IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

DALI WIRELESS, INC., Plaintiff, v. AT&T CORP., AT&T COMMUNICATIONS LLC, AT&T MOBILITY, AT&T MOBILITY II LLC, AT&T SERVICES INC., ERICSSON INC., TELEFONAKTIEBOLAGET LM ERICSSON, COMMSCOPE HOLDING COMPANY, INC., COMMSCOPE INC., and COMMSCOPE TECHNOLOGIES LLC, Defendants.	)	Case No. 2:22-cv-12 **JURY TRIAL DEMANDED**

COMPLAINT

Plaintiff Dali Wireless, Inc. ("Dali") files this Complaint against Defendants AT&T Corp., AT&T Communications LLC, AT&T Mobility, AT&T Mobility II, AT&T Services Inc. (collectively, "AT&T"), Ericsson Inc., Telefonaktiebolaget LM Ericsson (collectively, "Ericsson"), CommScope Holding Company, Inc., CommScope, Inc., and CommScope Technologies LLC (collectively, "CommScope").

NATURE OF THE CASE

1. This is an action for the infringement of four United States Patents: (1) United States Patent No. 8,682,338 (the "'338 patent"), (2) United States Patent No. 9,197,358 (the "'358 patent"), (3) United States Patent No. 11,026,232 (the "'232 patent"), and (4) United States Patent No. 10,334,499 (the "'499 patent"), collectively referred to as the "Patents-in-Suit."

2. AT&T and CommScope have been infringing the '358 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G

networks which include equipment relating to small cell wireless solutions, such as CommScope's OneCell product.

3. AT&T and Ericsson have been infringing the '338 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell wireless solutions such as Ericsson's Radio Dot System.

4. AT&T and CommScope have been infringing the '232 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell wireless solutions such as CommScope's ION®-E/ERA platform.[1]

5. AT&T and Ericsson have been infringing the '232 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell wireless solutions such as Ericsson's Radio Dot System.

6. AT&T and Ericsson have been infringing the '499 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell wireless solutions such as Ericsson's Radio Dot System.

7. AT&T and CommScope have been infringing the '499 patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell wireless solutions such as CommScope's ION®-E/ERA platform.

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[1] 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 5, 2022).

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

THE PARTIES

9. 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.

10. 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 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 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.

11. Defendant AT&T Corp. is a corporation organized and existing under the laws of the State of New York, with a principal place of business at One AT&T Way, Bedminster, New Jersey, 07921-0752.

12. Defendant AT&T Communications, LLC, is a limited liability company organized and existing under the laws of the State of Delaware, with a principal place of business at 295 North Maple Ave, Basking Ridge, NJ 07920.

13. Defendant AT&T Mobility, LLC, is a limited liability company organized and existing under the laws of the State of Delaware, with a principal place of business at 1025 Lenox Park Boulevard NE, Atlanta, Georgia 30319.

14. Defendant AT&T Mobility II, LLC, is a corporation established under the laws of the State of Delaware, with its principal place of business at 1025 Lenox Park Blvd Ne Rm A325, Brookhaven, Georgia 30319.

15. Defendant AT&T Services, Inc. is a corporation organized and existing under the laws of the State of Delaware, with a principal place of business at 175 East Houston Street, San Antonio, Texas 78205

16. On information and belief, AT&T's operations in the Eastern District of Texas are substantial and varied.

17. AT&T operates one or more wireless telecommunications networks to provide wireless telecommunications services, including within the Eastern District of Texas, under brand names including but not limited to "AT&T."

18. AT&T advertises that its 4G LTE and 5G Nationwide networks are available within the Eastern District of Texas.

19. AT&T maintains multiple facilities in this judicial district. For example, there are numerous AT&T retail stores within this judicial district, including AT&T Stores at 190 E Stacy Rd Suite 214, Allen, TX 75002; 1103 E Tyler St, Athens, TX 75751; 4460 Dowlen Rd, Beaumont, TX 77706; 351 TX-243 Suite 200, Canton, TX 75103; 2520 W University Dr Suite 1180, Denton, TX 76201; 3551 Preston Rd, Frisco, TX 75034; 1214 US-259 Suite 102, Kilgore, TX 75662; 318 N Main St Suite B, Lindale, TX 75771; 109 W Loop 281, Longview, TX 75605; 1712 E Grand Ave, Marshall, TX 75670; 3402 North St, Nacogdoches, TX 75965; 1335 S Broadway St Suite

10, Sulphur Springs, TX 75482; 5112 Summerhill Rd, Texarkana, TX 75503; and 4757 S Broadway Ave, Tyler, TX 75703. These stores are physical places within the district and are AT&T's regular and established places of business.

20. AT&T further maintains a foundry within this judicial district in Plano, Texas, "encompassing all aspects of an industry environment – from manufacturing to distribution to retail" and enabling AT&T's customers "to test potential 5G solutions."[2] On information and belief, AT&T uses this foundry to design, test, use, and sell telecommunications services that infringe the Patents-in-Suit. This foundry is a physical place within the district and is AT&T's regular and established place of business.

21. AT&T advertises that it is currently seeking to hire a significant number of positions in Plano, Texas including, for example, "Senior-System Engineer," "Principal Member of Technical Staff- Switching Network Architecture," "Senior-Software Engineer," and "Principal-Network Support."[3]

22. By registering to conduct business in Texas and by maintaining facilities in at least the cities of Allen, Athens, Beaumont, Canton, Denton, Frisco, Kilgore, Lindale, Longview, Marshall, Nacogdoches, Plano, Sulphur Springs, Texarkana, and Tyler, AT&T has multiple regular and established places of business within the Eastern District of Texas.

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

24. Telefonaktiebolaget LM Ericsson, the parent corporation of Ericsson Inc., is a

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[2] AT&T Foundry Launches Innovation Space for Vertical Industries, Sept. 20, 2018, *available at* https://about.att.com/story/2018/plano_foundry.html (last visited January 5, 2022).

[3] https://www.att.jobs/search-jobs/Plano, TX/117/4/6252001-4736286-4682500-4719457/33x01984/-96x69889/50/2 (last visited January 5, 2022).

company organized under the laws of Sweden with its principal place of business at Torshamsgatan 23, Kista, 164 83 Stockholm, Sweden.

25. Ericsson Inc. maintains a significant physical presence in this judicial district. Ericsson Inc.'s headquarters is located at 6300 Legacy Drive, Plano, Texas 75024, which is within this judicial district. On information and belief, Ericsson Inc. is wholly-owned and controlled by Telefonaktiebolaget LM Ericsson and acts as the agent for Telefonaktiebolaget LM Ericsson in making sales, servicing equipment, and otherwise carrying out the operations of Telefonaktiebolaget LM Ericsson in North America. Telefonaktiebolaget LM Ericsson and/or its affiliates manufacture wireless telecommunications equipment and then arrange with Ericsson Inc. to import those products into the United States for installation in AT&T's network. Upon information and belief, representatives of Telefonaktiebolaget LM Ericsson regularly visit this district in their supervisory capacity over Ericsson Inc. At all times relevant hereto, Ericsson Inc. was acting as the agent of Telefonaktiebolaget LM Ericsson.

26. Defendant 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.

27. Defendant 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 a wholly owned subsidiary of CommScope Holding Company.

28. Defendant CommScope Inc. is a corporation organized and existing under the laws of the State of Delaware, and can be served through its registered agent, United Agent Group Inc.,

3411 Silverside Road Tatnall Building #104, Wilmington, DE 19810. On information and belief, CommScope Inc. is a wholly owned subsidiary of CommScope Holding Company.

29. 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.

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 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. CommScope has admitted in this Court that it "has a regular and established physical place of business in the Eastern District of Texas."[4] CommScope Inc. maintains a regular and established place of business at 2601 Telecom Parkway, Richardson, Texas 75082, located within this District, that contains employees and/or other individuals that the CommScope Defendants direct or control. This office is a physical place within the district and is CommScope's regular and established place of business.

32. On information and belief, CommScope also has major customers with locations in Texas and this District, including, for example, AT&T.

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[4] *See SIPCO, LLC v. CommScope Holding Co.*, No. 5:20-CV-00168-RWS-CMC, ECF No. 48 (Amended Complaint) ¶ 24 (E.D. Tex. May 21, 2021) ("Plaintiff is informed and believes, and on that basis alleges, that CommScope has a regular and established physical place of business in the Eastern District of Texas, including at 2601 Telecom Parkway, Richardson Texas 70852 . . . ."); *id.* ECF No. 50 (CommScope's Answer) ¶ 24 (E.D. Tex. June 7, 2021) ("Admitted."); *see also Barkan Wireless IP Holdings, L.P. v. Sprint Corp.*, No. 2:19-CV-00336-JRG, ECF No. 46 (Answer to Amended Complaint) ¶ 16 (E.D. Tex. Jan. 21, 2020) ("CommScope admits that it has a regular and established place of business in this judicial district at 2601 Telecom Parkway, Richardson, Texas 70852.").

JURISDICTION AND VENUE

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

34. This Court has original subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

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

36. AT&T 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. AT&T's infringement has caused substantial injury to Dali, including within this District.

37. 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.

38. 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.

39. 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. Moreover, CommScope has also acceded to

this Court's jurisdiction in prior patent cases.[5]

40. 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.

41. Joinder of AT&T, Ericsson, and CommScope in this action is proper under 35 U.S.C. § 299(a). Dali's right to relief against AT&T, Ericsson, and CommScope 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 AT&T's Long Term Evolution ("LTE") and 5G networks. No claim is made in this complaint against Ericsson or CommScope in relation to products or services sold to other wireless carriers.

42. 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). AT&T, Ericsson, and CommScope 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

43. The '338 patent is titled "Remotely Reconfigurable Distributed Antenna System

[5] *See, e.g.*, *SIPCO, LLC v. CommScope Holding Co.*, No. 5:20-CV-00168-RWS-CMC, ECF No. 50 (Answer to First Amended Complaint) ¶ 24 (E.D. Tex. June 7, 2021) ("Defendants, for purposes of this case only, will not challenge personal jurisdiction in the Eastern District of Texas."); *see also, e.g., Barkan Wireless IP Holdings, L.P. v. Sprint Corp.*, No. 2:19-CV-00336-JRG, ECF No. 46 (Answer to Amended Complaint) ¶ 14 (E.D. Tex. Jan. 21, 2020) ("For the purposes of this action only, CommScope does not challenge the Court's personal jurisdiction over CommScope.").

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.

44. 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.

45. The '338 patent is valid and enforceable under the United States Patent Laws.

46. The '358 patent is titled "Method and System for Soft Frequency Reuse in a Distributed Antenna System" and was issued by the United States Patent and Trademark Office to inventors Seyed Amin Hejazi and Shawn Patrick Stapleton on November 24, 2015, and assigned to Dali.

47. Dali is the owner of all right, title, and interest in and to the '358 patent with the full and exclusive right to bring suit to enforce the '358 patent.

48. The '358 patent is valid and enforceable under the United States Patent Laws.

49. 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.

50. 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.

51. The '232 patent is valid and enforceable under the United States Patent Laws.

52. 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.

53. 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.

54. The ’499 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 ’358 PATENT BY AT&T AND COMMSCOPE)

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

56. On information and belief, AT&T 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 7, of the ’358 patent in violation of 35 U.S.C. §§ 271, et seq., by deploying, operating, maintaining, testing, and using AT&T’s LTE and 5G networks which include equipment relating to small cell wireless solutions, such as, by way of example, CommScope’s OneCell product.[6] According to the “OneCell Cloud-RAN small cell system” product brochure, “the OneCell baseband controller and multiple radio points form a virtualized ‘super cell’ that covers the entire area” which eliminates handovers and boundary interference, resulting in “consistent, superior LT performance throughout enterprises and public venues at a dramatically lower cost of deployment than available alternatives.”[7]

57. Claim 7 of the ’358 patent provides:

> [Preamble] A method of distributing communications frequencies, the method providing:
>
> [7A] providing a set of communications units,

[6] *See* https://www.fiercewireless.com/tech/commscope-at-t-to-demo-o-ran-onap-at-digital-forum, last visited Oct. 14, 2021; *see also* https://www.commscope.com/press-releases/2018/att-to-begin-testing-5g-ready-cbrs-equipment/ (last visited January 5, 2022).

[7] *See* OneCell Cloud-RAN Small Cell System, available at https://www.anixter.com/content/dam/Suppliers/CommScope/Documents/OneCell_Cloud_RAN_Brochure_BR-110160-EN.pdf (last accessed January 5, 2022).

> [7B] transmitting and receiving, from a first communications unit of the set of communications units
>
> [7B1] a first set of frequencies characterized by a first frequency band and a first geographic footprint; and
>
> [7B2] a second set of frequencies characterized by a second frequency band different from the first frequency band and a second geographic footprint larger than and at least partially surrounding the first geographic footprint; and
>
> [7C] transmitting, and receiving, from a second communications unit of the set of communications units:
>
> [7C1] a third set of frequencies including one or more frequencies in the first frequency band and a third geographical footprint; and
>
> [7C2] a fourth set of frequencies including one or more frequencies in a third frequency band and a fourth geographical footprint larger than and at least partially surrounding the third geographical footprint.

58. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, satisfy each and every limitation of at least claim 7 of the '358 patent as stated below.

59. On information and belief, and to the extent the preamble of claim 7 is determined to be limiting, AT&T's LTE and 5G networks provide "[a] method of distributing communication frequencies." For example, CommScope's OneCell system is a "Small Cell Solution" "using a unique C-RAN architecture [that] connects multiple distributed radio points."[8]

[8] *See, e.g.*, https://netechnologypartners.com/commscopes-onecell-product-ideal-small-cell-solution-for-5g-migration/ (last visited on January 5, 2022).

CommScope's ONECELL® Product Ideal Small Cell Solution for 5G Migration

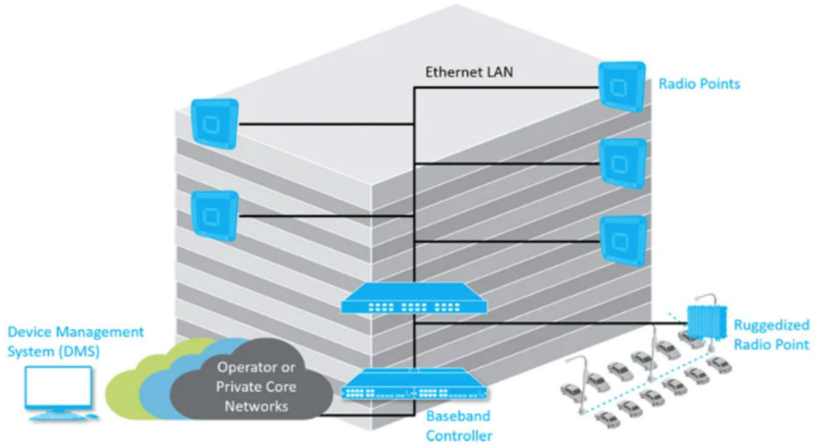
ONECELL® is CommScope's award-winning indoor small cell solution. It utilizes a Cloud RAN (C-RAN) architecture to create a single cell across multiple radios for improved performance and simplified deployment. ONECELL® is designed to service medium-sized to large buildings with high capacity and excellent performance.

CommScope's ONECELL® illustrates how small cells are evolving to help operators better support wireless users indoors. Using a unique C-RAN architecture, ONECELL® connects multiple distributed radio points via standard Ethernet cabling to a centralized baseband controller.

LTE scheduling takes place in the baseband controller, creating a single physical cell ID across all radio points. This eliminates border interference and the need for handovers within the coverage area.

ONECELL® also employs sophisticated coordination across radio points, enabling simultaneous re-use of physical resource blocks (PRB) in different parts of the building. This increases spectral efficiency and system capacity.

CommScope's OneCell website explains that the OneCell Radio Points transmit and receive radio frequency (RF) signals supporting up to four frequency bands.[9] For example:



ONECELL system description

Baseband controller

The Baseband Controller the system signal source, performing baseband processing and scheduling across all Radio Points. Unlike traditional large macro base stations, the ONECELL baseband controller supports up to 1,024 simultaneous users in half of a standard 1U chassis.

Radio Points

Radio points transmit and receive radio frequency (RF) signals over the air. Edge intelligence in the radio points enables advanced features such as cell virtualization, enhanced signal quality and user location awareness for emergency services. ONECELL offers two radio point solutions, both available in indoor and rugged form factors.

RP5000 Series is a multi-carrier, multi-channel solution that supports up to four frequency bands simultaneously. It incorporates programmable logic, allowing operators to convert existing LTE bands to 5G NR via software, and support higher 5G frequencies with an RF module upgrade.

RP2000 Series is a highly compact, single-carrier, single-frequency solution. The frequency is software-selectable, enabling the operator to change frequency bands without touching the hardware.

[9] *See, e.g.*, https://www.commscope.com/product-type/in-building-cellular-systems/small-cells/onecell/ (last visited on January 5, 2022).

Thus, to the extent the preamble of claim 7 is limiting, AT&T's LTE and 5G networks, which include CommScope's OneCell product, satisfy the preamble of claim 7.

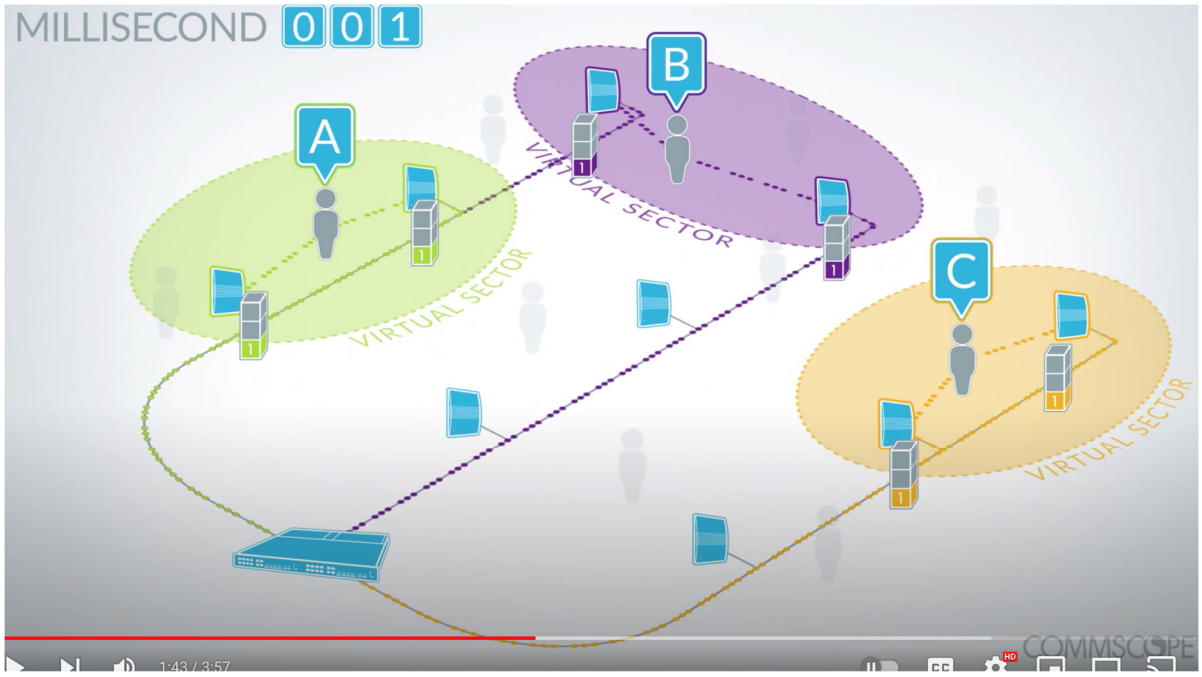
60. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7A] of claim 7 of the '358 patent

61. On information and belief, AT&T's LTE and 5G networks provide a set of communication units. For example, CommScope's OneCell website describes how the OneCell system includes a set of "Radio Points" which are remote communication units. Therefore, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element 7[A] of claim 7.

62. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7B] of claim 7 of the '358 patent.

63. On information and belief, AT&T's LTE and 5G networks transmit and receive, from a first communications unit of the set of communications units. For example, CommScope's OneCell system architecture includes several distributed Radio Points or communication units in which the "Radio points transmit and receive radio frequency (RF) signals over the air." As shown below in a CommScope video explaining the Cell Virtualization feature of the OneCell system, a first Radio Point, i.e., first communication unit, is illustrated adjacent and to the right of "user A."[10] As such, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element [7B] of claim 7 of the '358 patent.

[10] *See, e.g.*, https://www.youtube.com/watch?v=vEsHetvkOVA (last visited on January 5, 2022).



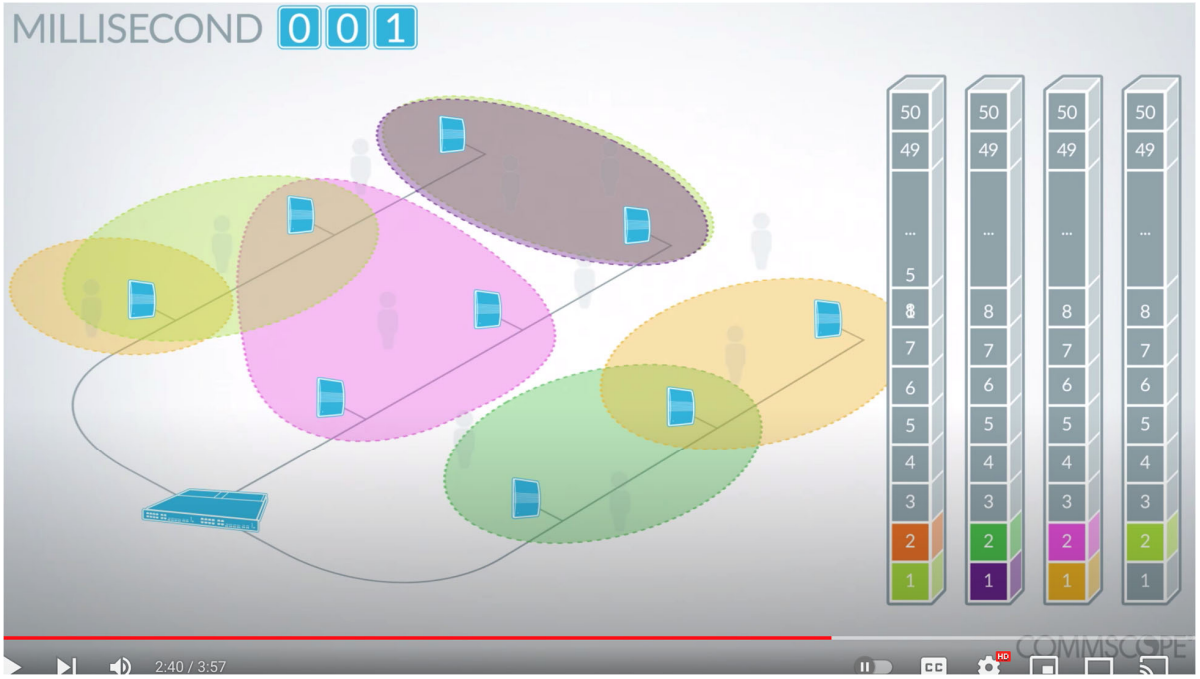
64. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7B1] of claim 7 of the '358 patent.

65. On information and belief, AT&T's LTE and 5G networks transmit and receive, from a first communications unit of the set of communications units, a first set of frequencies characterized by a first frequency band and a first geographic footprint. For example, as shown above in the OneCell Cell Virtualization video, the first Radio Point (adjacent to the right of "user A") transmits and receives on Physical Resource Block 1 or "PRB 1," which is a first set of frequencies characterized by a first frequency band and a first geographic footprint, which is depicted in the area shaded in light green. As such, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meets element [7B1] of claim 7 of the '358 patent.

66. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7B2] of claim 7 of the '358 patent.

67. On information and belief, AT&T's LTE and 5G networks transmit and receive, from a first communications unit of the set of communications units, a second set of frequencies

characterized by a second frequency band different from the first frequency band and a second geographic footprint larger than and at least partially surrounding the first geographic footprint. For example, the CommScope Cell Virtualization video shows that the first Radio Point also transmits and receives on Physical Resource Block 2 or "PRB 2," which is a second set of frequencies characterized by a second frequency band and a second geographic footprint, which is depicted by the area shaded in pink:[11]



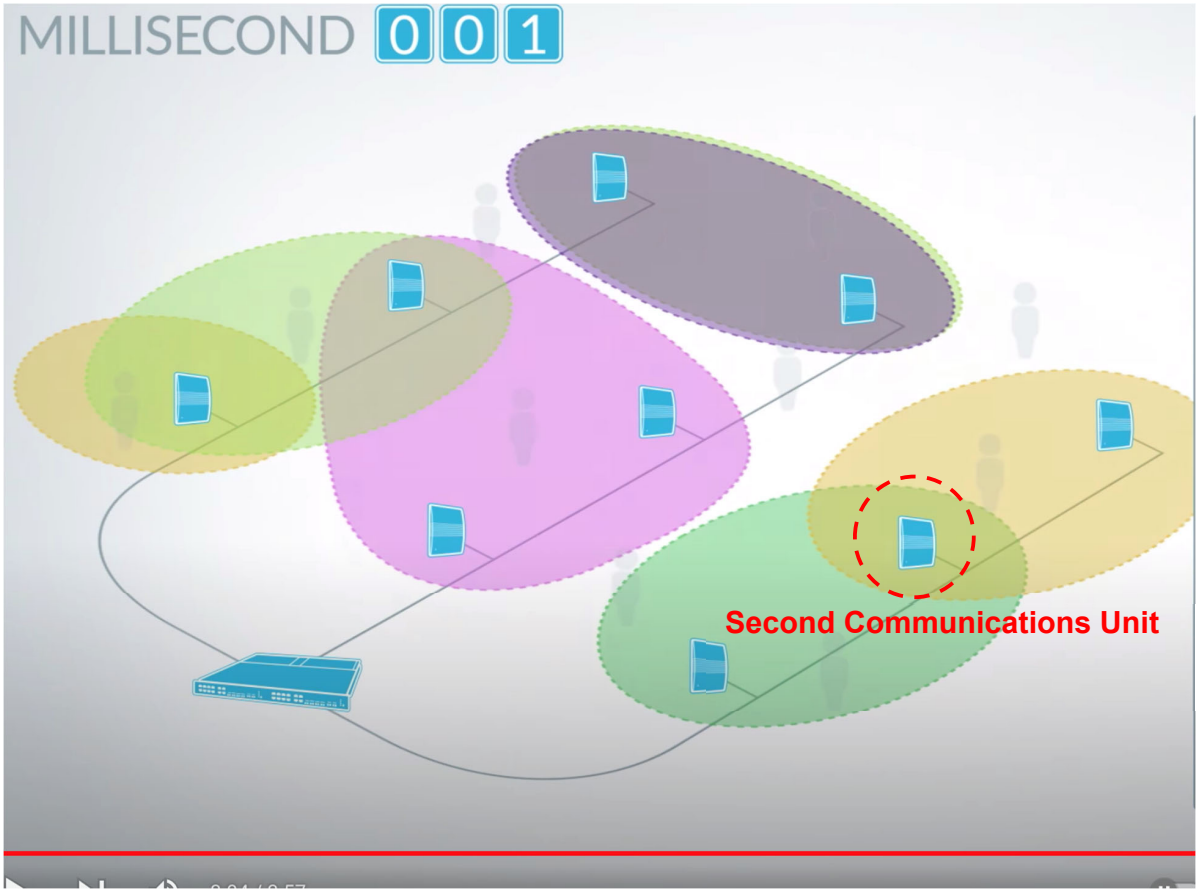
This second area shaded in pink is larger than and at least partially surrounds the first area shaded in light green as shown below. As such, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element [7B2] of claim 7 of the '358 patent.

68. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7C] of claim 7 of the '358 patent.

69. On information and belief, AT&T's LTE and 5G networks transmit and receive,

[11] *Id.*

from a second communications unit of the set of communications units. For example, the OneCell system architecture includes several distributed Radio Points or communication units in which the "Radio points transmit and receive radio frequency (RF) signals over the air."[12] A second Radio Point, i.e., second communication unit, is depicted and circled in red:[13]



As such, the AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element [7C] of claim 7 of the '358 patent.

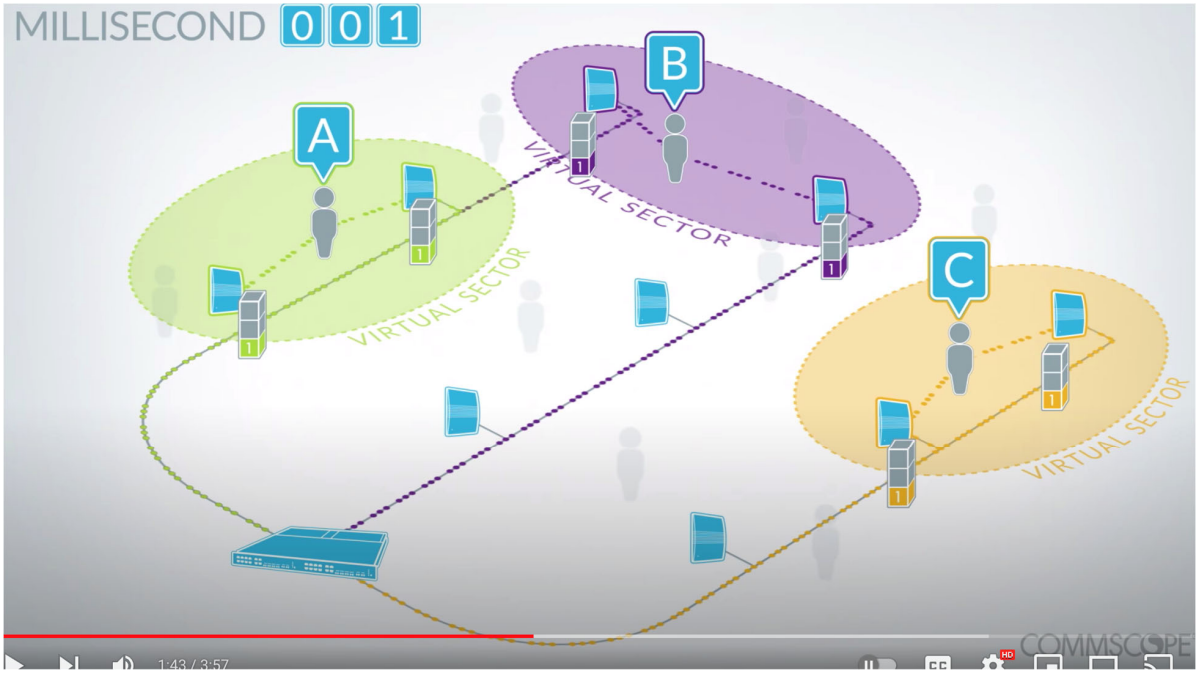
70. On information and belief, AT&T's LTE and 5G networks, which include

[12] https://www.commscope.com/product-type/in-building-cellular-systems/small-cells/onecell/ (last visited January 5, 2022).

[13] *See* https://www.youtube.com/watch?v=vEsHetvkOVA (last visited January 5, 2022) (annotation added).

CommScope's OneCell product, meet claim element [7C1] of claim 7 of the '358 patent.

71. On information and belief, AT&T's LTE and 5G networks transmit and receive, from a second communications unit of the set of communications units a third set of frequencies including one or more frequencies in the first frequency band and a third geographical footprint. For example, the OneCell Cell Virtualization video shows that the second Radio Point transmits and receives on Physical Resource Block 1 or "PRB 1," which includes the first set of frequencies in the first frequency band and a third geographical footprint, which is depicted in the area shaded in yellow:[14]

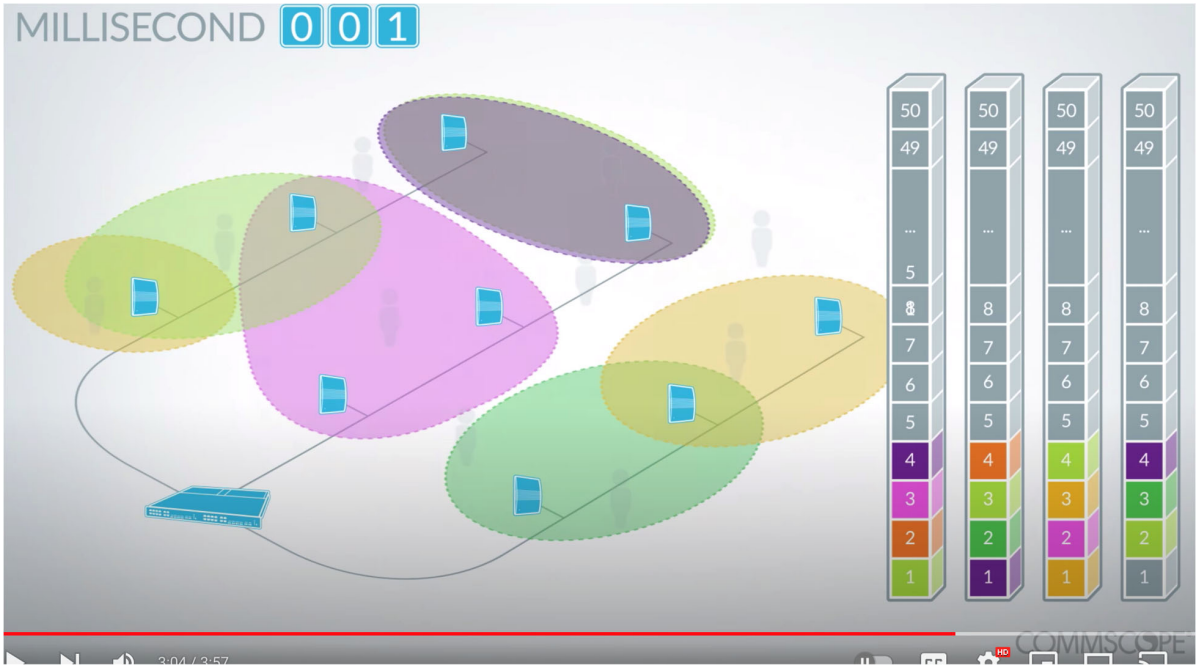


As such, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element [7C1] of claim 7 of the '358 patent.

72. On information and belief, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet claim element [7C2] of claim 7 of the '358 patent.

[14] *Id.*

73. On information and belief, AT&T's LTE and 5G networks transmit and receive, from a second communications unit of the set of communications units a fourth set of frequencies including one or more frequencies in a third frequency band and a fourth geographical footprint larger than and at least partially surrounding the third geographical footprint. For example, the CommScope Cell Virtualization video shows that the second Radio Point also transmits and receives on Physical Resource Block 3 or "PRB 3," which is a fourth set of frequencies including one or more frequencies in a third frequency band and a fourth geographical footprint depicted by the area shaded in dark green:[15]



This fourth area shaded in dark green is larger than and at least partially surrounds the third area shaded in yellow as shown below. As such, AT&T's LTE and 5G networks, which include CommScope's OneCell product, meet element [7C2] of claim 7 of the '358 patent.

74. Accordingly, AT&T's LTE and 5G networks, which include CommScope's

[15] *Id.*

OneCell product, satisfy each and every limitation of claim 7 of the ’358 patent.

75. On information and belief, CommScope has induced infringement of at least claim 7 of the ’358 patent by AT&T pursuant to 35 U.S.C. § 271(b), and committed contributory infringement of at least claim 7 of the ’358 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for AT&T to perform the claimed method, along with instructions that induce AT&T to perform the claimed method.

76. On information and belief, CommScope takes active steps to induce infringement of at least claim 7 of the ’358 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described communication frequency distribution feature, and participating in the installation, configuration, operation, and maintenance of OneCell products in AT&T’s network specifically for the purpose of performing the infringing methods.

77. On information and belief, CommScope knows or should know that such activities induce AT&T to infringe at least claim 7 of the ’358 patent by performing the claimed methods from at least the date of the filing of this Complaint.

78. On information and belief, CommScope also contributes to the infringement of at least claim 7 of the ’358 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by CommScope that contribute to the infringement of AT&T include providing OneCell hardware and software modules that are capable of implementing the above-described communication frequency distribution feature. The accused communication frequency distribution software is especially adapted for use in the infringing communication frequency distribution functions, and it has no substantial non-infringing uses. On information and belief, CommScope knows or should know

that such activities contribute to AT&T's infringement of at least claim 7 of the '358 patent by performing the claimed method.

79. By way of this Complaint, CommScope knows of the '358 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 7 of the '358 patent by AT&T. Thus, CommScope is indirectly liable for infringement of at least claim 7 of the '358 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

80. AT&T and CommScope undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the '358 Patent, which has been duly issued by the PTO and is presumed valid. Moreover, the PTAB has declined to institute a petition for *inter partes* review against the '358 patent. For example, AT&T and CommScope have been aware of an objectively high likelihood that their actions constituted and continue to constitute infringement of the '358 Patent and that the '358 Patent is valid. On information and belief, AT&T and CommScope could not reasonably, subjectively believe that their actions do not constitute infringement of the '358 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and CommScope have continued their infringing activities. As such, AT&T and CommScope have willfully infringed and/or will continue to willfully infringe the '358 patent.

81. As a result of AT&T's and CommScope's infringement of the '358 patent, Dali has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by AT&T's and CommScope's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for AT&T's and CommScope's wrongful conduct.

82. Dali has no adequate remedy at law to prevent future infringement of the '358 patent. Dali suffers and continues to suffer irreparable harm as a result of AT&T's and

CommScope's patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T's and CommScope's wrongful conduct.

SECOND CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '338 PATENT BY AT&T AND ERICSSON)

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

84. On information and belief, AT&T 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 '338 patent, in violation of 35 U.S.C. § 271, et seq., by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small cell equipment such as Ericsson's Radio Dot System.[16]

85. 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;
>
> [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;

[16] *See e.g.,* https://www.fiercewireless.com/private-wireless/at-t-teams-ericsson-for-private-wireless-networks-cbrs-spectrum (last visited January 5, 2022); *see also* https://www.lightreading.com/mobile/small-cells/ericsson-unveils-radio-dot-system-/d/d-id/705843 (last visited January 5, 2022).

> [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.

86. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, satisfy each and every limitation recited in at least claim 1 of the '338 patent as stated below.

87. On information and belief, and to the extent the preamble is limiting, AT&T's LTE and 5G networks meet the preamble of claim 1 of the '338 patent because Ericsson's Radio Dot System routes 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."[17] 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."[18]

88. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1A] of claim 1 of the '338 patent.

89. AT&T's LTE and 5G networks include 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

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[17] *See e.g.,* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[18] *Id.*

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)."[19] The functionality of Ericsson's Radio Dot RF hardware includes transmitting downlink RF signals and receiving uplink RF signals.

90. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1B] of claim 1 of the '338 patent.

91. AT&T's LTE and 5G networks provide 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, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[20] 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."[21] The "DU and IRU can be connected by fiber or co-located and connected through Digital CPRI cable." In certain circumstances, "the digital unit is centrally located and the IRUs are distributed."[22] On information and belief, the DU is configured to communicate with remote radio units, including Radio Dots and IRUs.

92. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element [1C] of claim 1 of the '338 patent.

93. On information and belief, AT&T's LTE and 5G networks translate the uplink and downlink signals between RF and base band as appropriate. For example, Ericsson's Radio Dot

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[19] *Id.*

[20] *Id.*

[21] *Id.*

[22] *Id.*

System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[23] 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."[24] 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)."[25] 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.

94. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot, meet claim element [1D] of claim 1 of the '338 patent.

95. On information and belief, AT&T's LTE and 5G networks packetize the uplink and downlink base band signals, wherein the packetized signals correspond to a plurality of carriers. For example, Ericsson's Radio Dot System within AT&T's LTE and 5G networks packetize signals for transport over CAT6/CAT6A LAN cables to the Radio Dots.[26]

96. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1E] of claim 1 of the '338 patent.

97. On information and belief, AT&T's LTE and 5G networks configure 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. For example, Ericsson's Radio

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[23] *Id.*

[24] *Id.*

[25] *Id.*

[26] *Id.*

Dot System supports LTE and 5G technologies.[27] "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."[28] 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.

98. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1F] of claim 1 of the '338 patent.

99. On information and belief, AT&T's LTE and 5G networks reconfigure 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 in real time while increasing spectral and hardware efficiency of the system."[29] 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

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[27] *See e.g.,* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022); *see also* https://mediabank.ericsson.net/deployedFiles/ericsson.com/Taking%20the%20next%20step%20in%20the%20indoor%20revolution.pdf (last visited January 5, 2022).

[28] https://www.ericsson.com/en/ran/carrier-aggregation (last visited January 5, 2022); *see also* https://www.ericsson.com/en/news/2020/2/radio-dot-update (last visited January 5, 2022).

[29] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

traffic conditions, hardware faults, as well as new service requirements."[30] 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.[31] Consequently, on information and belief, Ericsson's Radio Dot System reconfigures 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.

100. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1G] of claim 1 of the '338 patent.

101. On information and belief, AT&T's LTE and 5G networks route and switch 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. 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."[32] Moreover, the DU "is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[33] This allows for reconfiguring the routing and switching of packetized signals among the one or more Radio Dots through the DU.

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[30] 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 5, 2022).

[31] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[32] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[33] *Id.*

102. Accordingly, on information and belief, AT&T'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 '338 patent.

103. On information and belief, Ericsson has induced infringement of at least claim 1 of the '338 patent by AT&T pursuant to 35 U.S.C. § 271(b), and committed contributory infringement of at least claim 1 of the '338 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for AT&T to perform the claimed method, along with instructions that induce AT&T to perform the claimed method.

104. On information and belief, Ericsson takes active steps to induce infringement of at least claim 1 of the '338 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described routing and switching feature, and participating in the installation, configuration, operation, and maintenance of Radio Dot Systems in AT&T's network specifically for the purpose of performing the infringing methods.

105. On information and belief, Ericsson knows or should know that such activities induce AT&T to infringe at least claim 1 of the '338 patent by performing the claimed methods from at least the date of the filing of this Complaint.

106. On information and belief, Ericsson also contributes to the infringement of at least claim 1 of the '338 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by Ericsson that contribute to the infringement of AT&T include providing Radio Dot System hardware and software modules that are capable of implementing the above-described routing and switching feature. The accused routing and switching software is especially adapted for use in the infringing

routing and switching functions, and it has no substantial non-infringing uses. On information and belief, Ericsson knows or should know that such activities contribute to AT&T's infringement of at least claim 1 of the '338 patent by performing the claimed method.

107. By way of this Complaint, Ericsson knows of the '338 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 1 of the '338 patent by AT&T. Thus, Ericsson is indirectly liable for infringement of at least claim 1 of the '338 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

108. AT&T and Ericsson undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the '338 Patent, which has been duly issued by the PTO and is presumed valid. Moreover, the PTAB has denied institution of at least one petition for *inter partes* review of the '338 patent.[34] For example, since at least the filing this Complaint, AT&T and Ericsson have been aware of an objectively high likelihood that their actions constituted and continue to constitute infringement of the '338 Patent and that the '338 Patent is valid. On information and belief, AT&T and Ericsson could not reasonably, subjectively believe that their actions do not constitute infringement of the '338 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and Ericsson have continued their infringing activities. As such, AT&T and Ericsson have willfully infringed and/or will continue to willfully infringe the '338 patent.

109. As a result of AT&T's and 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 AT&T's and Ericsson's infringement to the fullest extent permitted by the Patent Act, together

[34] *See CommScope Techs. LLC v. Dali Wireless Inc.*, IPR2020-01466, Paper 16 (Decision denying institution).

with prejudgment interest and costs for AT&T's and Ericsson's wrongful conduct.

110. 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 AT&T's and Ericsson's patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T's and Ericsson's wrongful conduct.

THIRD CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY AT&T AND COMMSCOPE)

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

112. On information and belief, AT&T and CommScope have infringed and continue 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., directly and/or indirectly, by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include solutions for in-building wireless coverage, such as CommScope's ION®-E/ERA platform.[35]

113. 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;

[35] *See e.g.,* https://stadiumtechreport.com/feature/att-stadium-rewrites-the-das-playbook-for-new-network/ (last visited January 5, 2022).

> [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.

114. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, satisfy each and every element recited in at least claim 12 of the '232 patent as stated below.

115. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet the preamble of claim 12 of the '232 patent. The preamble of claim 1 refers to "[a] method comprising . . .".

116. 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."[36]

117. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet 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 . . .".

118. According to publicly available documents, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[37] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[38] Accordingly, AT&T's LTE and 5G networks,

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[36] https://www.commscope.com/product-type/in-building-cellular-systems/distributed-antenna-systems-das/era/ (last visited January 5, 2022).

[37] *Id.*

[38] *Id.*

which include CommScope's ION®-E/ERA platform, receive a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol.

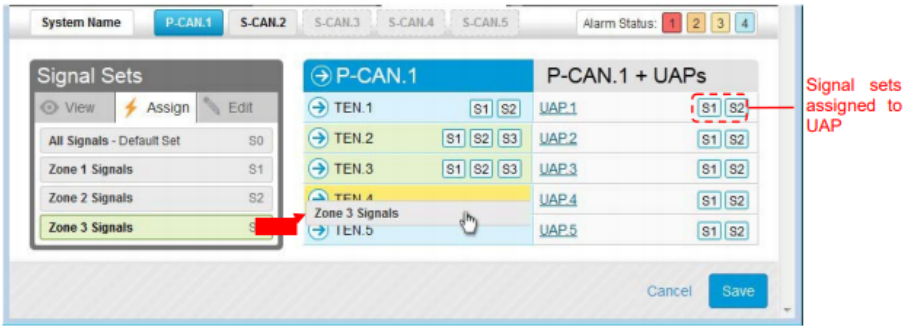
119. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA, meet element [12B] of claim 12 of the '232 patent. Element [12B] of claim 12 requires "assigning a first subset of the plurality of radio resources to a first access point included in a plurality of wireless 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 . . .".

120. According to publicly available documents, CommScope's ION®-E/ERA assigns different subsets of radio resources to different access points:[39]

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

121. Publicly available documents further explain that CommScope's ION®-E/ERA provides customizable signal sets with different numbers of channels.[40] Further, different numbers

[39] https://fccid.io/BCR-IONEUAP/User-Manual/user-manaul-2552804.pdf at 14 (last visited January 5, 2022) (annotation in original).

[40] *Id.*

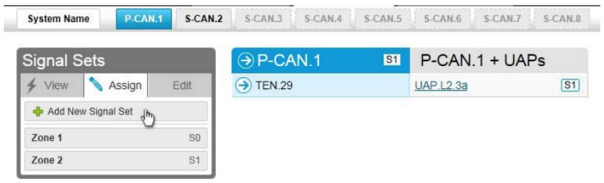
of signal sets can be assigned to different UAPs or access points:[41]

5.5. Signal Distribution

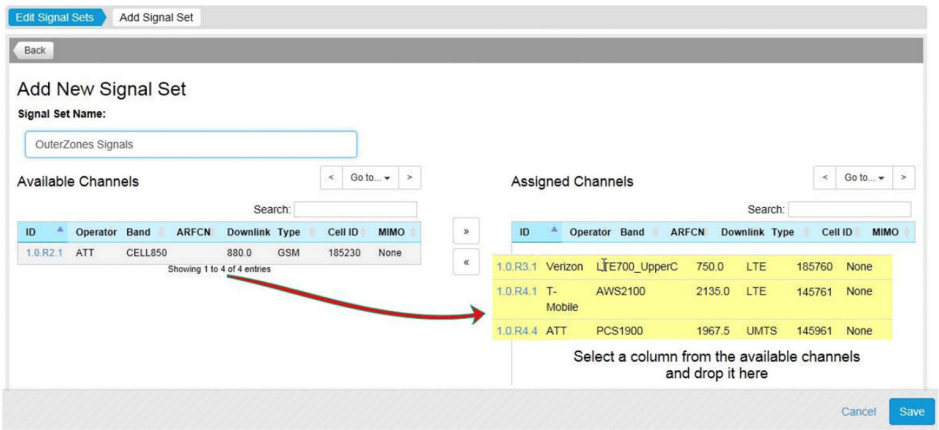
The ION-E uses signal sets to group the detected signals to simplify signal routing to the radiating elements throughout the system. First the user must create and define the signal sets by assigning channels to the sets. The signal sets are then assigned as needed using drag and drop functionality to 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, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, assign 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.

122. On information and belief, AT&T's LTE and 5G networks, which include

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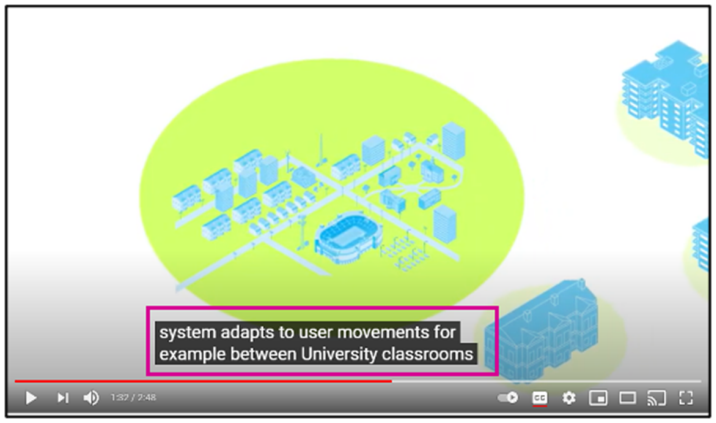
[41] *Id.* at 13-14.

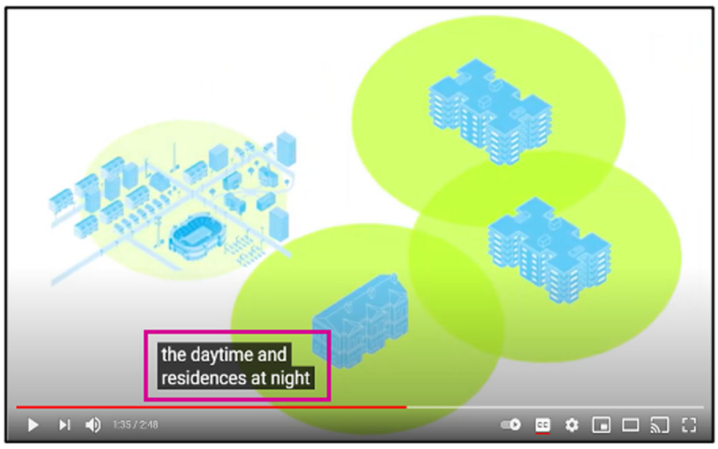
CommScope's ION®-E/ERA platform, meet element [12C] of claim 12 of the '232 patent. Element [12C] of claim 12 requires "in response to a change in need of a number of wireless subscribers coupled to the second access point and which of the second subset is loaded beyond a threshold, assigning one or more additional radio resources of the plurality of radio resources to the second access point."

123. On information and belief, CommScope's ION®-E/ERA comprises software that can configure access points by increasing or decreasing the number of resources in the plurality of resources.

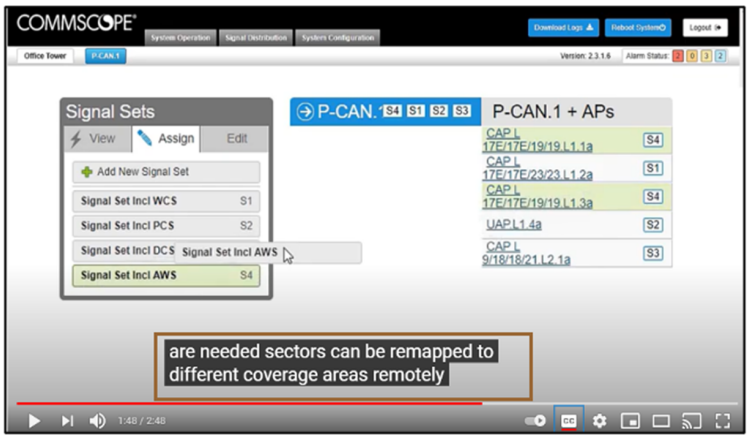
124. For example, CommScope's own marketing materials describe how additional resources can be assigned to access points when the majority of users move from one place, like a university classroom, to a second place, like university residences:[42]



[42] https://www.youtube.com/watch?v=uBRDL7a8_8g (last visited January 5, 2022) (emphasis added).



Moreover, the same marketing materials describe how sectors can be remapped where resources are needed most:[43]



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, CommScope's ION®-E/ERA platform assigns 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.

125. As a result, on information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet all elements of, and therefore infringe, at

[43] *Id* (emphasis added).

least claim 12 of the ’232 patent.

126. On information and belief, CommScope has induced infringement of at least claim 12 of the ’232 patent by AT&T pursuant to 35 U.S.C. § 271(b), and committed contributory infringement of at least claim 12 of the ’232 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for AT&T to perform the claimed method, along with instructions that induce AT&T to perform the claimed method.

127. On information and belief, CommScope takes active steps to induce infringement of at least claim 12 of the ’232 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described remote reconfiguration feature, and participating in the installation, configuration, operation, and maintenance of CommScope’s ION®-E/ERA platform in AT&T’s network specifically for the purpose of performing the infringing methods.

128. On information and belief, CommScope knows or should know that such activities induce AT&T to infringe at least claim 12 of the ’232 patent by performing the claimed methods from at least the date of the filing of this Complaint.

129. On information and belief, CommScope also contributes to the infringement of at least claim 12 of the ’232 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by CommScope that contribute to the infringement of AT&T include providing CommScope ION®-E/ERA platforms that are capable of implementing the above-described remote reconfiguration feature. The accused remote reconfiguration software is especially adapted for use in the infringing remote reconfiguration feature, and it has no substantial non-infringing uses. On information and belief, CommScope knows or should know that such activities contribute to AT&T’s infringement of at

least claim 12 of the ’232 patent by performing the claimed method.

130. By way of this Complaint, CommScope knows of the ’232 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 12 of the ’232 patent by AT&T. Thus, CommScope is indirectly liable for infringement of at least claim 12 of the ‘232 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

131. AT&T and CommScope undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the ’232 Patent, which has been duly issued by the PTO and is presumed valid. For example, since at least the filing this Complaint, AT&T and CommScope have been aware of an objectively high likelihood that their actions constituted and continue to constitute infringement of the ’232 Patent and that the ’232 Patent is valid. On information and belief, AT&T and CommScope could not reasonably, subjectively believe that their actions do not constitute infringement of the ’232 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and CommScope have continued their infringing activities. As such, AT&T and CommScope have willfully infringed and/or will continue to willfully infringe the ’232 patent.

132. As a result of AT&T and 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 AT&T and CommScope’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interests and costs for AT&T and CommScope’s wrongful conduct.

133. 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 AT&T and CommScope’s patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T and CommScope’s wrongful conduct.

FOURTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE '232 PATENT BY AT&T AND ERICSSON)

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

135. On information and belief, AT&T and Ericsson have infringed and continue 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., directly and/or indirectly, by deploying, operating, maintaining, testing, and using AT&T's LTE and 5G networks which include small-cell solutions for wireless coverage, such as Ericsson's Radio Dot System.[44]

136. 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.

137. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, satisfy each and every element recited in at least claim 12 of the

[44] *See e.g.,* https://www.fiercewireless.com/private-wireless/at-t-teams-ericsson-for-private-wireless-networks-cbrs-spectrum (last visited January 5, 2022); *see also* https://www.lightreading.com/mobile/small-cells/ericsson-unveils-radio-dot-system-/d/d-id/705843 (last visited January 5, 2022).

’232 patent as stated below.

138. On information and belief, AT&T’s LTE and 5G networks, which include Ericsson’s Radio Dot System, meet the preamble of claim 12 of the ’232 patent. The preamble of claim 1 refers to “[a] method comprising . . .”.

139. 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.”[45] 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.”[46]

140. On information and belief, AT&T’s LTE and 5G networks, which include Ericsson’s Radio Dot System, meet 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 . . .”.

141. 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.”[47] Moreover, “[t]he Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the

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[45] *See e.g.,* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[46] *Id.*

[47] *See* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

building(s) or area."[48] Accordingly, on information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, receive a plurality of radio resources from an operator hub that operates using a Common Public Radio Interface (CPRI) protocol.

142. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet 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 . . .".

143. According to Ericsson's marketing materials, the Radio Dot System "consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[49] "The Baseband is the signal source of the Radio Dot System and provides the pooled baseband resources for the building(s) or area."[50] 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."[51] 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

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[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] *Id.*

requirements."[52] 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.[53] On information and belief, the first subset of radio resources includes more resources than the second subset of radio resources. Accordingly, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, assign 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.

144. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet 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."

145. 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

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[52] 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 5, 2022).

[53] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

system."[54]

146. 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."[55] 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.[56]

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

148. As a result, on information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet all elements of, and therefore infringe, at least claim 12 of the '232 patent.

149. On information and belief, Ericsson has induced infringement of at least claim 12 of the '232 patent by AT&T pursuant to 35 U.S.C. § 271(b), and committed contributory infringement of at least claim 12 of the '232 patent pursuant to 35 U.S.C. § 271(c), by providing

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[54] *Id.*

[55] 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 5, 2022).

[56] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

the hardware and software necessary for AT&T to perform the claimed method, along with instructions that induce AT&T to perform the claimed method.

150. On information and belief, Ericsson takes active steps to induce infringement of at least claim 12 of the ’232 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described remote reconfiguration feature, and participating in the installation, configuration, operation, and maintenance of Ericsson’s Radio Dot System in AT&T’s network specifically for the purpose of performing the infringing methods.

151. On information and belief, Ericsson knows or should know that such activities induce AT&T to infringe at least claim 12 of the ’232 patent by performing the claimed methods from at least the date of the filing of this Complaint.

152. On information and belief, Ericsson also contributes to the infringement of at least claim 12 of the ’232 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by Ericsson that contribute to the infringement of AT&T include providing Ericsson’s Radio Dot Systems that are capable of implementing the above-described remote reconfiguration feature. The accused remote reconfiguration software is especially adapted for use in the infringing remote reconfiguration feature, and it has no substantial non-infringing uses. On information and belief, Ericsson knows or should know that such activities contribute to AT&T’s infringement of at least claim 12 of the ’232 patent by performing the claimed method.

153. By way of this Complaint, Ericsson knows of the ’232 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 12 of the ’232 patent by AT&T. Thus, Ericsson is indirectly liable for infringement of at least claim 12 of

the ‘232 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

154. AT&T and Ericsson undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the ’232 Patent, which has been duly issued by the PTO and is presumed valid. For example, since at least the filing this Complaint, AT&T and Ericsson have been aware of an objectively high likelihood that their actions constituted and continue to constitute infringement of the ’232 Patent and that the ’232 Patent is valid. On information and belief, AT&T and Ericsson could not reasonably, subjectively believe that their actions do not constitute infringement of the ’232 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and Ericsson have continued their infringing activities. As such, AT&T and Ericsson have willfully infringed and/or will continue to willfully infringe the ’232 patent.

155. As a result of AT&T and 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 AT&T and Ericsson’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interests and costs for AT&T and Ericsson’s wrongful conduct.

156. 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 AT&T and Ericsson’s patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T and Ericsson’s wrongful conduct.

FIFTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE ’499 PATENT BY AT&T AND ERICSSON)

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

158. On information and belief, AT&T 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 AT&T's LTE and 5G networks which include small cell equipment such as Ericsson's Radio Dot System.[57]

159. 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

[57] *See e.g.,* https://www.fiercewireless.com/private-wireless/at-t-teams-ericsson-for-private-wireless-networks-cbrs-spectrum (last visited January 5, 2022); *see also* https://www.lightreading.com/mobile/small-cells/ericsson-unveils-radio-dot-system-/d/d-id/705843 (last visited January 5, 2022).

[1I] wherein the baseband unit is configured to receive digital signals from each of the plurality of remote units.

160. On information and belief, AT&T'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.

161. On information and belief, and to the extent the preamble is limiting, AT&T'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."[58] 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."[59]

162. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1A] of claim 1 of the '499 patent.

163. AT&T'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."[60]

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[58] *See e.g.,* https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[59] *Id.*

[60] *Id.*

164. On information and belief, AT&T's LTE and 5G networks, which include Ericsson's Radio Dot System, meet claim element [1B] of claim 1 of the ’499 patent.

165. For example, Ericsson's Radio Dot System “consists of the Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU).”[61] 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.”[62] The “DU and IRU can be connected by fiber or colocated and connected through Digital CPRI cable.”[63] In certain circumstances, the “the digital unit is centrally located and the IRUs are distributed.”[64] Accordingly, AT&T’s LTE and 5G networks, which include Ericson’s Radio Dot System, include a plurality of signal sources, including at least a first signal source and a second signal source.

166. On information and belief, AT&T’s LTE and 5G networks, which include Ericson’s Radio Dot System, meet claim element [1C] of claim 1 of the ’499 patent.

167. For example, Ericsson’s Radio Dot System includes “Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU).”[65] 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.”[66] Accordingly,

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[61] *Id.*

[62] *Id.*

[63] *Id.*

[64] *Id.*

[65] *Id.*

[66] *Id.*

AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, include a plurality of remote units, including at least a first remote unit and a second remote unit.

168. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element [1D] of claim 1 of the '499 patent.

169. For example, Ericsson's Radio Dot System includes "Radio Dots, Baseband Units (DU) and Indoor Radio Unit(s) (IRU)."[67] 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:[68]

> 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.

170. Moreover, Ericsson has announced that the Radio Dot System supports multi-operator service in three ways:[69]

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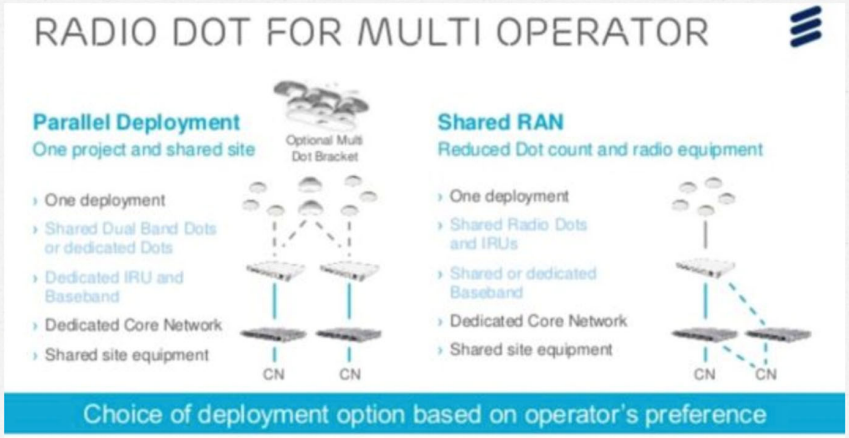
[67] *Id.*

[68] *Id.*

[69] https://the-mobile-network.com/2017/08/ericssons-multi-operator-radio-dot-matrix/ (last visited January 5, 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, AT&T's LTE and 5G networks, which include Ericson'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.

171. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element [1E] of claim 1 of the '499 patent.

172. For example, as explained above in paragraphs 169-170, 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.

173. On information and belief, AT&T's LTE and 5G networks, which include Ericson's

Radio Dot System, meet claim element [1F] of claim 1 of the '499 patent.

174. 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."[70] 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."[71] 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, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet element [1F] of claim 1 of the '499 patent.

175. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element 1[G] of claim 1 of the '499 patent.

176. For example, as explained above in paragraph 174, 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, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element 1[G] of claim 1 of the '499 patent.

177. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element 1[H] of claim 1 of the '499 patent.

178. For example, as explained above in paragraph 174, the DU is configured to send

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[70] https://cellantenna.com/wp-content/uploads/2020/08/CellAntenna-Radio-Dot-System-Brochure-2020-01-17-1.pdf (last visited January 5, 2022).

[71] *Id.*

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, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element 1[H] of claim 1 of the '499 patent.

179. On information and belief, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element 1[I] of claim 1 of the '499 patent.

180. For example, as explained above in paragraph 174, 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, AT&T's LTE and 5G networks, which include Ericson's Radio Dot System, meet claim element [1I] of claim 1 of the '499 patent.

181. On information and belief, Ericsson has induced infringement of at least claim 1 of the '499 patent by AT&T pursuant to 35 U.S.C. § 271(b) and committed contributory infringement of at least claim 1 of the '499 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for AT&T to use the claimed system, along with instructions that induce AT&T to use the claimed system.

182. On information and belief, Ericsson takes active steps to induce infringement of at least claim 1 of the '499 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described distributed antenna system, and participating in the installation, configuration, operation, and maintenance of Radio Dot Systems in AT&T's network specifically for the purpose of using the

infringing system.

183. On information and belief, Ericsson knows or should know that such activities induce AT&T to infringe at least claim 1 of the ’499 patent by using the claimed systems from at least the date of the filing of this Complaint.

184. On information and belief, Ericsson also contributes to the infringement of at least claim 1 of the ’499 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by Ericsson that contribute to the infringement of AT&T include providing Radio Dot System hardware and software modules that comprise the above-described distributed antenna system. The accused hardware and software are especially adapted for use in the infringing distributed antenna system, and they have no substantial non-infringing uses. On information and belief, Ericsson knows or should know that such activities contribute to AT&T’s infringement of at least claim 1 of the ’499 patent by using the claimed system.

185. By way of this Complaint, Ericsson knows of the ’499 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 1 of the ’499 patent by AT&T. Thus, Ericsson is indirectly liable for infringement of at least claim 1 of the ’499 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

186. AT&T and Ericsson undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the ’499 Patent, which has been duly issued by the PTO and is presumed valid. Moreover, the PTAB has denied institution of at least one petition for *inter partes* review of the ’499 patent.[72] For example, since at least the filing this Complaint, AT&T and Ericsson have been aware of an objectively high likelihood that their actions constituted and continue to constitute infringement of the ’499 Patent and that the ’499

[72] *See* IPR2020-01430, Paper No. 15 (decision denying institution).

Patent is valid. On information and belief, AT&T and Ericsson could not reasonably, subjectively believe that their actions do not constitute infringement of the ’499 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and Ericsson have continued their infringing activities. As such, AT&T and Ericsson have willfully infringed and/or will continue to willfully infringe the ’499 patent.

187. As a result of AT&T 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 AT&T and Ericsson’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for AT&T and Ericsson’s wrongful conduct.

188. 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 AT&T and Ericsson’s patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T and Ericsson’s wrongful conduct.

SIXTH CAUSE OF ACTION
(PATENT INFRINGEMENT UNDER 35 U.S.C. § 271 OF THE ’499 PATENT BY AT&T AND COMMSCOPE)

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

190. On information and belief, AT&T 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 AT&T’s LTE and 5G networks which include solutions for in-building wireless coverage, such as CommScope’s ION®-E/ERA

platform.[73]

191. 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.

192. On information and belief, AT&T's LTE and 5G networks, which include CommScope’s ION®-E/ERA platform, satisfy each and every element recited in at least claim 1

[73] *See e.g.,* https://stadiumtechreport.com/feature/att-stadium-rewrites-the-das-playbook-for-new-network/ (last visited January 5, 2022).

of the ’499 patent as stated below.

193. On information and belief, and to the extent the preamble is limiting, AT&T'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.”[74] 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.”[75]

194. On information and belief, AT&T's LTE and 5G networks, which include CommScope’s ION®-E/ERA platform, meet claim element [1A] of claim 1 of the ’499 patent.

195. AT&T’s LTE and 5G networks include a baseband unit. For example, CommScope’s ION®-E/ERA platform includes a “CPRI digital donor (CDD)” module.[76] This module “receives CPRI digital signals from compatible operator baseband units (BBU).”[77] Further, CommScope explains that the ION®-E/ERA platform “[t]ake[s] advantage of an all-digital CPRI

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[74] https://www.commscope.com/product-type/in-building-cellular-systems/distributed-antenna-systems-das/era/ (last visited January 5, 2022).

[75] *Id.*

[76] *Id.*

[77] *Id.*

baseband interface that eliminates the need for analog-to-digital conversions, further reducing head-end size and power requirements."[78] Accordingly, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, include a baseband unit.

196. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1B] of claim 1 of the '499 patent.

197. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[79] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[80] 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."[81] 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."[82] Accordingly, AT&T'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.

198. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1C] of claim 1 of the '499 patent.

199. For example, CommScope's ION®-E/ERA platform includes "[a] range of remote

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[78] *Id.*

[79] *Id.*

[80] *Id.*

[81] *Id.*

[82] *Id.*

access points that convert the digital signal back to radio frequency (RF) for over-the-air transmission."[83] These remote units include "the carrier access point (CAP)" and "the universal access point (UAP)."[84] Accordingly, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, include a plurality of remote units, including at least a first remote unit and a second remote unit.

200. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1D] of claim 1 of the '499 patent.

201. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[85] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[86] 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."[87] 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."[88] Accordingly, AT&T'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

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[83] *Id.*

[84] *Id.*

[85] *Id.*

[86] *Id.*

[87] *Id.*

[88] *Id.*

signal sources.

202. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1E] of claim 1 of the '499 patent.

203. For example, as explained above in paragraphs 200-201, 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 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.

204. On information and belief, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1F] of claim 1 of the '499 patent.

205. For example, CommScope's ION®-E/ERA platform includes a "CPRI digital donor (CDD)" module.[89] This module "receives CPRI digital signals from compatible operator baseband units (BBU)."[90] 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."[91] 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

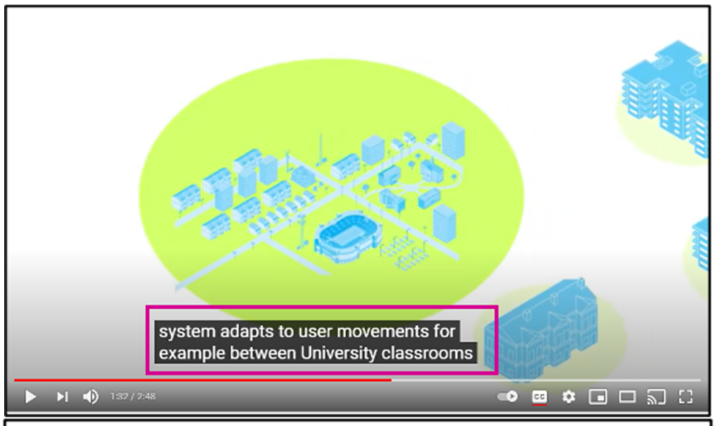
[89] *Id.*

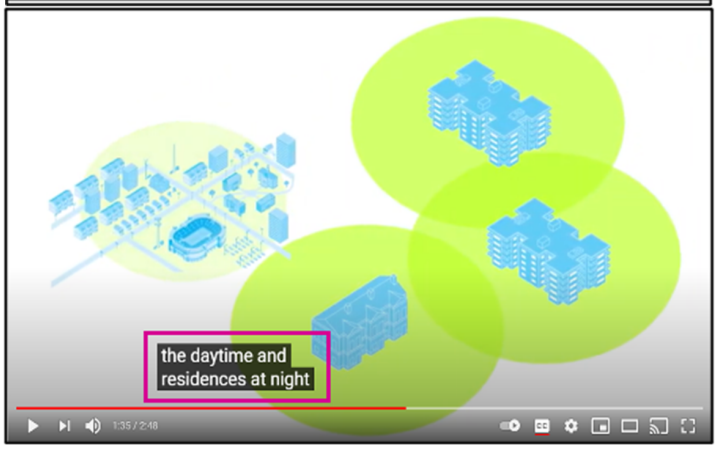
[90] *Id.*

[91] *Id.*

throughout a building or campus."[92]

206. 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:[93]





Moreover, the same marketing materials describe how sectors can be remapped where radio resources are needed most:[94]

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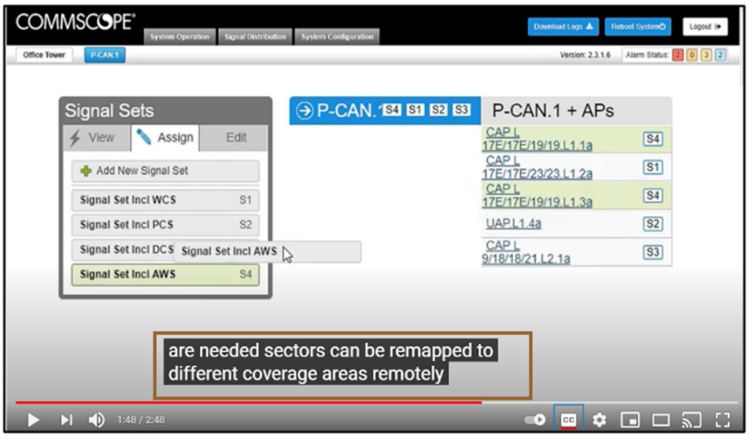
[92] *Id.*

[93] *See,* "CommScope Era™ C-RAN Antenna System," https://www.youtube.com/watch?v=uBRDL7a8_8g (last visited January 5, 2022) (annotation added).

[94] *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.

207. On information and belief, AT&T'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.

208. For example, as explained above in paragraphs 205-206, 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, AT&T'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.

209. On information and belief, AT&T'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.

210. For example, as explained above in paragraphs 205-208, 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, AT&T'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.

211. On information and belief, AT&T'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.

212. For example, as explained above in paragraphs 205-206, 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, AT&T's LTE and 5G networks, which include CommScope's ION®-E/ERA platform, meet claim element [1I] of claim 1 of the '499 patent.

213. On information and belief, CommScope has induced infringement of at least claim 1 of the '499 patent by AT&T pursuant to 35 U.S.C. § 271(b) and committed contributory infringement of at least claim 1 of the '499 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for AT&T to use the claimed system, along with instructions that induce AT&T to use the claimed system.

214. On information and belief, CommScope takes active steps to induce infringement of at least claim 1 of the '499 patent by AT&T, knowing that those steps will induce, encourage, and facilitate direct infringement by AT&T in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing AT&T with instructions on the use of the above-described distributed antenna system, and participating in the installation, configuration, operation, and

maintenance of ION®-E/ERA platforms in AT&T's network specifically for the purpose of using the infringing system.

215. On information and belief, CommScope knows or should know that such activities induce AT&T to infringe at least claim 1 of the '499 patent by using the claimed systems from at least the date of the filing of this Complaint.

216. On information and belief, CommScope also contributes to the infringement of at least claim 1 of the '499 patent by AT&T in violation of 35 U.S.C. § 271(c). Acts by CommScope that contribute to the infringement of AT&T include providing ION®-E/ERA platform hardware and software modules that comprise the above-described distributed antenna system. The accused hardware and software are especially adapted for use in the infringing distributed antenna system, and they have no substantial non-infringing uses. On information and belief, CommScope knows or should know that such activities contribute to AT&T's infringement of at least claim 1 of the '499 patent by using the claimed system.

217. By way of this Complaint, CommScope knows of the '499 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of claim 1 of the '499 patent by AT&T. Thus, CommScope is indirectly liable for infringement of at least claim 1 of the '499 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

218. AT&T and CommScope undertook and continue their infringing actions despite an objectively high likelihood that such activities infringe the '499 Patent, which has been duly issued by the PTO and is presumed valid. Moreover, the PTAB has denied institution of at least one petition for *inter partes* review of the '499 patent.[95] For example, since at least the filing this Complaint, AT&T and CommScope have been aware of an objectively high likelihood that their

[95] *See* IPR2020-01430, Paper No. 15 (decision denying institution).

actions constituted and continue to constitute infringement of the ’499 Patent and that the ’499 Patent is valid. On information and belief, AT&T and CommScope could not reasonably, subjectively believe that their actions do not constitute infringement of the ’499 patent. Despite that knowledge and subjective belief, and the objectively high likelihood that their actions constitute infringement, AT&T and CommScope have continued their infringing activities. As such, AT&T and CommScope have willfully infringed and/or will continue to willfully infringe the ’499 patent.

219. As a result of AT&T 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 AT&T and CommScope’s infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for AT&T and CommScope’s wrongful conduct.

220. 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 AT&T and CommScope’s patent infringement and is, therefore, entitled to injunctive relief to enjoin AT&T and CommScope’s wrongful conduct.

PRAYER FOR RELIEF

WHEREFORE, Dali respectfully requests judgment against Defendants as follows:

A. that this Court adjudge that AT&T and CommScope, to the extent not enjoined, infringe the ’358 patent, the ’232 patent, and the ’499 patent;

B. that the Court enter an injunction prohibiting AT&T, CommScope, and their agents, officers, servants, employees and all persons in active concert or participation with AT&T or CommScope from deploying, operating, maintaining, testing, and using small cell wireless

solutions in AT&T's LTE and 5G Networks, including CommScope's OneCell and ION®-E/ERA products, and from otherwise infringing any of the Patents-in-Suit;

C. that this Court adjudge that AT&T and CommScope, to the extent not enjoined, willfully infringe the '358 patent, the '232 patent, and the '499 patent;

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

E. that the Court enter an injunction prohibiting AT&T, Ericsson, and their agents, officers, servants, employees and all persons in active concert or participation with AT&T or Ericsson from deploying, operating, maintaining, testing, and using small cell wireless solutions in AT&T's LTE and 5G Networks, including Ericsson's Radio Dot System, and from otherwise infringing any of the Patents-in-Suit;

F. that this Court adjudge that AT&T and Ericsson, to the extent not enjoined, willfully infringe the '338 patent, the '232 patent, and the '499 patent;

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 7, 2022

Respectfully submitted,

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