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

Headwater Partners II LLC, *Plaintiff*, vs. T-Mobile USA, Inc. and Sprint LLC, *Defendants*.	CASE NO. 2:24-cv-00015 **Complaint for Patent Infringement** **JURY DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Headwater Partners II LLC ("Headwater") files this complaint against Defendants T-Mobile USA, Inc. and Sprint LLC, formerly known as Sprint Corporation (collectively, "Defendants" or "T-Mobile"), alleging infringement of U.S. Patent Nos. 9,094,868 and 9,413,502.

BACKGROUND

1. This complaint arises from Defendants' infringement of U.S. Patent Nos. 9,094,868 ("'868 patent") and 9,413,502 ("'502 patent") (collectively, the "Asserted Patents"), which relate to wireless communications technology.

2. Dr. Gregory Raleigh—the primary inventor of the Asserted Patents—is a world-renowned scientist, inventor, and entrepreneur, with over 25 years of executive experience in several technology sectors including networking, cloud software, consumer services, wireless and military systems. Dr. Raleigh holds Ph.D. and Masters degrees in Electrical Engineering from Stanford University, and a BS in Electrical Engineering from Cal Poly San Luis Obispo. He is the inventor of over 350 issued U.S. and international patents in several fields including radio systems and

components, radar, mobile operating systems, cloud services, IoT, networking, consumer electronics, radiation beam cancer therapy and medical imaging.

3. Dr. Raleigh has a long and distinguished record of significant contributions and advancements in wireless communications technology. His inventions, companies, and products have profoundly and positively impacted virtually every aspect of the mobile device and communications market. In 2005, Dr. Raleigh was named one of the "50 most powerful people in networking" because of his discoveries in wireless communications technology, and his work in multiplying the capacity of a radio link using multiple transmission and receiving antennas to exploit multipath propagation was described as the "most important wireless technology in the works." *See* https://www.networkworld.com/article/2316916/the-50-most-powerful-people-in-networking.html?page=2.

4. In 1996, while at Stanford University, Dr. Raleigh presented the first mathematical proof demonstrating that multiple antennas may be used with special signal processing techniques to transmit multiple data streams at the same time and on the same frequency while in the presence of naturally occurring multipath propagation. Dr. Raleigh's work at Stanford has been widely adopted in modern multiple-input and multiple-output ("MIMO") radio communication and implemented in major wireless communication standards including 4G and 5G. *See, e.g.*, https://en.wikipedia.org/wiki/Gregory_Raleigh.

5. Dr. Raleigh's groundbreaking work solved problems that had existed in wireless communication since the late 1800s and overturned a century of research and practice in the fields of radio science and wireless communication theory. His work revealed that a new class of MIMO signal processing architectures would allow wireless devices to transmit multiple data streams at the

same time on the same frequency thereby multiplying the information-carrying capacity of wireless networks.

6. Based on his discoveries, Dr. Raleigh co-founded Clarity Wireless to develop smart antenna products incorporating the advances of his MIMO signal processing architecture, and obtained patents now used in 4G and 5G cellular and Wi-Fi standards. Field trials of the smart antennas developed by Clarity Wireless demonstrated performance significantly above anything else contemplated at the time and continue to set standards for multipath broadband wireless access links. Shortly after those field trials, Cisco acquired Clarity in 1998 and hired Dr. Raleigh to continue to commercialize these technologies.

7. After leaving Cisco, Dr. Raleigh founded Airgo Networks to develop the world's first MIMO wireless chipsets, networking software, reference design systems and commercial OEM products. Airgo Networks's chipset products significantly improved the speed and reliability of Wi-Fi, leading to the adoption of its technology as the core of Wi-Fi radio standards since 2006, and adoption of the chipsets into products sold across the globe. In 2006, Qualcomm acquired Airgo Networks and hired Dr. Raleigh to continue to commercialize these technologies. The Airgo team at Qualcomm spearheaded the creation of Wi-Fi standards and developed the first Qualcomm Wi-Fi chips for cell phones.

8. Dr. Raleigh's innovations at Clarity Wireless, Cisco, Airgo Networks, and Qualcomm, resulted in widespread adoption of his technologies in a multitude of cellular and Wi-Fi standards, such as LTE, WiMAX, 802.11n, 802.11ac (Wi-Fi 5), as well as 802.11ax (Wi-Fi 6).

9. After successfully founding and selling Clarity Wireless and Airgo Networks to Cisco and Qualcomm, respectively, Dr. Raleigh shifted his focus from solving radio-centric problems to solving problems in how wireless services are provided to consumers. Dr. Raleigh

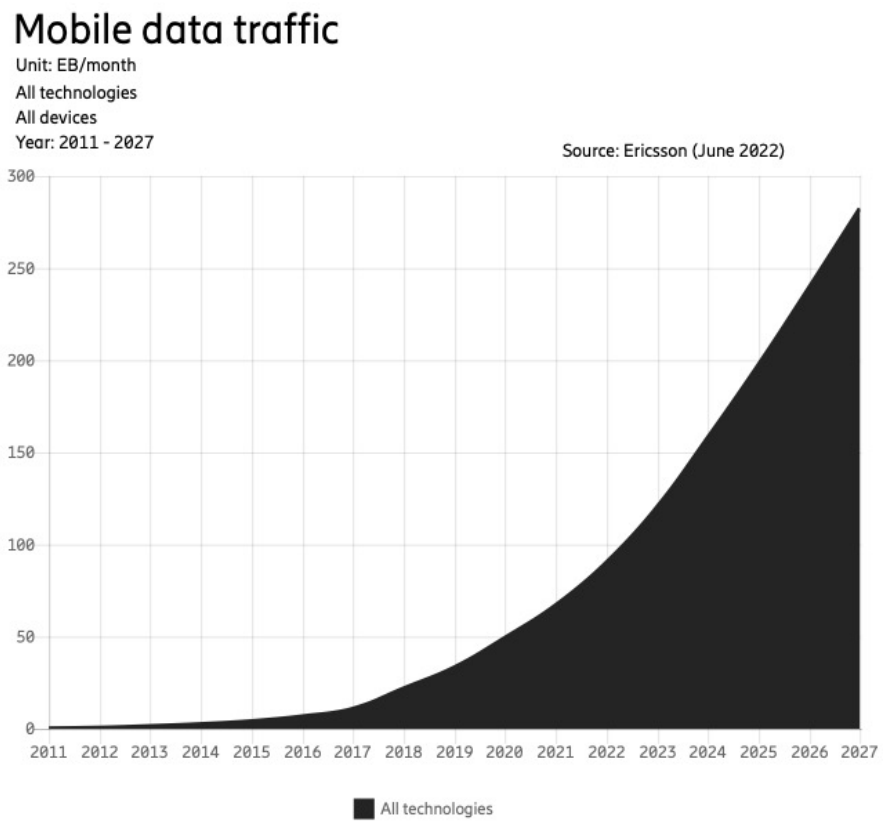
foresaw significant data demand problems presented by the advent and adoption of smartphones. He sought to solve these data demand problems by improving end-user wireless devices and the services that support them.

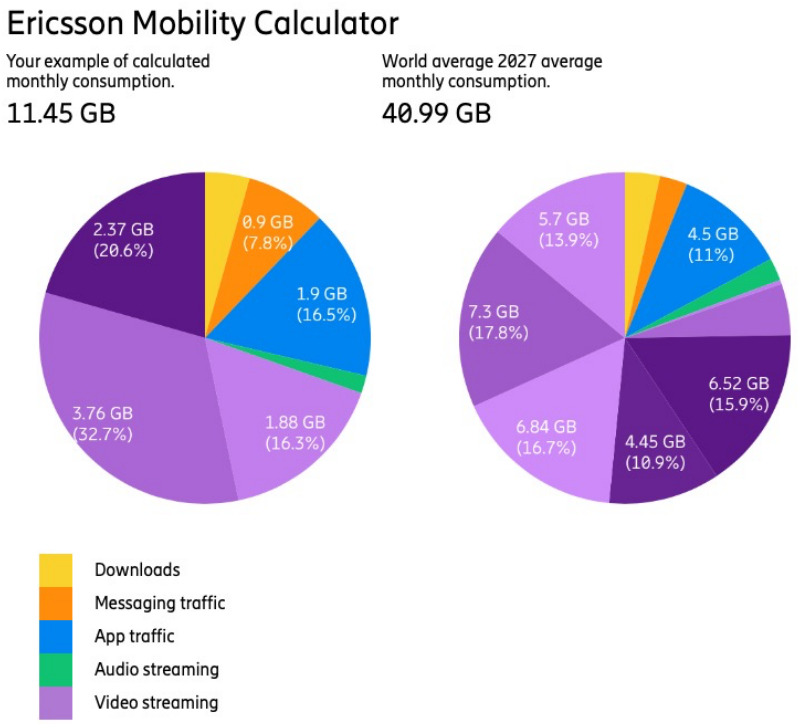
10. In 2008, Dr. Raleigh formed Headwater to develop mobile operating systems and cloud technology, which today, underpin the mobile phone and app industries. The patents in this action describe and claim some of the extraordinary inventions developed by Dr. Raleigh and the Headwater team.

11. Smartphones and other mobile devices have become ubiquitous and inseparable components of our daily lives, allowing us to make and receive phone calls, get notifications, download music, upload photos, stream entertainment, transact business, exchange ideas, and keep us connected to our family and friends whether they are down the hall or around the globe. Users can get email, install apps, and browse the internet from these tiny devices by making use of data connectivity services. These devices accomplish these amazing feats by exchanging staggering amounts of data over the internet using wireless and cellular networks, relying on ubiquitous data connectivity to keep users up-to-date and connected.

12. Since 2011, mobile device data demand has exploded—increasing by almost 400%—with each user consuming approximately 11.5 gigabytes of data per month. In the aggregate, this equates to approximately 90 exabytes of data consumption per month. *See, e.g.*, https://www.ericsson.com/en/reports-and-papers/mobility-report/mobility-visualizer?f=9&ft=2&r=1&t=11,12,13,14,15,16,17&s=4&u=3&y=2011,2027&c=3. For context: a single exabyte of data is equivalent to one billion gigabytes of data. Said another way, if one gigabyte is the size of the Earth, then an exabyte is the size of the sun. *See, e.g.*, https://www.backblaze.com/blog/what-is-an-exabyte/.

13. And mobile device data demand shows no sign of slowing down. Between now and 2027, mobile data demand is projected to increase more than three-fold, from 90 exabytes per month to a staggering 282 exabytes per month, with each user consuming an average of 41 gigabytes of data each and every month. *See, e.g.*, https://www.ericsson.com/en/reports-and-papers/mobility-report/mobility-calculator?up=2&bp=1&v=0&c=2; https://www.ericsson.com/en/reports-and-papers/mobility-report/mobility-visualizer?f=9&ft=2&r=1&t=11,12,13,14,15,16,17&s=4&u=3&y=2011,2027&c=3.





14. The Headwater technologies disclosed in the Asserted Patents laid the groundwork for many of the infringing features and functionalities that help improve spectral efficiency; reduce deployment costs; enhance network flexibility, coverage, and densification; and increase throughput, reliability, efficiency.

PLAINTIFF HEADWATER AND THE PATENTS-IN-SUIT

15. Plaintiff Headwater was formed in 2011 and has been in continued existence and operation since that time. Headwater is a Texas limited liability company organized under the laws of Texas, with its headquarters at 110 North College Avenue, Suite 1116, Tyler, Texas 75702.

16. Headwater is the owner of U.S. Patent No. 9,094,868, entitled "User equipment link quality estimation based on positioning," which issued on July 28, 2015. A copy of the '868 patent is attached to this complaint as Exhibit 1.

17. Headwater is the owner of U.S. Patent No. 9,413,502, entitled "Backhaul assisted by user equipment," which issued on August 9, 2016. A copy of the '502 patent is attached to this complaint as Exhibit 2.

DEFENDANTS AND THE ACCUSED INSTRUMENTALITIES

18. On information and belief, Defendant T-Mobile USA is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, Washington 98006. On information and belief, T-Mobile USA may be served through its registered agent, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

19. On information and belief, since on or about November 22, 1999, T-Mobile USA has been registered to do business in the state of Texas under Texas SOS file number 19119836005. On information and belief, T-Mobile USA has directly or indirectly conducted business and continues to conduct business directly or indirectly in the State of Texas and within the Eastern District of Texas.

20. On information and belief, Defendant Sprint LLC ("Sprint"), formerly known as Sprint Corporation, is a Delaware limited liability company with its principal place of business at 12920 Southeast 38th Street, Bellevue, Washington 98006.

21. On April 1, 2020, T-Mobile and Sprint closed a merger of the two companies, with the surviving company continuing to be T-Mobile.

22. The Accused Instrumentalities are 4G LTE and 5G base stations, nodes, and related network equipment and services, including those described in Exhibits 3 and 4, made, used, offered for sale, sold, and/or imported by T-Mobile in the United States.

JURISDICTION AND VENUE

23. This action arises under the patent laws of the United States, Title 35 of the United

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

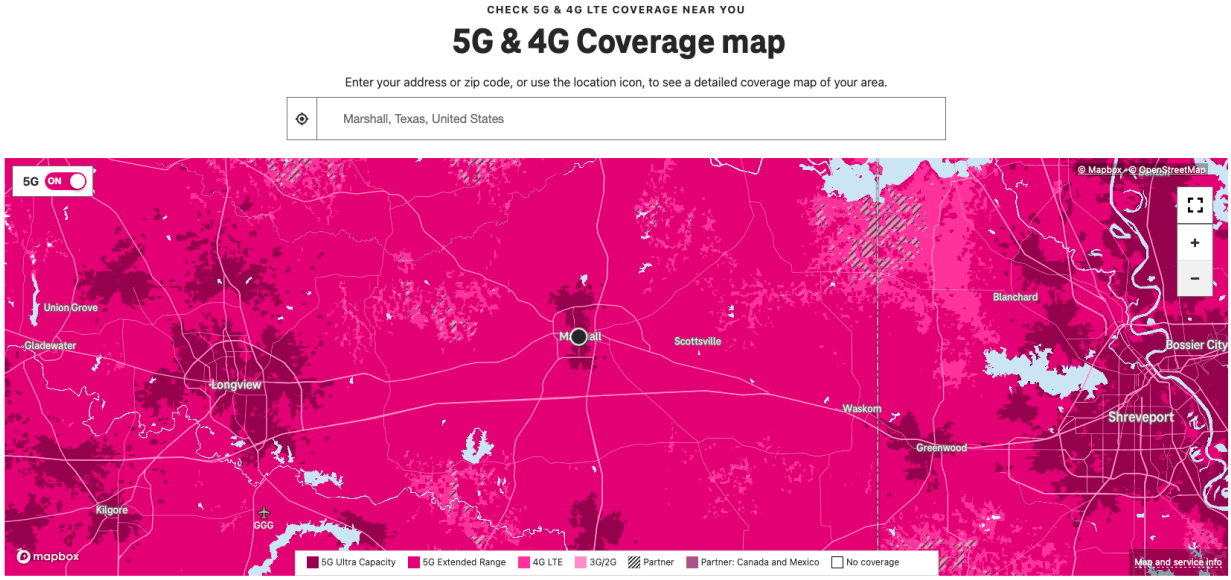
24. This Court has personal jurisdiction over Defendants in this action because T-Mobile has committed acts of infringement within this District giving rise to this action, has a regular and established place of business in this District, and has established minimum contacts with this forum such that the exercise of jurisdiction over T-Mobile would not offend traditional notions of fair play and substantial justice. T-Mobile, directly and/or through subsidiaries or intermediaries, conducts its business extensively throughout Texas, by shipping, distributing, offering for sale, selling, and advertising its products and/or services in Texas and the Eastern District of Texas, regularly do business or solicit business, engage in other persistent courses of conduct, and/or derive substantial revenue from products and/or services provided to individuals in Texas, and commit acts of infringement of Headwater's patents in this District by, among other things, making, using, importing, offering to sell, and selling products and services that infringe the asserted patents, including without limitation the Accused Instrumentalities.

25. T-Mobile, directly and/or through subsidiaries or intermediaries, have purposefully and voluntarily placed one or more products and/or services in the stream of commerce that practice the Asserted Patents with the intention and expectation that they will be purchased and used by consumers in this District. These products and/or services have been and continue to be purchased and used in this District.

26. Venue as to T-Mobile is proper in this District under 28 U.S.C. §§ 1391 and 1400(b). On information and belief, T-Mobile resides in this District and/or has committed acts of infringement and has a regular and established place of business in this District.

27. For example, T-Mobile advertises its wireless networks are available in Texas, including within the Eastern District of Texas. *See e.g.*, https://www.t-

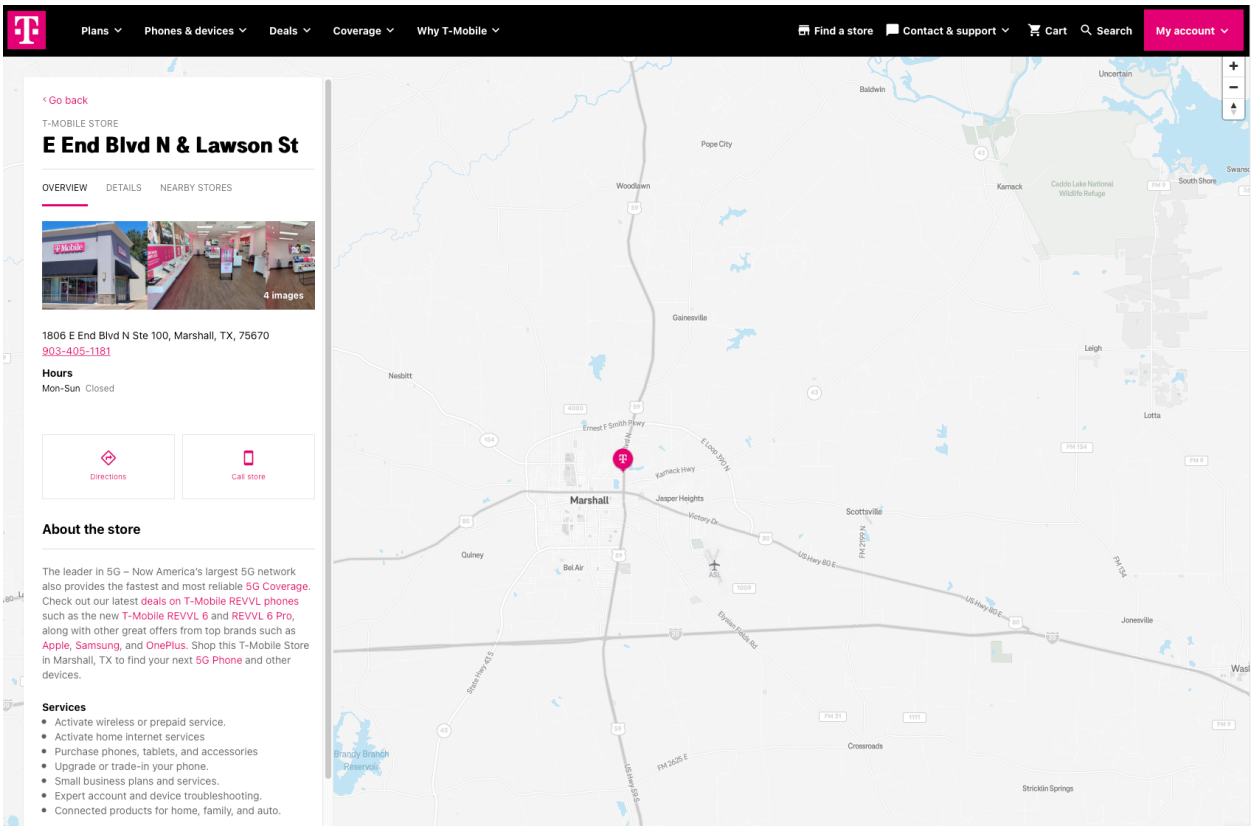
mobile.com/coverage/coverage-map:



28. T-Mobile had approximately 110 million subscribers as of the fourth quarter of 2021. *See* https://www.telekom.com/en/media/media-information/archive/second-quarter-report-2022-1012842.

29. T-Mobile owns, leases, maintains and/or operates cellular base stations throughout this District to sell and provide 5G data services to customers, in infringement of the Asserted Patents in this District.

30. T-Mobile also sells mobile devices that operate on its wireless networks in Texas, including within the Eastern District of Texas. *See e.g.*, https://www.t-mobile.com/store-locator/tx/marshall/e-end-blvd-n-lawson-st:



COUNT 1 – CLAIM FOR INFRINGEMENT OF THE '868 PATENT

31. Headwater incorporates by reference each of the allegations in the foregoing paragraphs as if fully set forth herein and further alleges as follows:

32. On July 28, 2015, the United States Patent and Trademark Office issued U.S. Patent No. 9,094,868, entitled "User equipment link quality estimation based on positioning." Exhibit 1.

33. Headwater is the owner of the '868 patent with full rights to pursue recovery of royalties for damages for infringement, including full rights to recover past and future damages.

34. The written description of the '868 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the nonconventional and non-generic combination of claim limitations is patentably distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

35. On information and belief, T-Mobile makes, uses, offers for sale, sells, and/or imports Accused Instrumentalities, such as Samsung, Ericsson and/or Nokia cellular base stations that support, e.g., 5G NR adaptive beamforming, that directly infringe, literally and/or under the doctrine of equivalents, claims of the '868 patent, including at least claim 1, in violation of 35 U.S.C. § 271(a). For example, attached as Exhibit 3 is a chart setting forth a description of T-Mobile's infringement of claim 1 of the '868 patent.

36. T-Mobile also knowingly and intentionally induces infringement of the '868 patent, including at least claim 1, in violation of 35 U.S.C. § 271(b). Through at least the filing and service of this Complaint, T-Mobile has had knowledge of the '868 patent and the infringing nature of the Accused Instrumentalities. Despite this knowledge, T-Mobile continues to actively encourage and instruct others, such as customers, end users, and MVNOs (for example, through user manuals, technical specifications, and online instruction materials on their website), to use the Accused Instrumentalities in ways that directly infringe the '868 patent. T-Mobile does so knowing and intending that such users will commit these infringing acts. T-Mobile also continues to make, use, offer for sale, sell, and/or import the Accused Instrumentalities, despite its knowledge of the '868 patent, thereby specifically intending for and inducing others to infringe the '868 patent through their normal and customary use of the Accused Instrumentalities.

37. T-Mobile has also contributed to infringement of the '868 patent by supplying Accused Instrumentalities to others, such as customers and MVNOs, knowing that they: constitute a material part of claimed inventions of the '868 Patent, including at least claim 1; are especially made or adapted to infringe the '868 Patent and would be put to an infringing use; and are not staple articles or commodities of commerce suitable for non-infringing use, in violation of 35 U.S.C. §§ 271(c) and (f).

38. As a result of T-Mobile's infringement of the '868 patent, Headwater is entitled to monetary damages in an amount adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by T-Mobile, together with interest and costs as fixed by the Court.

COUNT 2 – CLAIM FOR INFRINGEMENT OF THE '502 PATENT

39. Headwater incorporates by reference each of the allegations in the foregoing paragraphs as if fully set forth herein and further alleges as follows:

40. On August 9, 2016, the United States Patent and Trademark Office issued U.S. Patent No. 9,413,502, entitled "Backhaul assisted by user equipment." Exhibit 2.

41. Headwater is the owner of the '502 patent with full rights to pursue recovery of royalties for damages for infringement, including full rights to recover past and future damages.

42. The written description of the '502 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the nonconventional and non-generic combination of claim limitations is patentably distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

43. On information and belief, T-Mobile makes, uses, offers for sale, sells, and/or imports Accused Instrumentalities—such as Samsung, Ericsson and/or Nokia cellular base stations supporting 5G NR Integrated Access Backhaul (IAB), and 4G LTE and 5G nodes—that directly infringe, literally and/or under the doctrine of equivalents, claims of the '502 patent, including at least claim 1, in violation of 35 U.S.C. § 271(a). For example, attached as Exhibit 4 is a chart setting forth a description of T-Mobile's infringement of claim 1 of the '502 patent.

44. T-Mobile also knowingly and intentionally induces infringement of the '502 patent, including at least claim 1, in violation of 35 U.S.C. § 271(b). Through at least the filing and service of this Complaint, T-Mobile has had knowledge of the '502 patent and the infringing nature of the Accused Instrumentalities. Despite this knowledge, T-Mobile continues to actively encourage and instruct others, such as customers, end users, and MVNOs (for example, through user manuals, technical specifications, and online instruction materials on their website), to use the Accused Instrumentalities in ways that directly infringe the '502 patent. T-Mobile does so knowing and intending that such users will commit these infringing acts. T-Mobile also continues to make, use, offer for sale, sell, and/or import the Accused Instrumentalities, despite their knowledge of the '502 patent, thereby specifically intending for and inducing others to infringe the '502 patent through their normal and customary use of the Accused Instrumentalities.

45. T-Mobile has also contributed to infringement of the '502 patent by supplying Accused Instrumentalities to others, such as customers and MVNOs, knowing that they: constitute a material part of claimed inventions of the '502 Patent, including at least claim 1; are especially made or adapted to infringe the '502 Patent and would be put to an infringing use; and are not staple articles or commodities of commerce suitable for non-infringing use, in violation of 35 U.S.C. §§ 271(c) and (f).

46. As a result of T-Mobile's infringement of the '502 patent, Headwater is entitled to monetary damages in an amount adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by T-Mobile, together with interest and costs as fixed by the Court.

JURY DEMAND

47. Headwater demands a jury trial pursuant to Federal Rule of Civil Procedure 38.

RELIEF REQUESTED

Headwater prays for the following relief:

A. A judgment in favor of Headwater that T-Mobile has infringed the Asserted Patents, and that the Asserted Patents are valid and enforceable;

B. A judgment and order requiring T-Mobile to pay Headwater past and future damages arising out of T-Mobile's infringement of the Asserted Patents in an amount no less than a reasonable royalty as well as costs, expenses, and pre- and post-judgment interest for its infringement of the Asserted Patents, as provided under 35 U.S.C. § 284;

C. Any and all injunctive and/or equitable relief to which Headwater may be entitled including, but not limited to, ongoing royalties with respect to T-Mobile's infringement of the Asserted Patents;

D. A judgment and order requiring T-Mobile to provide an accounting and to pay supplemental damages to Headwater, including, without limitation, pre-judgment and post-judgment interest;

E. A judgment and order finding that this case is exceptional under 35 U.S.C. § 285, and an award of Headwater's reasonable attorney's fees and costs; and

G. Any and all other relief to which Headwater may be entitled.

Dated: January 10, 2024

Respectfully submitted,

/s/ Marc Fenster

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