] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[163] Further, CommScope explains that the ION®-E/ERA platform "[t]ake[s] advantage of an all-digital CPRI baseband interface that eliminates the need for analog-to-digital conversions, further reducing head-end size and power requirements."[164] CommScope also explains that the ION® E/ERA platform includes a "central area node (CAN)," which "digitizes baseband RF signals, combines signals from different operators and distributes them throughout a building or campus."[165]

289. By way of further example, CommScope's marketing materials describe how radio resources can be assigned to remote units when the majority of users move from one place, like a university classroom, to a second place, like university residences:[166]

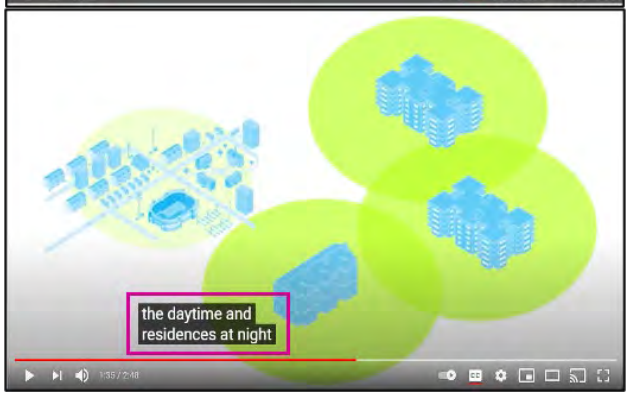
[162] *Id.*

[163] *Id.*

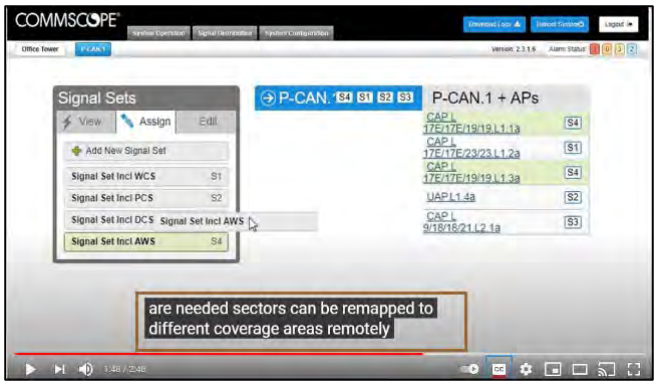
[164] *Id.*

[165] *Id.*

[166] *See*, "CommScope Era™ C-RAN Antenna System," https://www.youtube.com/watch?v=uBRDL7a8_8g (last visited January 27, 2022) (annotation added).



Moreover, the same marketing materials describe how sectors can be remapped where radio resources are needed most:[167]



[167] *Id.* (annotation added).

Accordingly, CommScope's ION®-E/ERA platform includes a baseband unit, wherein the baseband unit is configured to send a digital representation of a first set of radio resources to the first remote unit at a first point in time, the first set of radio resources for transmission at an antenna of the first remote unit.

290. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element 1[G] of claim 1 of the '499 patent.

291. For example, as explained above in paragraphs 288-289, CommScope's ION®-E/ERA platform is configured to send digital representations of radio resources to a remote unit. On information and belief, CommScope's ION®-E/ERA platform 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. Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element 1[G] of claim 1 of the '499 patent.

292. On information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element 1[H] of claim 1 of the '499 patent.

293. For example, as explained above in paragraphs 288-291, CommScope's ION®-E/ERA platform is configured to send a digital representation of a first and second set of radio resources to a remote unit. On information and belief, CommScope's ION®-E/ERA platform is configured to send a number of radio resources in the first set of radio resources that is different from a number of radio resources in the second set of radio resources. Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element 1[H] of claim 1 of the '499 patent.

294. On information and belief, Verizon's LTE and 5G networks, which include

CommScope's ION®-E/ERA platform, meet claim element 1[I] of claim 1 of the '499 patent.

295. For example, as explained above in paragraphs 288-289, CommScope's ION®-E/ERA platform is configured to send digital representations of radio resources to a remote unit. On information and belief, CommScope's ION®-E/ERA platform is also configured to receive digital signals from each of the plurality of remote units. Accordingly, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1I] of claim 1 of the '499 patent.

296. Accordingly, on information and belief, Verizon's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet all elements of, and therefore infringe at least claim 1 of the '499 patent.

297. As a result of Verizon and CommScope's infringement of the '499 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Verizon and CommScope's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon and CommScope's wrongful conduct.

298. Dali has no adequate remedy at law to prevent future infringement of the '499 patent. Dali suffers and continues to suffer irreparable harm as a result of Verizon and CommScope's patent infringement and is, therefore, entitled to injunctive relief to enjoin Verizon and CommScope's wrongful conduct.

PRAYER FOR RELIEF

WHEREFORE, Dali respectfully requests judgment against Defendants as follows:

A. that this Court adjudge that Verizon and CommScope, to the extent not enjoined, infringe the '232 patent and the '499 patent;

B. that the Court enter an injunction prohibiting Verizon, CommScope, and their agents, officers, servants, employees and all persons in active concert or participation with Verizon or CommScope from deploying, operating, maintaining, testing, and using CommScope's ION®-E/ERA products in Verizon's LTE and 5G Networks, and from otherwise infringing any of the Patents-in-Suit;

D. that this Court adjudge that Verizon and Ericsson, to the extent not enjoined, infringe the '232 patent, the '499 patent, the '343 patent, and the '338 patent;

E. that the Court enter an injunction prohibiting Verizon, Ericsson, and their agents, officers, servants, employees and all persons in active concert or participation with Verizon or Ericsson from deploying, operating, maintaining, testing, and using Ericsson's Radio Dot System in Verizon's LTE and 5G Networks, and from otherwise infringing any of the Patents-in-Suit;

G. that this Court adjudge that Verizon and Corning, to the extent not enjoined, infringe the '232 patent, the '499 patent, and the '343 patent;

H. that the Court enter an injunction prohibiting Verizon, Corning, and their agents, officers, servants, employees and all persons in active concert or participation with Verizon or Corning from deploying, operating, maintaining, testing, and using Corning's Everon™ 6000 DAS solutions in Verizon's LTE and 5G Networks, and from otherwise infringing any of the Patents-in-Suit;

G. that this Court ascertain and award Dali damages under 35 U.S.C. § 284 sufficient to compensate for Defendants' infringement, including but not limited to infringement occurring before the filing of this lawsuit;

H. that this Court ascertain and award Dali any post-judgment ongoing royalties under 35 U.S.C. § 284 as may be appropriate;

I. that this Court award Dali any applicable pre-judgment and post-judgment interest;

J. that this Court award Dali such other relief at law or in equity as the Court deems just and proper.

JURY DEMAND

Dali requests that all claims and causes of action raised in this Complaint against Defendants be tried to a jury to the fullest extent possible.

Date: January 27, 2022

Respectfully submitted,

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