UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

HOWLINK GLOBAL LLC, Plaintiff, v. AT&T INC.; AT&T CORP.; AT&T COMMUNICATIONS, LLC; AT&T MOBILITY LLC; and AT&T SERVICES, INC., Defendants.	Case No. _____ JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Howlink Global LLC ("Plaintiff" or "Howlink") hereby alleges infringement of United States Patent No. 8,630,279 ("'279 Patent" or "LTE Patent"), U.S. Patent No. RE46,415 ("'415 Patent" or "Backhaul Patent"), which is a reissue of U.S. Patent No. 7,565,167, and U.S. Patent No. 9,596,576 ("'576 Patent" or "The Private Network Service ("PNS") Patent") (collectively with the LTE Patent and Backhaul Patent, the "Patents-In-Suit") against Defendants AT&T Inc. ("ATTI"); AT&T Corp. ("ATTCorp"); AT&T Communications, LLC ("ATTComm"); AT&T Mobility LLC ("ATTM"); and AT&T Services, Inc. ("ATTS") (collectively, "Defendants" or "AT&T") as follows:

THE PARTIES

1. Howlink is a Texas limited liability company with a principal location at 101 E. Park Blvd., Suite 600, Plano, Texas 75074.

2. Defendant ATTI is a corporation organized and existing under the laws of the State of Delaware, with a principal place of business at 208 South Akard Street, Dallas, Texas

75202-4206.

3. Defendant ATTCorp 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.

4. Defendant ATTComm is a corporation organized and existing under the laws of the State of Delaware, with a principal place of business at 208 South Akard Street, Dallas, Texas 75202-4206.

5. Defendant ATTM 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.

6. Defendant ATTS 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.

7. Upon information and belief, Defendant ATTI is the parent corporation of Defendants ATTCorp, ATTComm, ATTM, and ATTS; and Defendant ATTComm is the parent company of Defendant ATTM. Defendants have a regular and established place of business at 1712 East Grand Avenue, Marshall, Texas 75670.

8. Defendants may be served with process through their registered agent at CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

JURISDICTION; VENUE; JOINDER

9. This action arises under the patent laws of the United States, Title 35 of the United States Code ("U.S.C.") § 101 et seq.

10. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331, 1332, and 1338(a).

11. Defendants are subject to this Court's specific and general personal jurisdiction consistent with the principles of due process and/or the Texas Long Arm Statute.

12. Defendants are registered with the Secretary of State to do business in the State of Texas. Defendants sell and offer to sell products and services throughout the State of Texas, including in this judicial district, and introduce infringing products and services into the stream of commerce knowing that they would be sold in the State of Texas and this judicial district.

13. Personal jurisdiction exists generally over Defendants because each Defendant has sufficient minimum contacts with the forum as a result of business conducted within the State of Texas and the Eastern District of Texas. Personal jurisdiction also exists over each Defendant because it, directly or through subsidiaries or intermediaries, makes, uses, sells, offers for sale, imports, advertises, makes available, and/or markets products within the State of Texas and the Eastern District of Texas that infringe one or more claims of the Patents-In-Suit, as alleged more particularly below.

14. Venue in this District is proper under 28 U.S.C. § 1400(b) because each Defendant is subject to personal jurisdiction, resides and/or has a regular and established place of business, and has committed acts of infringement in this District. Each Defendant makes, uses, sells, offers to sell, and/or imports infringing products into and/or within this District, maintains a permanent and/or continuing presence within this District, and has the requisite minimum contacts with this District such that this venue is a fair and reasonable one. Upon information and belief, each Defendant has transacted and, at the time of the filing of the Complaint, is continuing to transact business within this District.

15. Defendants are properly joined under 35 U.S.C. § 299(a)(1) because, as set forth in greater detail below, Defendants commonly and/or jointly make, use, sell, offer to sell, and/or

import infringing instrumentalities, such that at least one right to relief is asserted against Defendants jointly, severally, and in the alternative with respect to the same transactions, occurrences, or series of transactions or occurrences relating to the making, using, selling, offering to sell, and/or importing into the United States the same accused instrumentalities, as set forth in greater detail herein.

16. Defendants are properly joined under 35 U.S.C. § 299(a)(2) because, as set forth in greater detail below, Defendants make, use, sell, offer to sell in, and/or import into the United States the same or similar accused instrumentalities, such that questions of fact that are common to all Defendants will arise, as set forth in greater detail herein.

CELLULAR TELECOMMUNICATIONS BACKGROUND

17. The Patents-in-Suit concern cellular telecommunications technology. Cellular telecommunications technology uses a large number of "base stations," each of which covers a specific area or "cell." A cellular telecommunications system comprises a mobile handset or user equipment ("UE"), a radio access network ("RAN") and a core network. The radio access network links the user equipment to the core network and includes the base stations and base station controllers. The core network is the hub of the system and controls user access, connects user equipment to other networks and performs a variety of other tasks. The radio access network and the core network are connected by what is known as the "backhaul."

18. The evolution of cellular telecommunications technology is characterized by different technology generations, which are referred to as 1G, 2G, 3G, 4G, and now 5G. The "Third Generation Partnership Project" or "3GPP" is an industry consortium that develops cellular technology standards, including a 4G "long term evolution" or "LTE" standard. 4G LTE networks are entirely IP based, meaning the core network transmits and receives information in

"packets" according to the "Internet Protocol." The 3GPP LTE Standard has gone through multiple iterations. The various versions and revisions comprise the body of the standard. The release of a new version does not mean that all prior revisions have been superseded. Implementers who wish to declare their conformity with the 3GPP specifications are given permission to use the LTE trademark or logo and to mark their documentation with the LTE trademark and LTE logo. Use of the LTE trademark or logo requires the permission of the European Telecommunications Standards Institute ("ETSI"), which is a 3GPP member.

19. Radio access networks use a variety of different techniques for allowing multiple users to gain access to the network at the same time. Such techniques include "frequency division multiple access" ("FDMA"), "time division multiple access" ("TDMA"), "code division multiple access" ("CDMA"), and in 4G LTE networks "orthogonal frequency division multiple access" ("OFDMA"). When a UE accesses a RAN, it communicates by sending signals over portions of the electromagnetic spectrum. The signals are interpreted using different protocols that define what the signals represent. In order to communicate with a RAN, synchronization signals are used so that the UE and the RAN know how to temporally relate the signals to the applicable protocol and to the cell that is being used. Synchronization signals are used both when the UE is transmitting signals to the RAN (referred to as an "uplink" signal) and when the UE is receiving signals from the RAN (referred to as a "downlink" signal).

THE LTE PATENT

20. The '279 Patent, entitled "Method for Generating Downlink Signal, and Method for Searching Cell," issued on January 14, 2014, to the Electronics and Telecommunications Research Institute ("ETRI"), SK Telecom., Co., Ltd ("SKT"), and KT Corporation ("KT"). A true and correct copy of the '279 Patent is attached hereto as Exhibit A.

21. ETRI is a Korean government-funded research institute that researches, develops,

and distributes industrial core technologies, including telecommunications technologies. Since its inception in 1976, ETRI has developed new technologies in, among other things, 4M DRAM computer memory, CDMA communications, 3G CDMA2000, 3G WCDMA, 4G WiBro, 4G LTE cellular communications, 5G NR cellular communications, WLAN, LCD displays, Video Coding, and Media Transport & Delivery.[1]

22. Over the last five years, ETRI has applied for more than 14,000 patents, contributed more than 4,400 proposals adopted by international and/or domestic standards organizations, and published over 1,300 peer-reviewed, technology articles.[2] ETRI is recognized as a world leader in information technology and patent development and has developed one of the industry's strongest intellectual-property portfolios, including approximately 12,000 patents worldwide.[3] In April 2014, Intellectual Property Today ranked ETRI for the third year in a row as the top research establishment in the world, measured by the number and strength of United States patents granted.[4] ETRI currently has more than 2,000 researchers and technical staff, the vast majority of whom hold a post-graduate degree.[5] To achieve its success, ETRI has heavily invested in inventing standardized telecommunications technologies, spending around $550 million annually on research and development.[6]

23. KT and SKT are two of Korea's largest telecommunications companies. Their predecessors were founded in in the 1980s, and both companies have been at the forefront of developing Korea's information technology. Like ETRI, both invest heavily in research and

[1] *See* https://www.etri.re.kr/engcon/sub1/sub1_02.etri; *see generally* https://www.etri.re.kr/40th/eng/index.html.
[2] ETRI 2021 Brochure, available at https://www.etri.re.kr/engcon/sub3/sub3_0101.etri.
[3] https://www.etri.re.kr/45th/eng/sub06.html.
[4] https://www.etri.re.kr/engcon/sub1/sub1_08.etri.
[5] ETRI 2021 Brochure, available at https://www.etri.re.kr/engcon/sub3/sub3_0101.etri.
[6] *Id.*

development related to telecommunications technologies,[7] including by funding research by institutes such as ETRI. In 2020, KT spent approximately $190 million on research and development, and SKT spent approximately $350 million.[8] As of December 31, 2020, KT had nearly 6,000 registered patents.[9] The companies continue to be recognized as leaders in the field. In 2020, for example, KT won the Greatest 5G Innovation and Telecom Service Innovation categories at the 11th annual awards ceremony of Informa Telecoms & Media, a London-based ICT research organization.[10] SKT, for example, was awarded 2019's Global Telecoms Awards (GLOTEL Awards) in the categories of 5G Implementation Excellence, Best Operator, and BSS/OSS Transformation Excellence.[11]

24. Plaintiff Howlink was originally formed in 2002 as Howlink Global, Inc., located in Austin, Texas. In or about 2010, it was re-formed as a limited liability company in Plano, Texas. The owner of Howlink is Mr. Ey-Taeg Kwon. Mr. Kwon formed Howlink to provide telecommunication hardware and services and developed a VoIP system and device designed to implement collect calling. He is the named inventor of several patents related to this technology.

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[7] https://www.sec.gov/Archives/edgar/data/1015650/000119312521138579/d25917d20f.htm#rom25917_23; https://www.sec.gov/Archives/edgar/data/892450/000119312521142666/d73875d20f.htm#rom73875_15.

[8] https://www.sec.gov/Archives/edgar/data/1015650/000119312521138579/d25917d20f.htm#rom25917_23; https://www.sec.gov/Archives/edgar/data/892450/000119312521142666/d73875d20f.htm#rom73875_15.

[9] https://www.sec.gov/Archives/edgar/data/892450/000119312521142666/d73875d20f.htm#rom73875_15.

[10] https://www.prnewswire.com/news-releases/s-koreas-kt-corp-wins-top-global-awards-in-telecom-industry-again-301126205.html.

[11] https://www.sktelecom.com/en/press/press_detail.do?page.page=1&idx=1428.

Howlink owns by assignment all substantial rights, title, and interest in and to the Patents-In-Suit, including the right to sue for past and ongoing infringement thereof, and thus has standing to sue for infringement.

25. The main inventor of the '279 Patent is Kap-Seok Chang, who has been a full-time senior researcher at ETRI since 2005. Dr. Chang holds Master's and Ph.D. degrees in information and communications engineering from the Korea Advanced Institute of Science & Technology, a leading university in engineering and information technologies. Since 2009, he has been an Associate Professor of Mobile Communication and Digital Broadcasting Engineering at the University of Science and Technology in South Korea. Dr. Chang is the named inventor on dozens of United States patents, and his research has been recognized with numerous distinctions.[12]

26. The '279 Patent is directed to the synchronization process in the LTE Standard, which is used to obtain cell identity and frame timing. Specifically, the '279 Patent claims an apparatus and method for generating a downlink signal comprising code groups formed by concatenation of cell ID codes, and an apparatus and method for searching a cell using such code groups, which read on at least the 3GPP TS 36.211 v8.9.0 specification portion of the LTE Standard.

27. The relevant version for 3GPP TS 36.211 is Release 8, v8.9.0 (dated December 16, 2009). The latest version of the 3GPP TS 36.211 is v16.4.0 (dated February 3, 2021).

28. Implementation and use of the LTE Standard as detailed in the 3GPP specification series have increased in recent years at a rapid pace.

29. The '279 Patent is directed to cell searching, which is a process by which, *e.g.*, a

[12] https://ieeexplore.ieee.org/author/37336322900.

mobile device achieves time and frequency synchronization within a particular cell of an LTE system. The '279 Patent specifies orthogonal frequency division multiplexing ("OFDM")-based systems and methods to perform cell searching using synchronization information, and cell and cell group information. This enables mobile devices such as cell phones to be synchronized with cellular/LTE base stations in both the time and frequency domains, thereby ensuring reliable and accurate cellular/LTE communications. This is a fundamental step in implementation of LTE service.

30. Most major carriers in the United States have adopted LTE in accordance with at least 3GPP Release 8. AT&T launched an LTE network in or around September 2011, touting it as providing "high speeds", "improved coverage and service offerings", and "improved data connectivity."[13]

31. Although the '279 Patent claims read on the LTE Standard, the '279 Patent is not a standard essential patent ("SEP") or subject to any FRAND obligations, and neither the inventor nor the prior assignees have ever communicated any licensing assurances to 3GPP.

32. The Accused Instrumentalities that infringe at least claims 1 and 7 of the '279 Patent include systems, networks, and components including LTE compatible mobile devices and services thereto used and controlled by Defendants having LTE capabilities, and particularly capability to generate and search a downlink signal comprising cell identification code groups formed by concatenation (inter-linking) of cell ID codes.

AT&T ADOPTS THE LTE PATENT TECHNOLOGY

33. Defendants provide a wireless network and system for generating a downlink

[13] https://www.cnet.com/tech/mobile/at-t-launching-lte-on-sept-18-at-long-last/; https://developer.att.com/technical-library/network-technologies/long-term-evolution

frame in a wireless communication system that allows for mobile devices to synchronize time and frequency within a particular cell from Defendant's LTE network. Defendants also provide LTE compatible mobile devices comprising hardware and software for searching a cell and more specifically, obtaining cell identification information from the downlink signal.

34. In or around September 2011, AT&T launched its 4G LTE network that covered 30 cities and 100 million people at the time of launch.[14] Since its launch, AT&T expanded its coverage and is recongized as having "the second-best 4G LTE coverage in the country, just a mere 2% behind Verizon."[15]

35. Defendant claims that its LTE network was developed in compliance with 3GPP standards.[16] On information and belief, Defendant's LTE network was developed in compliance with and/or based on 3GPP TS 36.211 v8.9.0 specification which, as discussed above, is read upon by the claims of the LTE Patent.

36. AT&T's current selection of smartphones and plans are all compatible for use with its LTE network. Access to AT&T's LTE network is included in the monthly service plan.

THE BACKHAUL PATENT

37. The '415 Patent, entitled "Low-Cost Network System Between a Base Station Controller and a Base Transceiver Station, and Method for Transmitting Data Between Them," issued on May 23, 2017, to KT. A true and correct copy of the '415 Patent is attached hereto as

[14] http://4g5gworld.com/blog/att-lte-launch-mid-2011#:~:text=AT%26T%20plans%20to%20launch%20its%20LTE%20network%20around,and%20oversees%20its%20networks%2C%20according%20to%20a%20FierceWirelessreport.

[15] https://www.comparecellular.com/coverage-maps/att-coverage-map/#:~:text=AT%26T%E2%80%99s%20network%20offers%20the%20second-best%204G%20LTE%20coverage,falls%20back%20to%20when%204G%20coverage%20isn%E2%80%99t%20available%29.

[16] https://developer.att.com/technical-library/network-technologies/long-term-evolution

Exhibit B1. The '415 Patent is a reissue of U.S. Patent No. 7,565,167, issued on July 21, 2009, to KTFreetel Co., Ltd., which later merged with KT. U.S. Patent No. 7,565,167, is attached hereto as Exhibit B2. The amendments to the claims during reissuance were cosmetic and did not change the substance of the original claims.

38. The main inventor of the '415 Patent is Hee-Nam Son.

39. The '415 Patent describes a backhaul system that provides hybrid fixed line and IP network connectivity through TDM (Time Division Multiplex) and CDMA (Code Division Multiple Access) circuit emulation using a "base station controller matching unit" ("BSCMU") and a base station transceiver matching unit ("BSTMU").

40. The conversion of legacy networks to 4G LTE networks required the replacement of copper backhaul lines used in TDM-based and CDMA-based networks with fiber optic lines used in IP-based networks, including both in the core network and in the backhaul. Converting everything at once was time-consuming and expensive. However, copper line TDM-based backhaul systems could not interoperate with fiber optic IP-based systems. The '415 Patent addresses this problem and provides a low-cost fix for the transition from legacy networks to all-IP networks.

41. The '415 Patent provides systems and methods that enable legacy backhaul in TDM-based backhaul to interoperate with newer IP-based network architectures. For example, TDM is used to deliver the majority of phone calls over traditional copper lines, whereas most cellular calls are IP-based VoIP or VoLTE calls. The '415 Patent allows intercommunication between TDM and IP telephony as one example. In practice, the technology has become critical to connecting legacy TDM-based backhaul with IP-based 3G and 4G LTE (and soon-to-be 5G and 6G) networks, given the slow industry migration to an all-IP mobile backhaul. This practical

reality requires network operators and service providers to supply multi-protocol networks that can carry hybrid IP and TDM traffic.

42. The backhaul comprises equipment for routing signals to and from the core network. In the case of legacy backhaul used with an IP core network, the signals used by the core network must be packetized. Alcatel-Lucent (Nokia) provides such backhaul equipment for mobile communications systems and for allowing legacy TDM-backhaul in both TDM-based and CDMA-based networks to interoperate with IP core networks. Mobile communication service providers, including AT&T, implement such Ericsson and Alcatel-Lucent backhaul equipment in their networks.[17]

43. The Accused Instrumentalities that infringe at least claim 1 of the ’415 Patent include systems, networks, and components and services thereto used and controlled by Defendants that enable its legacy TDM-based backhaul to interoperate with its newer IP-based network architectures.

44. On information and belief, Defendant’s 5G network, in relevant part, operates and/or uses the same components in the same way as its legacy TDM and CDMA-based networks and thus also infringes the ’415 Patent.

AT&T ADOPTS THE BACKHAUL PATENT TECHNOLOGY

45. Defendants provide a wireless network and system comprising legacy TDM-based backhaul, newer IP-based network architectures, and a hybrid fixed line backhaul comprising equipment for routing packets to and from the core network that enables intercommunication between the TDM-based backhaul and the newer IP-based network

[17] https://www.rcrwireless.com/20100210/carriers/at-t-picks-ericsson-alcatel-lucent-for-lte-rollout.

architectures.

46. On or around February 10, 2010, AT&T contracted with Ericsson and Alcatel-Lucelt to upgrade its entire national network to IP-based platform.[18] On information and belief, this includes the purchase and deployment of backhaul infrastructure solutions includng routers; for example, Alcatel-Lucent backhaul infrastructure solution comprising a 7705 Service Aggregation router and the 7710/7750 Service Router.

47. AT&T's current selection of smartphones and plans are all compatible for use with both its legacy TDM based networks and/or CDMA-based networks and newer IP-based network architectures (e.g., 4G LTE and 5G networks). Access to AT&T's networks is included in the monthly service plan.

THE PRIVATE NETWORK SERVICE ("PNS") PATENT

48. The '576 Patent, entitled "Providing Services According to Subscription Status of User Equipment," issued on March 14, 2017, to KT. A true and correct copy of the '576 Patent is attached hereto as Exhibit C.

49. The named inventor of the '576 Patent is Kwang-Jun Ha.

50. A "femtocell" is a device that acts as a mini cellular base station that extends the area of coverage of a cellular network. The '576 Patent is directed to a femtocell base station architecture that supports hybrid access control for mobile devices connecting to a base station, by differentiating between devices that are authorized to use certain network resources and devices that are not. This technology enables femtocell base stations to serve a variety of users, while prioritizing or offering additional services to users who have, *e.g.*, special privileges or

[18] https://www.rcrwireless.com/20100210/carriers/at-t-picks-ericsson-alcatel-lucent-for-lte-rollout.

subscription levels. In particular, the '576 Patent provides systems and methods for allocating different IP addresses for different networks to user equipment depending on subscription data.

51. The '576 Patent specifies use of a Closed Subscriber Group, or CSG, which may be provisioned to identify subscribers of a particular network or network operator and their associated network permissions. The CSG contains a list of subscribers having permission to access certain network resources that would otherwise be off limits to non-CSG users. The system uses the CSG to differentiate between users—when a device connects to a base station, the system determines whether the device is associated with a subscriber on a CSG or not. Thus, for example, if a user is determined to be on the CSG, the system may allocate a private IP address for the device to access an enterprise network, such as corporate intranet. On the other hand, if the user is not determined to be on the CSG, the system may allocate a different, public IP address for the device to access a public network, such as the public internet.

52. On information and belief, the Accused Instrumentalities that infringe at least claim 1 of the '576 Patent include systems, networks, and components and services thereto used and controlled by Defendants including but not limited to AT&T's Microcell[19], Cisco LTE 2.0 NIM[20], and any other hardware, software, or service that is provisioned to provide different levels of service according to a subscription status of the user equipment, for example, private network services for enterprise[21].

AT&T ADOPTS THE PNS PATENT TECHNOLOGY

53. The largest mobile network operators in the U.S. offer or have offered femtocell

[19] https://www.att.com/att/microcell/

[20] https://www.cisco.com/c/en/us/products/collateral/routers/4000-series-integrated-services-routers-isr/datasheet-C78-734341.html

[21] https://www.businesswire.com/news/home/20200707005102/en/Accenture-ATT-Bring-Mobile-Connectivity-Phillips-66

products. Defendants, for example, offer the AT&T Microcell for use with its LTE network.[22]

54. On information and belief, AT&T's femtocell products provide different levels of service according to a subscription status of the user equipment.

55. AT&T femtocells for consumer and enterprise are used with its monthly service plans. Additionally, AT&T also offers private network services to its enterprise subscribers in addition to femtocell products, including Cisco LTE 2.0 NIM.[23] On information and belief, AT&T's private network services provide different levels of service according to a subscription status of the user equipment.

THE ACCUSED INSTRUMENTALITIES

56. The Accused Instrumentalities include systems, networks, components, and services thereto used and controlled by Defendants for implementing (1) an LTE wireless network (and 5G networks using the same technology) that includes a system for generating a downlink frame in a wireless communication system which allows for mobile devices to synchronize time and frequency within a particular cell from Defendant's LTE network, and mobile devices including hardware and software to search for cell identification information from the downlink signal; (2) legacy TDM-based backhaul, newer IP-based network architectures, and a hybrid fixed line backhaul comprising equipment for routing packets to and from the core network which enables intercommunication between the TDM-based backhaul and the newer IP-based network architectures; and (3) private network services, AT&T femtocells, and monthly service plans providing access to Defendants' LTE and 5G networks

[22] https://www.att.com/att/microcell/

[23] https://www.businesswire.com/news/home/20200707005102/en/Accenture-ATT-Bring-Mobile-Connectivity-Phillips-66; https://www.cisco.com/c/en/us/products/collateral/routers/4000-series-integrated-services-routers-isr/datasheet-C78-734341.html

that are provisioned to provide members of a CSG list with selective network access relative to non-list members who nevertheless may still receive service from the femtocell.

COUNT 1

57. Each Defendant infringes at least claims 1 and 7 of the ’279 Patent.

58. Each Defendant has committed and continues to commit acts of direct infringement by making, using, selling, offering to sell, and/or importing Accused Instrumentalities, including but not limited to instrumentalities comprising a wireless network and system, LTE network, user mobile devices, and internet service provisioning.

59. Exhibit D details the manner in which the Accused Instrumentalities infringe the ’279 Patent by way of a representative example that charts 3GPP TS 36.211 version 8.9.0 Release 8 (dated December 16, 2009) to claims 1 and 7 of the ’279 Patent. On information and belief, the manner of infringement by all Accused Instrumentalities is materially the same as this representation.

60. Defendants have actual notice of the ’279 Patent and/or their infringing activities relating to the ’279 Patent. For example, on February 1, 2022, Plaintiff provided AT&T with the ’279 Patent and claim chart, and offered to license the ’279 Patent. Defendants have been aware of the ’279 Patent since at least the filing date of this complaint, when they were put on notice of infringement.

61. Each Defendant has been and is indirectly infringing the ’279 Patent by actively inducing the direct infringement by others of the ’279 Patent, in the United States, the State of Texas, and this District.

62. Each Defendant has induced and continues to induce, through affirmative acts, customers and third parties, such as wireless subscribers and/or Internet service users, to directly infringe the ’279 Patent under 35 U.S.C. § 271(b) by making, using, selling, offering for sale,

and/or importing into the United States the Accused Instrumentalities.

63. Defendants infringe the ’279 Patent by creation and control of systems utilized by end users, including Defendant’s direct customers and users.

64. Each Defendant specifically intended and was aware that the ordinary and customary use of the Accused Instrumentalities would infringe the ’279 Patent.

65. The affirmative acts of inducement by Defendants include, but are not limited to, any one or a combination of encouraging and/or facilitating third party infringement through the advertisement, marketing, and dissemination of the Accused Instrumentalities and their components, including via Defendants’ wireless subscribers and/or internet service users; and creating and publishing promotional and marketing materials, supporting materials, product manuals, and/or technical support and information relating to the Accused Instrumentalities, which describe, train, and instruct users on the implementation of the Accused Instrumentalities and their components, including but not limited to mobile devices and cellular networks.

66. Defendants knew that the induced conduct would constitute infringement, and intended said infringement at the time of committing the aforementioned acts, such that those acts and conduct have been and continue to be committed with the specific intent to induce infringement, or to deliberately avoid learning of the infringing circumstances at the time these acts were committed, so as to be willfully blind to the infringement they induced.

67. Defendants took active steps to encourage end users to use and operate the Accused Instrumentalities, despite knowing of the ’279 Patent in the United States, in a manner they knew directly infringes each element of at least claims 1 and 7 of the ’279 Patent. Further, Defendants provided product manuals and other technical information that cause their subscribers, customers, and other third parties to use and to operate the Accused

Instrumentalities for their ordinary and customary use, such that Defendants' customers and other third parties have directly infringed the '279 Patent, through the normal and customary use of the Accused Instrumentalities.

68. Therefore, each Defendant is liable for infringement of the '279 Patent and that infringement has been and continues to be willful in nature.

69. Plaintiff Howlink has incurred and will continue to incur substantial damages.

70. Plaintiff Howlink has been and continues to be irreparably harmed by each Defendant's infringement.

71. Therefore, Plaintiff Howlink is entitled to an injunction, actual and/or compensatory damages, reasonable royalties, pre- and post-judgment interest, enhanced damages, attorney fees, and costs.

COUNT 2

72. Each Defendant infringes at least claim 1 of the '415 Patent.

73. Each Defendant has committed and continues to commit acts of direct infringement by making, using, selling, offering to sell, and/or importing Accused Instrumentalities, including but not limited to legacy TDM-based backhaul, newer IP-based network architectures, and a hybrid fixed line backhaul comprising equipment for routing packets to and from the core network which enables intercommunication between the TDM-based backhaul and the newer IP-based network architectures, user mobile devices, and internet service provisioning.

74. Exhibit E details the manner in which the Accused Instrumentalities infringe the '415 Patent by way of a representative example that charts Defendants' backhaul system. On information and belief, the manner of infringement by all Accused Instrumentalities is materially the same as this representation.

75. Defendants have actual notice of the ’415 Patent and/or their infringing activities relating to the ’415 Patent since at least the filing date of this complaint, when they were put on notice of infringement.

76. Additionally, Defendants have actual notice of the ’415 Patent and/or their infringing activities relating to the ’415 Patent. For example, on February 1, 2022, Plaintiff provided AT&T with the ’415 Patent and claim chart, and offered to license the ’415 Patent. Defendants have been aware of the ’415 Patent since at least the filing date of this complaint, when they were put on notice of infringement.

77. Each Defendant has been and is indirectly infringing the ’415 Patent by actively inducing the direct infringement by others of the ’415 Patent, in the United States, the State of Texas, and this District.

78. Each Defendant has induced and continues to induce, through affirmative acts, customers and third parties, such as wireless subscribers and/or Internet service users, to directly infringe the ’415 Patent under 35 U.S.C. § 271(b) by making, using, selling, offering for sale, and/or importing into the United States the Accused Instrumentalities.

79. Defendants infringe the ’415 Patent by creation and control of systems utilized by end users, including Defendant’s direct customers and users.

80. Each Defendant specifically intended and was aware that the ordinary and customary use of the Accused Instrumentalities would infringe the ’415 Patent.

81. The affirmative acts of inducement by Defendants include, but are not limited to, any one or a combination of encouraging and/or facilitating third party infringement through the advertisement, marketing, and dissemination of the Accused Instrumentalities and their components, including via Defendants’ wireless subscribers and/or internet service users; and

creating and publishing promotional and marketing materials, supporting materials, product manuals, and/or technical support and information relating to the Accused Instrumentalities, which describe, train, and instruct users on the implementation of the Accused Instrumentalities and their components, including but not limited to mobile devices and cellular networks.

82. Defendants knew that the induced conduct would constitute infringement, and intended said infringement at the time of committing the aforementioned acts, such that those acts and conduct have been and continue to be committed with the specific intent to induce infringement, or to deliberately avoid learning of the infringing circumstances at the time these acts were committed, so as to be willfully blind to the infringement they induced.

83. Defendants took active steps to encourage end users to use and operate the Accused Instrumentalities, despite knowing of the ’415 Patent in the United States, in a manner they knew directly infringes each element of at least claim 1 of the ’415 Patent. Further, Defendants provided product manuals and other technical information that cause their subscribers, customers, and other third parties to use and to operate the Accused Instrumentalities for their ordinary and customary use, such that Defendants’ customers and other third parties have directly infringed the ’415 Patent, through the normal and customary use of the Accused Instrumentalities.

84. Therefore, each Defendant is liable for infringement of the ’415 Patent and that infringement has been and continues to be willful in nature.

85. Plaintiff Howlink has incurred and will continue to incur substantial damages.

86. Plaintiff Howlink has been and continues to be irreparably harmed by each Defendant’s infringement.

87. Therefore, Plaintiff Howlink is entitled to an injunction, actual and/or

compensatory damages, reasonable royalties, pre- and post-judgment interest, enhanced damages, attorney fees, and costs.

COUNT 3

88. Each Defendant infringes at least claim 1 of the ’576 Patent.

89. Each Defendant has committed and continues to commit acts of direct infringement by making, using, selling, offering to sell, and/or importing Accused Instrumentalities, including but not limited to femtocells that are provisioned to provide members and non-members of a CSG list to receive service from the femtocell while providing full access to members on the CSG list and limited access to non-members.

90. Exhibit F details the manner in which the Accused Instrumentalities infringe the ’576 Patent by way of an exemplary device that maps to Defendants’ private network services and femtocell products. On information and belief, the manner of infringement by all Accused Instrumentalities is materially the same as this representation.

91. Defendants have actual notice of the ’579 Patent and/or their infringing activities relating to the ’579 Patent. For example, on Feburary 1, 2022, Plaintiff provided AT&T with the ’576 Patent and claim chart, and offered to license the ’579 Patent. Defendants have been aware of the ’576 Patent since at least the filing date of this complaint, when they were put on notice of infringement.

92. Each Defendant has been and is indirectly infringing the ’576 Patent by actively inducing the direct infringement by others of the ’576 Patent, in the United States, the State of Texas, and this District.

93. Each Defendant has induced and continues to induce through affirmative acts customers and third parties, such as wireless subscribers, to directly infringe the ’576 Patent under 35 U.S.C. § 271(b) by making, using, selling, offering for sale, and/or importing into the

United States the Accused Instrumentalities.

94. Defendants infringe the '576 Patent by creation and control of systems utilized by end users, including Defendant's direct customers and users.

95. Each Defendant specifically intended and was aware that the ordinary and customary use of the Accused Instrumentalities would infringe the '576 Patent.

96. The affirmative acts of inducement by Defendants include, but are not limited to, any one or a combination of encouraging and/or facilitating third party infringement through the advertisement, marketing, and dissemination of the Accused Instrumentalities and their components, including via Defendants' wireless subscribers and/or internet service users; and creating and publishing promotional and marketing materials, supporting materials, product manuals, and/or technical support and information relating to the Accused Instrumentalities, which describe, train, and instruct users on the implementation of the Accused Instrumentalities and their components, including but not limited to mobile devices and cellular networks.

97. Defendants knew that the induced conduct would constitute infringement, and intended said infringement at the time of committing the aforementioned acts, such that those acts and conduct have been and continue to be committed with the specific intent to induce infringement, or to deliberately avoid learning of the infringing circumstances at the time these acts were committed, so as to be willfully blind to the infringement they induced.

98. Defendants took active steps to encourage end users to use and operate the Accused Instrumentalities, despite knowing of the '576 Patent in the United States, in a manner they knew directly infringes each element of at least claim 1 of the '576 Patent. Further, Defendants provided product manuals and other technical information that cause their subscribers, customers, and other third parties to use and to operate the Accused

Instrumentalities for their ordinary and customary use, such that Defendants' customers and other third parties have directly infringed the '576 Patent, through the normal and customary use of the Accused Instrumentalities.

99. Therefore, each Defendant is liable for infringement of the '576 Patent and that infringement has been and continues to be willful in nature.

100. Plaintiff Howlink has incurred and will continue to incur substantial damages.

101. Plaintiff Howlink has been and continues to be irreparably harmed by each Defendant's infringement.

102. Therefore, Plaintiff Howlink is entitled to an injunction, actual and/or compensatory damages, reasonable royalties, pre- and post-judgment interest, enhanced damages, attorney fees, and costs.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Howlink respectfully requests that this Court:

A. Enter judgment in favor of Plaintiff Howlink that the Patents-In-Suit are valid and enforceable;

B. Enter judgment in favor of Plaintiff Howlink that each Defendant has infringed and continues to infringe the Patents-In-Suit, and find that such infringement is willful;

C. Award Plaintiff Howlink all monetary relief available under the laws of the United States, including but not limited to 35 U.S.C. § 284;

D. Order each Defendant to pay ongoing royalties in an amount to be determined for any continued infringement after the date that judgment is entered;

E. Declare this case exceptional and award Plaintiff Howlink its reasonable attorney fees under 35 U.S.C. § 285;

F. Enjoin each Defendant, and its officers, subsidiaries, agents, servants, and

employees, and all persons in active concert with any of the foregoing, from further infringement of the Patents-In-Suit; and

G. Grant Plaintiff Howlink all such other relief as the Court deems just and equitable.

DEMAND FOR JURY TRIAL

Plaintiff Howlink demands a jury trial on all issues so triable pursuant to Rule 38 of the Federal Rules of Civil Procedure.

Date: February 3, 2022

Respectfully submitted,

/s/ S. Calvin Capshaw

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