

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

XR COMMUNICATIONS, LLC, dba
VIVATO TECHNOLOGIES,

Plaintiff,

v.

T-MOBILE USA, INC.

Defendant.

Case No. 2:23-cv-00469

JURY TRIAL DEMANDED

**COMPLAINT FOR PATENT INFRINGEMENT
AGAINST T-MOBILE USA, INC.**

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.*, in which Plaintiff XR Communications LLC d/b/a Vivato Technologies (“Plaintiff” or “Vivato”) makes the following allegations against Defendant T-Mobile USA, Inc. (“Defendant” or “T-Mobile”):

INTRODUCTION

1. This complaint arises from Defendant’s unlawful infringement of the following United States patents owned by Vivato, each of which generally relate to wireless communication technology: United States Patent No. 11,750,256 (the “’256 Patent”), and 11,777,569 (the “’569 Patent”) (collectively, the “Asserted Patents”).

2. Countless electronic devices today connect to the Internet wirelessly. Beyond just connecting our devices together, wireless networks have become an inseparable part of our lives in our homes, our offices, and our neighborhood coffee shops. In even our most crowded spaces, today’s wireless technology allows all of us to communicate with each other, on our own devices,

at virtually the same time. Our connected world would be unrecognizable without the ubiquity of sophisticated wireless networking technology.

3. Just a few decades ago, wireless technology of this kind could only be found in science fiction. The underlying science behind wireless communications can be traced back to the development of “wireless telegraphy” in the nineteenth century. Guglielmo Marconi is credited with developing the first practical radio, and in 1896, Guglielmo Marconi was awarded British patent 12039, *Improvements in transmitting electrical impulses and signals and in apparatus there-for*, the first patent to issue for a Herzian wave-based wireless telegraphic system. Marconi would go on to win the Nobel Prize in Physics in 1909 for his contributions to the field.

4. One of Marconi’s preeminent contemporaries was Dr. Karl Ferdinand Braun, who shared the 1909 Nobel Prize in Physics with Marconi. In his Nobel lecture dated December 11, 1909, Braun explained that he was inspired to work on wireless technology by Marconi’s own experiments. Braun had observed that the signal strength in Marconi’s radio was limited beyond a certain distance, and wondered why increasing the voltage on Marconi’s radio did not result in a stronger transmission at greater distances. Braun thus dedicated himself to developing wireless devices with a stronger, more effective transmission capability.

5. In 1905, Braun invented the first phased array antenna. This phased array antenna featured three antennas carefully positioned relative to one another with a specific phase relationship so that the radio waves output from each antenna could add together to increase radiation in a desired direction. This design allowed Braun’s phased array antenna to transmit a directed signal.

6. Building on the fundamental breakthrough that radio transmissions can be *directed* according to a specific radiation pattern through the use of a phased array antenna, directed

wireless communication technology has developed many applications over the years. Braun's invention led to further developments in radar, smart antennas, and, eventually, to a technology known as "MIMO," or "multiple-input, multiple-output," which would ultimately allow a single radio channel to receive and transmit multiple data signals simultaneously. Along the way, engineers have worked tirelessly to overcome limitations and roadblocks directed wireless communication technology.

7. At the beginning of the twenty-first century, the vast majority of wireless networks still did not yet take advantage of directed wireless communications. Instead, "omnidirectional" access points and base stations were ubiquitous. Omnidirectional base stations transmit radio waves uniformly around the base station in every direction and do not steer the signal in particular directions. Omnidirectional antenna base stations do typically achieve 360 degrees of coverage around the base station, but with a reduced coverage distance. Omnidirectional base stations also lack sophisticated approaches to overcome certain types of interference in the environment. As only one example, the presence of solid obstructions, such as a building, can limit signal penetration. As another example, interference arises when radio waves are reflected, refracted, or diffracted based on obstacles present between the transmitter and receiver. The multiple paths that radio waves can travel between the transmitter and receiver often result in signal interference that decreases performance, and omnidirectional base stations lack advanced solutions to overcome these "multipath" effects.

8. Moving from omnidirectional networks to modern networks has required an additional series of advancements that harness the capabilities of directed wireless technology. These advancements range from conceiving various ways to steer and modify radiation patterns, to enhancing the transmission signal power in a desired direction, to suppressing radiation in

undesired directions, to minimizing signal “noise,” and then applying these new approaches into communications networks with multiple, heterogenous transmitters and receivers.

9. Harnessing the capabilities of directed wireless technology resulted in a significant leap forward in the signal strength, reliability, concurrent users, and/or data transmission capability of a wireless network. One of the fundamental building blocks of this latest transition was the development of improvements to MIMO and “beamforming,” which are the subject matter of patents in this infringement action that resulted from the investment of tens of millions of dollars and years of tireless effort by a group of engineers who built a technology company slightly ahead of its time. Their patented innovations laid the groundwork for today’s networks, and are infringed by Defendant.

THE PARTIES

10. Plaintiff XR Communications, LLC, d/b/a Vivato Technologies (“Vivato” or “Plaintiff”) is a limited liability company organized and existing under the laws of the State of Delaware with its principal place of business at 2809 Ocean Front Walk, Venice, California 90291. Vivato is the sole owner by assignment of all right, title, and interest in each Asserted Patent.

11. Vivato was founded in 2000 as a \$80+ million venture-backed company with several key innovators in the wireless communication field including Siavash Alamouti, Ken Biba, William Crilly, James Brennan, Edward Casas, and Vahid Tarokh, among many others. At that time, “Wi-Fi” or “802.11” had become the prominent means of wireless connection to the Internet, integrated into hundreds of millions of mobile devices globally. Vivato was founded to leverage its talent to generate intellectual property and deliver Wi-Fi/802.11 wireless connectivity solutions to service the growing demand for bandwidth.

12. Vivato has accomplished significant innovations in the field of wireless

communications technology. One area of focus at Vivato was the development of advanced wireless systems with sophisticated antenna designs to improve wireless speed, coverage, and reliability. Vivato also focused on designing wireless systems that maximize the efficient use of spectrum and wireless resources for large numbers of connected mobile devices. Ultimately, Vivato's accomplishments expanded beyond "Wi-Fi" and "802.11"-based networks.

13. Vivato's inventions and technology—particularly relating to "MIMO" and beamforming—also apply to wireless communication apart from WiFi, such as communication using cellular networks. Indeed, Vivato's earliest products focused on achieving wireless communication over much longer ranges (i.e., several miles) as compared to a traditional 802.11 Wi-Fi access point.

14. Among many fundamental breakthroughs achieved by Vivato are inventions that allow for intelligent and adaptive beamforming based on up-to-date information about the wireless medium, as well as adaptive beamforming in larger base stations accommodating many beams and many users. Through these and many other inventions, Vivato's engineers pioneered a wireless technology that provides for simultaneous transmission and reception, a significant leap forward over conventional wireless technology.

15. Over the years, Vivato has developed proven technology, with over 400 deployments globally, including private, public and government, and it has become a recognized provider of extended range wireless network infrastructure solutions. Vivato's wireless base stations integrate beamforming phased array antenna design with packet steering technology to deliver high-bandwidth extended range connections to serve multiple users and multiple devices.

16. Vivato's patent portfolio includes over 17 issued patents and pending patent applications. The patented technologies at issue in this case are directed to specific aspects of

wireless communication, including adaptively steered antenna array technology and beamforming technology.

17. On information and belief, Defendant T-Mobile USA, Inc. (“T-Mobile”) is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at 12920 S.E. 38th Street, Bellevue, Washington 98006. T-Mobile has as its registered agent for service: Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808. T-Mobile has been registered to do business in the state of Texas under Texas SOS file number 12958406. Defendant T-Mobile USA, Inc. provides communications, technology, and information products and services to consumers, businesses, and government entities throughout the State of Texas, including the Eastern District of Texas, including operating and selling access to a wireless communications network in the Eastern District of Texas.

18. On information and belief, T-Mobile US, Inc., a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at 12920 S.E. 38th Street, Bellevue, Washington 98006, is the ultimate parent corporation, either directly or indirectly, of Defendant.

JURISDICTION AND VENUE

19. This action arises under the patent laws of the United States, Title 35 of the United States Code § 1, *et seq*, including 35 U.S.C. §§ 271, 281, 283, 284, and 285. This Court has original subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

20. This Court has personal jurisdiction over Defendant in this action because Defendant has committed acts within this District giving rise to this action, and has established minimum contacts with this forum such that the exercise of jurisdiction over Defendant would not offend traditional notions of fair play and substantial justice. Defendant, directly and through

subsidiaries or intermediaries, has committed and continue to commit acts of infringement in this District by, among other things, importing, offering to sell, and selling products that infringe the asserted patents, and inducing others to infringe the asserted patents in this District. Defendant is directly and through intermediaries making, using, selling, offering for sale, distributing, advertising, promoting, and otherwise commercializing its infringing products in this District, including by operating, using, and selling access to its cellular network that uses the accused products. Defendant regularly conducts and solicits business in, engage in other persistent courses of conduct in, and/or derive substantial revenue from goods and services provided to the residents of this District and the State of Texas. Defendant is subject to jurisdiction pursuant to due process and/or the Texas Long Arm Statute due to its substantial business in this State and District including at least its infringing activities, regularly doing or soliciting business at its Texas facilities, and engaging in persistent conduct and deriving substantial revenues from goods and services provided to residents in the State of Texas including the Eastern District of Texas.

21. T-Mobile, directly and/or through subsidiaries or intermediaries, has 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 the Eastern District of Texas. These products and/or services have been and continue to be purchased and used in the Eastern District of Texas.

22. Venue is proper in this District under 28 U.S.C. §§ 1391(b), (c), (d), and 1400(b). Defendant T-Mobile USA, Inc. is registered to do business in Texas, and upon information and belief, Defendant has transacted business in this District and has committed acts of direct and indirect infringement in this District by, among other things, making, using, offering to sell, selling, and importing products that infringe the asserted patents. Defendant has regular and established

places of businesses in this District, including at 116 E Loop Ste 101, Longview, Texas 75605; 1806 E End Blvd N Ste 100, Marshall, Texas 75670; and 5800 Legacy Dr Suite C-9, Plano, Texas 75024. For example, T-Mobile maintains or has authorized retail locations in this District, including at the addresses listed above. *See, e.g.*, T-Mobile’s Answer and Counterclaims filed on February 24, 2023 (Dkt. No. 22), *Cobblestone Wireless, LLC v. T-Mobile USA, Inc., T-Mobile US Inc.* Case No. 2:22-cv-00477-JRG-RSP (Lead Case) (E.D. Texas), at ¶¶ 12-13 (“T-Mobile admits that T-Mobile USA, Inc. has retail stores in the Eastern District of Texas...”)

23. T-Mobile advertises its wireless networks as available in Texas, including within the Eastern District of Texas. Further, T-Mobile also owns, leases, maintains and/or operates cellular base stations in this District that provide 5G data services to T-Mobile customers in this District, including numerous cell tower locations in Tyler, Texas, Longview, Texas, and Marshall Texas.

24. In other recent actions, T-Mobile has either admitted or not contested that this federal judicial district is a proper venue for patent infringement actions against it. *See, e.g.*, T-Mobile’s Answer and Counterclaims filed on February 24, 2023 (Dkt. No. 22), *Cobblestone Wireless, LLC v. T-Mobile USA, Inc., T-Mobile US Inc.* Case No. 2:22-cv-00477-JRG-RSP (Lead Case) (E.D. Texas), at ¶¶ 11 (“T-Mobile does not contest that, for purposes of this action only, venue is proper in this District...”).

25. T-Mobile operates and sells access to a mobile network that provides telecommunication, Internet service, and other services to customers via cellular base stations located in this district and throughout the United States, in infringement of the asserted patents. T-Mobile’s 4G and 5G coverage extends to cities in this district, including within the Marshall division, according to T-Mobile’s website. *See, e.g.*, T-Mobile’s Answer and Counterclaims filed

on February 24, 2023 (Dkt. No. 22), *Cobblestone Wireless, LLC v. T-Mobile USA, Inc., T-Mobile US Inc.* Case No. 2:22-cv-00477-JRG-RSP (Lead Case) (E.D. Texas), at ¶¶ 14-15 (“T-Mobile admits that T-Mobile USA, Inc. operates a wireless telecommunications network that provides services to customers within the Eastern District of Texas...”)

COUNT I

INFRINGEMENT OF U.S. PATENT NO. 11,750,256

26. Vivato realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

27. Vivato owns by assignment all rights, title, and interest in U.S. Patent No. 11,750,256, entitled “Directed MIMO Communications.” The ’256 Patent was duly and legally issued by the United States Patent and Trademark Office on September 5, 2023. A true and correct copy of the ’256 Patent is attached as Exhibit 1.

28. On information and belief, Defendants make, use, offer for sale, sell, and/or import certain products/instrumentalities (“Accused Products” or “Accused Instrumentalities”), such as Ericsson and/or Nokia cellular base stations / 5G NR RAN solutions that support 3GPP 5G NR beamforming, that directly infringe, literally and/or under the doctrine of equivalents, various claims of the ’256 Patent, including at least claim 18. Defendants have, without authorization, operated, used, and sold, and continues to operate, use, and sell access to its 5G NR mobile network that includes the Accused Products/Instrumentalities. Defendants are liable for infringement of the ’256 Patent pursuant to 35 U.S.C. § 271(a).

29. Defendants also knowingly and intentionally induce infringement of various claims of the ’256 Patent in violation of 35 U.S.C. § 271(b). Through the filing and service of this

Complaint, Defendants have had knowledge of the '256 Patent and the infringing nature of the Accused Products. Despite this knowledge of the '256 Patent, Defendants continue to actively encourage and instruct their authorized third parties, customers, and/or end users (for example, through manuals and online instruction materials on their website, and other white papers, technical specifications, and professional support services provided directly) to use the Accused Products in ways that directly infringe the '256 Patent. Defendants do so knowing and intending that their authorized third parties, customers, or end users will commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the Accused Products, despite their knowledge of the '256 Patent, thereby specifically intending for and inducing to infringe the '256 Patent through the normal and customary use of the Accused Products. Defendants also knew or were willfully blind that its actions would induce direct infringement by others and intended that its actions would induce direct infringement by others. Accordingly, a reasonable inference is that Defendant specifically intended for others, such as its authorized third parties, end users, or customers, to directly infringe one or more claims of Vivato's '256 Patent in the United States because Defendant had knowledge of the '256 Patent and actively induced others (*e.g.*, its customers) to directly infringe the '256 Patent.

30. Defendants also contributorily infringes pursuant to 35 U.S.C. § 271(c) by making, using, selling, offering to sell, commercially distributing, and/or importing the '256 Accused Products, knowing they constitute a material part of the invention, are especially made or adapted for use in infringing, and that they are not staple articles of commerce capable of substantial non-infringing use.

31. The Accused Products satisfy all claim limitations of at least method claim 18 and method claim 22 of the '256 Patent. Claim charts comparing independent claim 18 of the '256

Patent to representative Accused Products/Instrumentalities are attached as Exhibit 2.

32. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Defendants have injured Vivato and are liable for infringement of the '256 Patent pursuant to 35 U.S.C. § 271.

33. As a result of Defendants' infringement of the '256 Patent, Vivato is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

34. Vivato's '256 Patent is valid and enforceable.

35. Vivato has complied with 35 USC § 287 as to the '256 Patent, at least because there are no unmarked patented articles subject to a duty to mark.

COUNT II

INFRINGEMENT OF U.S. PATENT NO. 11,777,569

36. Vivato realleges and incorporates by reference the foregoing paragraphs as if fully set forth herein.

37. Vivato owns by assignment all rights, title, and interest in U.S. Patent No. 11,777,569, entitled "Directed Wireless Communications." The '569 Patent was duly and legally issued by the United States Patent and Trademark Office on October 3, 2023, which is when infringement began. A true and correct copy of the '569 Patent is attached as Exhibit 3.

38. On information and belief, Defendants make, use, offer for sale, sell, and/or import certain products/instrumentalities ("Accused Products" or "Accused Instrumentalities"), such as Ericsson and/or Nokia cellular base stations / 5G NR RAN solutions that support 3GPP 5G NR beamforming, that directly infringe, literally and/or under the doctrine of equivalents, various

claims of the '569 Patent, including claim 11. Defendants have, without authorization, operated, used, and sold, and continues to operate, use, and sell access to its 5G NR mobile network that includes the Accused Products/Instrumentalities. Defendants are liable for infringement of the '569 Patent pursuant to 35 U.S.C. § 271(a).

39. Defendants also knowingly and intentionally induce infringement of various claims of the '569 Patent in violation of 35 U.S.C. § 271(b). Through the filing and service of this Complaint, Defendants have had knowledge of the '569 Patent and the infringing nature of the Accused Products. Despite this knowledge of the '569 Patent, Defendants continue to actively encourage and instruct their authorized third parties, customers, and/or end users (for example, through manuals and online instruction materials on their website, and other white papers, technical specifications, and professional support services provided directly) to use the Accused Products in ways that directly infringe the '569 Patent. Defendants do so knowing and intending that their authorized third parties, customers, and end users will commit these infringing acts. Defendants also continue to make, use, offer for sale, sell, and/or import the Accused Products, despite their knowledge of the '569 Patent, thereby specifically intending for and inducing their customers to infringe the '569 Patent through the normal and customary use of the Accused Products. Defendants also knew or were willfully blind that its actions would induce direct infringement by others and intended that its actions would induce direct infringement by others. Accordingly, a reasonable inference is that Defendant specifically intended for others, such as its customers, to directly infringe one or more claims of Vivato's '569 Patent in the United States because Defendant had knowledge of the '569 Patent and actively induced others (*e.g.*, authorized third parties, customers, or end users) to directly infringe the '569 Patent.

40. Defendants also contributorily infringes pursuant to 35 U.S.C. § 271(c) by making,

using, selling, offering to sell, commercially distributing, and/or importing the '569 Accused Products, knowing they constitute a material part of the invention, are especially made or adapted for use in infringing, and that they are not staple articles of commerce capable of substantial non-infringing use.

41. The Accused Products satisfy all claim limitations of at least method claim 11 of the '569 Patent. Claim charts comparing independent claim 11 of the '569 Patent to representative Accused Products/Instrumentalities are attached as Exhibit 4.

42. By making, using, offering for sale, selling and/or importing into the United States the Accused Products, Defendants have injured Vivato and are liable for infringement of the '569 Patent pursuant to 35 U.S.C. § 271.

43. As a result of Defendants' infringement of the '569 Patent, Vivato is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

44. Vivato's '569 Patent is valid and enforceable.

45. Vivato has complied with 35 USC § 287 as to the '569 Patent, at least because there are no unmarked patented articles subject to a duty to mark.

PRAYER FOR RELIEF

WHEREFORE, Vivato respectfully requests that this Court enter:

- a. A judgment in favor of Vivato that Defendant has infringed, either literally and/or under the doctrine of equivalents, the '256 Patent and the '569 Patent and that they are valid, enforceable, and patent-eligible;
- b. A judgment and order requiring Defendant to pay Vivato its damages, costs,

expenses, and pre-judgment and post-judgment interest for Defendant's infringement of the '256 Patent and the '569 Patent;

c. A judgment and order requiring Defendant to provide an accounting and to pay supplemental damages to Vivato, including without limitation, pre-judgment and post-judgment interest, and an award of an ongoing royalty for Defendant's post-judgment infringement in an amount according to proof;

d. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Vivato its reasonable attorneys' fees and costs against Defendant, and enhanced damages pursuant to 35 U.S.C. § 284;

e. Any and all injunctive and/or equitable relief to which Vivato may be entitled including without limitation ongoing royalties with respect to Defendant's infringement; and

f. Any and all other relief as the Court may deem appropriate and just under the circumstances.

DEMAND FOR JURY TRIAL

Vivato, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Dated: October 4, 2023

Respectfully submitted,

/s/Reza Mirzaie

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