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

FRACTUS, S.A.,	§	
	§	
Plaintiff,	§	
	§	
	§	
v.	§	**Civil Action No. 2:24-cv-1008**
	§	
GEOTAB INC.,	§	**JURY TRIAL DEMANDED**
	§	
Defendant.	§	
	§	
	§	
	§	
	§	
	§	

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Fractus, S.A. ("Fractus" or "Plaintiff") hereby submits this Complaint for patent infringement against Defendant Geotab Inc. ("Geotab" or "Defendant").

THE PARTIES

1. Fractus, S.A. is a foreign corporation duly organized and existing under the laws of Spain with its principal place of business in Barcelona, Spain.

2. Fractus is the owner by assignment of all right, title, and interest in U.S. Patent Nos. 8,456,365, 8,810,458, 11,031,677, 11,349,200, and 12,095,149 (collectively, the "Patents-in-Suit").

3. On information and belief, Defendant Geotab is a corporation organized and existing under the laws of Canada, with its principal place of business located at 2440 Winston Park Drive, Oakville, Ontario, L6H 7V2, Canada. Upon information and belief, Geotab does business in Texas and in the Eastern District of Texas, directly or through intermediaries.

JURISDICTION AND VENUE

4. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.* This Court has jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Defendant. Fractus is informed and believes, and on that basis alleges, that Defendant conducts business and has committed acts of patent infringement and/or has induced acts of patent infringement by others in the State of Texas and within this Judicial District. Defendant regularly transacts business in the State of Texas and within this District. Defendant has purposefully directed infringing activities at residents of the State of Texas, and this litigation results from those infringing activities. Defendant regularly sells (either directly or indirectly), its products within this District. For example, Defendant has placed and continue to place infringing products into the stream of commerce via an established distribution channel with the knowledge or understanding that such products are being and will continue to be sold in this Judicial District and the State of Texas. Defendant is subject to this Court's specific and/or general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, Tex. Civ. Prac. & Rem. Code § 17.042, due at least to its substantial and pervasive business in this State and Judicial District, including at least part of its infringing activities alleged herein and deriving substantial revenue from goods sold to Texas residents.

6. Venue is proper for Defendant in this federal district because Defendant is not a resident in the United States, and thus may be sued in any judicial district pursuant to 28 U.S.C. § 1391(c)(3).

PATENTS-IN-SUIT

7. On June 4, 2013, the United States Patent and Trademark Office issued U.S. Patent

No. 8,456,365 (the "'365 Patent") to Fractus for an invention entitled "Multi-Band Monopole Antennas for Mobile Communications Devices."

8. On August 19, 2014, the United States Patent and Trademark Office issued U.S. Patent No. 8,810,458 (the "'458 Patent") to Fractus for an invention entitled "Handheld Device with Two Antennas, and Method of Enhancing the Isolation Between the Antennas."

9. On June 8, 2021, the United States Patent and Trademark Office issued U.S. Patent No. 11,031,677 (the "'677 Patent") to Fractus for an invention entitled "Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices."

10. On May 31, 2022, the United States Patent and Trademark Office issued U.S. Patent No. 11,349,200 (the "'200 Patent") to Fractus for an invention entitled "Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices."

11. On September 17, 2024, the United States Patent and Trademark Office issued U.S. Patent No. 12,095,149 (the "'149 Patent") to Fractus for an invention entitled "Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices."

FACTUAL ALLEGATIONS

Fractus Technology

12. Fractus is a company specializing in advanced antenna technologies based in Barcelona, Spain. Fractus was founded by two college friends, Ruben Bonet and Carles Puente. Dr. Puente, a Professor at the Universitat Politècnica de Catalunya, is the lead inventor on the Patents-in-Suit. Dr. Puente's early research work focused on fractal antennas and evolved over time into the widely applicable and flexible antenna designs that appear in and are covered by the Patents-in-Suit.

13. Fractus has designed antennas for and/or has licensed the right to use its technology to leading companies across a variety of industries, including HTC, LG, RIM, Motorola, Samsung,

Asus, ZTE, CommScope, Vivint, and ADT. Since its incorporation Fractus has cumulatively sold more than 40 million antennas to customers. Among the numerous awards and honors the company has received for its innovative work, Fractus won the 2004 Frost & Sullivan Award for technological innovation and was named a 2005 Davos World Economic Forum Technology Pioneer and one of Red Herring's top innovative companies for 2006. Fractus inventors were finalists for the European Patent Office ("EPO") European Inventor Award in 2014, and in April 2017 Fractus received the "European Inspiring Company Award" by the London Stock Exchange and the Elite Group. In October 2017, Fractus was selected by the EPO as an example of an IP strategist for small and medium-sized enterprises. In 2021, Fractus endowed a chair at Pompeu Fabra University in Spain, to enhance technology transfer and research into 6G wireless communications. And, in September 2022, Fractus and the Universitat Politècnica de Catalunya partnered in the creation of a research and technology hub to develop "deep tech" solutions for global challenges.

14. The Patents-in-Suit were filed as a result of novel research by Fractus into antenna design for wireless devices, spanning across miniature antennas, multi-band monopole internal antennas, wireless devices comprising multiple antennas, and antennas for multifunctional wireless devices. Designers of wireless devices often face a number of challenges related to internal antennas capable of enabling efficient multiband operation. As with all antennas, these components both radiate and respond to electromagnetic waves. In the cramped confines of wireless devices, electromagnetic waves given off or absorbed by neighboring components in close proximity to an antenna can significantly impair the antenna's performance and efficiency. Without careful design, these problems may degrade an antenna's electromagnetic performance to the point that the device ceases to function in its intended manner or may require the designer to compromise on other desirable device attributes, such as size. The Patents-in-Suit solve these problems through a variety

of novel solutions enabling multiband operation and small size without the efficiency impairments normally faced by these antennas.

Geotab's Infringing Products

15. Geotab makes, uses, sells, offers for sale, and/or imports products in the United States, including, but not limited to, the Geotab GO8, GO8 Rugged, GO9, GO9 Rugged, GO9+, GO9B, SmartWitness KP2, SmartWitness CP2,[1] and FleetCarma C2 (collectively, the "Infringing Products").

16. The above list is not exhaustive. Fractus's investigation of Geotab's Infringing Products is ongoing, and the above list will expand as warranted to include additional Infringing Products with similarly designed antennas.

Notice and Willfulness

17. Fractus first noticed Geotab of the Patents-in-Suit via a letter in October 2021. The letter informed Geotab that Fractus believed Geotab was infringing Fractus's patents. The letter provided a full list of Fractus's patent portfolio, and specifically identified certain Fractus patents—including several of the Patents-in-Suit—which Geotab's products infringed. The letter was sent to Mr. Laurence Prystawski, General Counsel of Geotab USA, Inc., directly at two addresses and "c/o" to two Geotab USA, Inc. agents, The Corporation Trust Company and Corporative Service Company. On information and belief, Mr. Laurence Prystawski is general counsel of Geotab Inc.

18. On November 16, 2021, with a letter dated November 15, 2021, Wolf, Greenfield & Sacks, P.C., on behalf of Geotab USA, Inc., replied to Fractus's notice letter asking for claim

[1] On information and belief, after these devices were launched, SmartWitness was acquired by Sensata Technologies, which later sold the KP2 and CP2 devices under the Sensata INSIGHTS brand. Recently, Xirgo Technologies acquired Sensata INSIGHTS.

charts. Fractus responded on December 14, 2021, and offered to sign a nondisclosure agreement in order to protect information exchanged, but Geotab refused on January 10 and January 25, 2022.

19. Upon information and belief, prior to this lawsuit Geotab never disputed the validity of the Patents-in-Suit. In particular, Geotab has never communicated any allegedly invalidating prior art to Fractus or attempted to bring any post-grant action to the United States Patent and Trademark Office.

20. Geotab's conduct has demonstrated a pattern of bad-faith actions in continuing to infringe the Patents-in-Suit despite being on notice that it was infringing Fractus's patents. Instead of duly obtaining authorization or a license to practice the Patents-in-Suit, and as shown below, Geotab has continued making, using, selling, offering for sale, and/or importing into the United States products that infringe the Patents-in-Suit.

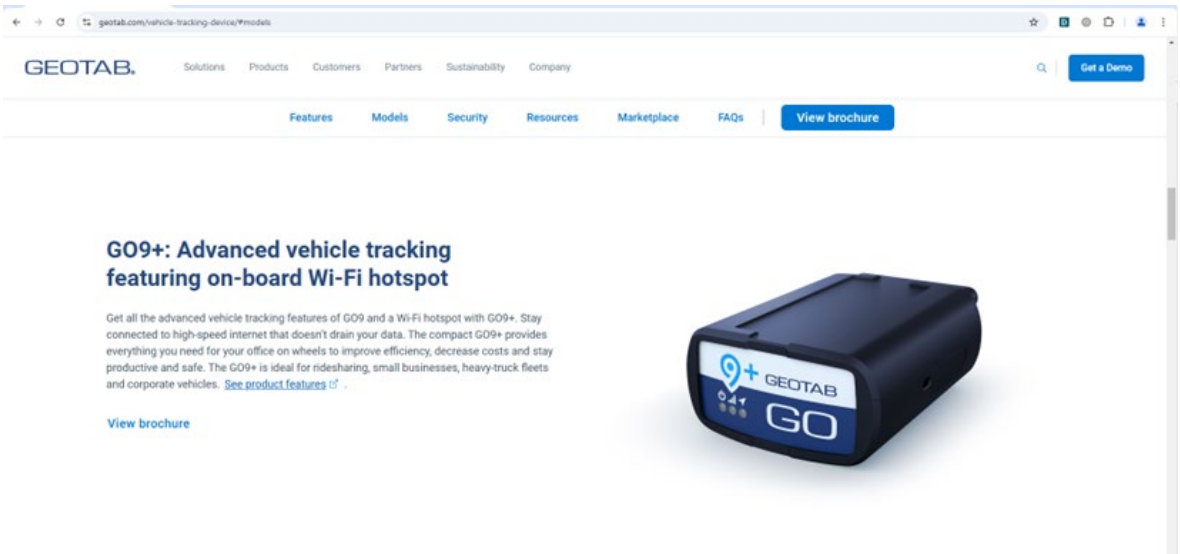


Fig. 1 (source: https://www.geotab.com/vehicle-tracking-device/#models [https://perma.cc/2QVB-N6KU] (last accessed 12/6/2024))

21. Geotab's failure to engage with respect to Fractus's notice letter and continued sale of the infringing product(s) identified in this letter evince a deliberate lack of intention to solve the matter amicably. Geotab has either reviewed Fractus's letter regarding infringement, concluded Geotab needed a license, and yet proceeded to sell infringing products regardless of that

determination or, in spite of the notice letter, has failed to make a good-faith effort to evaluate the Patents-in-Suit or even discuss the matter with Fractus and thus willfully blinded itself to the need to obtain a license to practice the Patents-in-Suit.

INFRINGEMENT OF U.S. PATENT NO. 8,456,365

22. On June 4, 2013, the '365 Patent was duly and legally issued for an invention entitled "Multi-Band Monopole Antennas for Mobile Communications Devices." A true and correct copy of the '365 Patent is attached as Exhibit 1.

23. The '365 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

24. The '365 Patent describes multiband antennas placed within communication devices.

25. As one example, claim 1 of the '365 Patent recites:

> A mobile communication device, comprising:
>
> a device housing;
>
> a printed circuit board, the printed circuit board comprising:
>
> a ground plane layer;
>
> a feeding point;
>
> a communication circuitry, the communication circuitry being mounted on the printed circuit board;
>
> wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;
>
> a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element;
>
> wherein the antenna element operates in cooperation with the ground plane layer;
>
> the antenna element comprising:
>
> a common conductor;
>
> a first radiating arm connected to the common conductor;
>
> a second radiating arm connected to the common conductor;

wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;

wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;

wherein the first radiating arm is at least partially shaped according to a grid-dimension curve; and

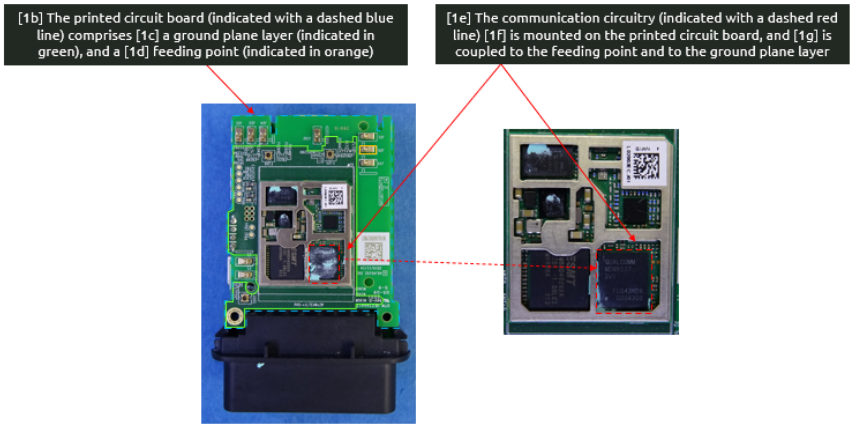
wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.

26. Defendant has directly infringed and continues to infringe at least at least claim 1 of the '365 Patent in violation of 35 U.S.C. § 271(a) by its manufacture, use, sale, importation, and/or offer for sale of Infringing Products, including but not limited to telematics devices. As detailed below, the Infringing Products meet every limitation of the relevant claims of the '365 Patent literally or under the doctrine of equivalents.[2]

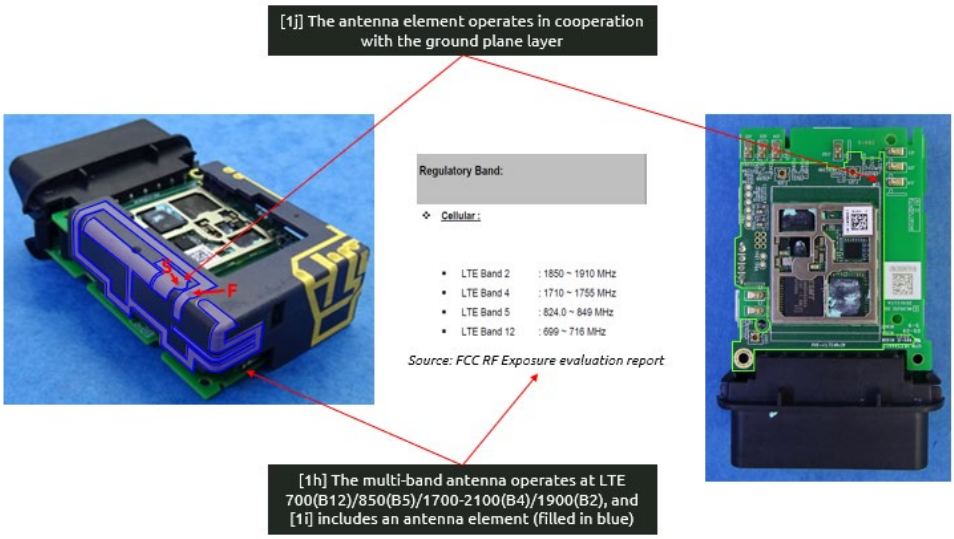
27. As an example, the Geotab GO9+ satisfies all claim limitations of at least claim 1 of the '365 Patent.

a. A mobile communication device, comprising: a device housing; a printed circuit board, the printed circuit board comprising: a ground plane layer; a feeding point; a communication circuitry, the communication circuitry being mounted on the printed circuit board; wherein the communication circuitry is coupled to the feeding point and to the ground plane layer;

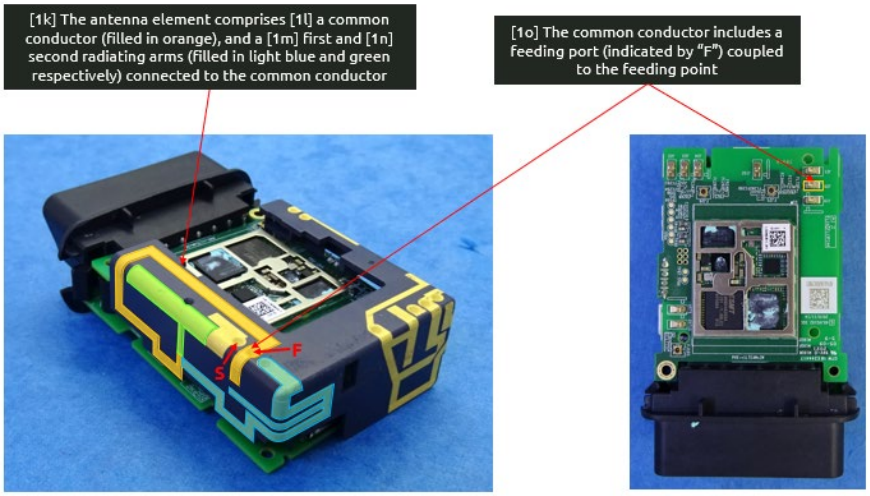
[2] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each Infringing Product infringes the '365 Patent.



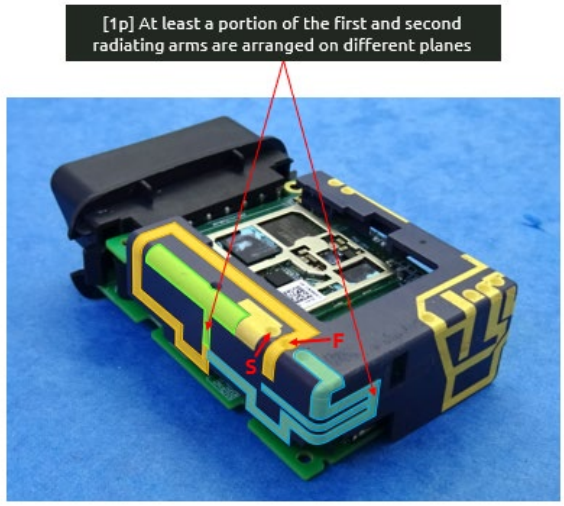
b. a multi-band antenna capable of operating at multiple frequency bands, the multi-band antenna including an antenna element; wherein the antenna element operates in cooperation with the ground plane layer;



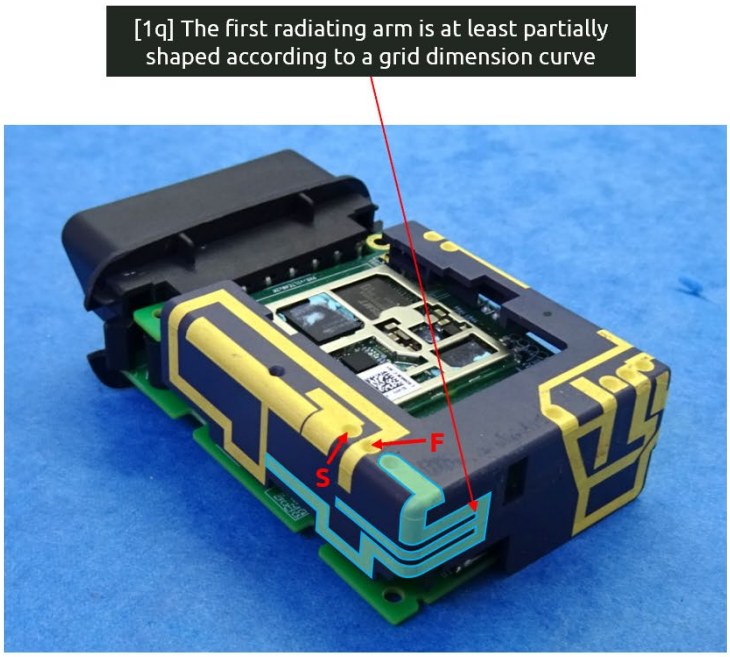
c. the antenna element comprising: a common conductor; a first radiating arm connected to the common conductor; a second radiating arm connected to the common conductor; wherein the common conductor includes a feeding port, the feeding port being coupled to the feeding point;



d. wherein at least a portion of the first radiating arm and at least a portion of the second radiating arm are arranged on different planes;

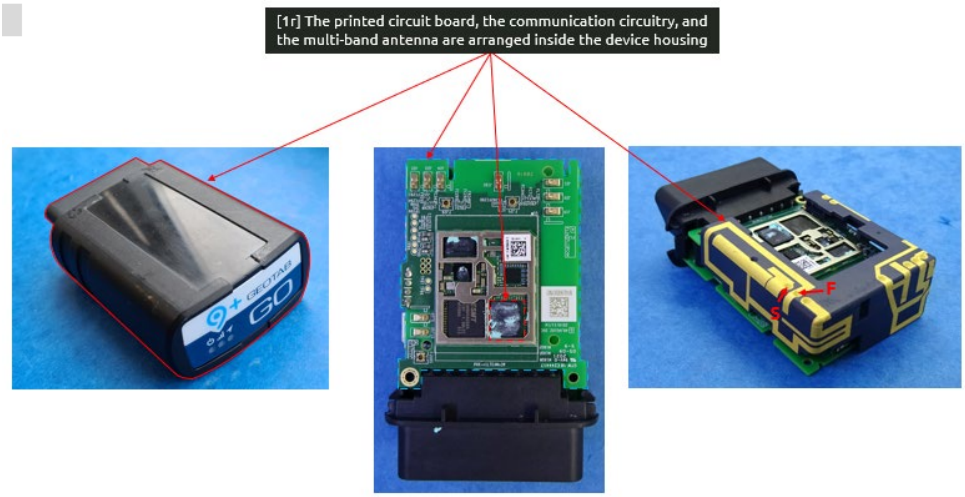


e. wherein the first radiating arm is at least partially shaped according to a grid-dimension curve;



$$\text{Grid dimension } (D_g) = -\frac{\log(N2) - \log(N1)}{\log(L2) - \log(L1)} = \frac{\log(N2) - \log(N1)}{\log(2)} = \frac{\log(64) - \log(22)}{\log(2)} = 1.54 > 1$$

f. and wherein the printed circuit board, the communication circuitry, and the multi-band antenna are arranged inside the device housing.



28. In addition to directly infringing the ’365 Patent, Defendant indirectly infringes at least claim 1 of the ’365 Patent by active inducement under 35 U.S.C. § 271(b). Defendant has induced, caused, urged, encouraged, aided, and abetted its direct and indirect customers, and/or one or more business partners, to make, use, sell, offer for sale, and/or import Infringing Products. Defendant has done so by acts including but not limited to selling Infringing Products to its customers; marketing Infringing Products; and providing instructions, technical support, and direct links to vendor websites (available via, e.g., https://www.geotab.com/vehicle-tracking-device/#models [https://perma.cc/2QVB-N6KU] (last accessed 12/6/2024)) for the use of Infringing Products. Such conduct by Defendant was intended to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Infringing Products in the United States.

29. The acts of infringement by Defendant have caused damage to Fractus, and Fractus is entitled to recover from Defendant the damages sustained by Fractus as a result of Defendant’s wrongful acts in an amount subject to proof at trial. The infringement of Fractus’s exclusive rights under the ’365 Patent by Defendant has damaged and will continue to damage Fractus,

causing irreparable harm, for which there is no adequate remedy at law, unless enjoined by this Court.

INFRINGEMENT OF U.S. PATENT NO. 8,810,458

30. On August 19, 2014, the ’458 Patent was duly and legally issued for an invention entitled “Handheld Device with Two Antennas, and Method of Enhancing the Isolation Between the Antennas.” A true and correct copy of the ’458 Patent is attached as Exhibit 2.

31. The ’458 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

32. The ’458 Patent describes a wireless device comprising a first antenna arranged to operate in mobile communications, and a second antenna arranged to operate in mobile communications and/or wireless connectivity service. The ’458 Patent also relates to enhancement of the isolation between first and second antennas in a wireless device.

33. As one example, claim 1 of the ’458 Patent recites:

> A wireless handheld or portable device comprising:
>
> a ground plane;
>
> the ground plane is inscribed in a rectangular area comprising a first side and a second side, a length of the second side being greater than a length of the first side;
>
> a first antenna configured to transmit and receive electromagnetic waves corresponding to at least three frequency bands;
>
> the at least three frequency bands being used for mobile communication services;
>
> a second antenna configured to receive electromagnetic waves corresponding to at least one frequency band;
>
> the at least one frequency band being used for wireless connectivity services;
>
> the first antenna extends in a direction substantially parallel to the first side;
>
> the second antenna extends in a direction substantially parallel to the second side;

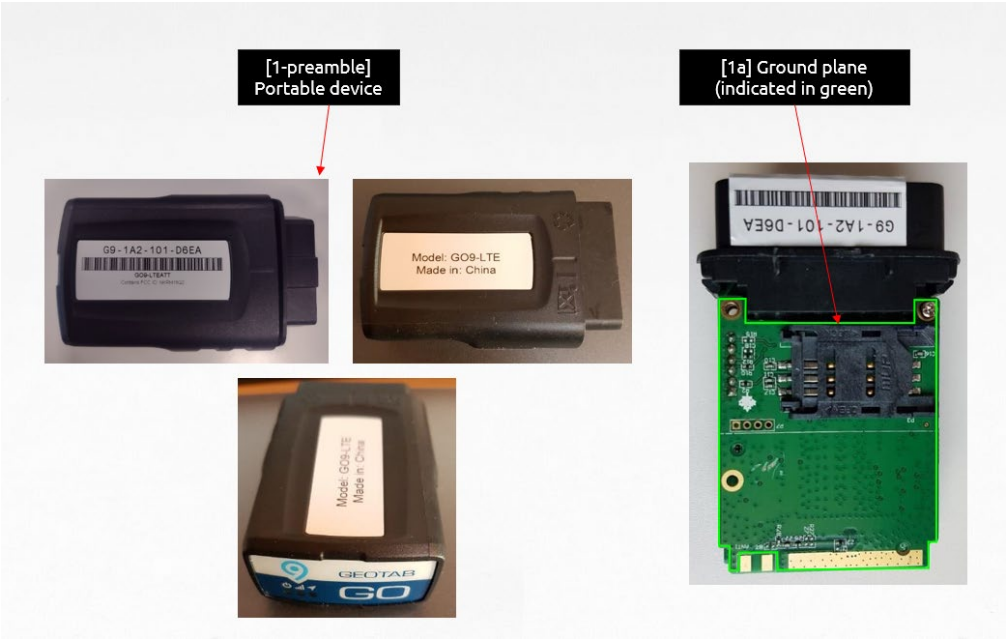
the first antenna is arranged substantially close to the first side; and

the first antenna and the second antenna are located internally within the wireless handheld or portable device.

34. Defendant has directly infringed and continues to infringe at least claim 1 of the ’458 Patent in violation of 35 U.S.C. § 271(a) by its manufacture, use, sale, importation, and/or offer for sale of Infringing Products, including but not limited to telematics devices. As detailed below, the Infringing Products meet every limitation of the relevant claims of the ’458 Patent literally or under the doctrine of equivalents.[3]

35. As an example, the Geotab GO9 satisfies all claim limitations of at least claim 1 of the ’458 Patent.

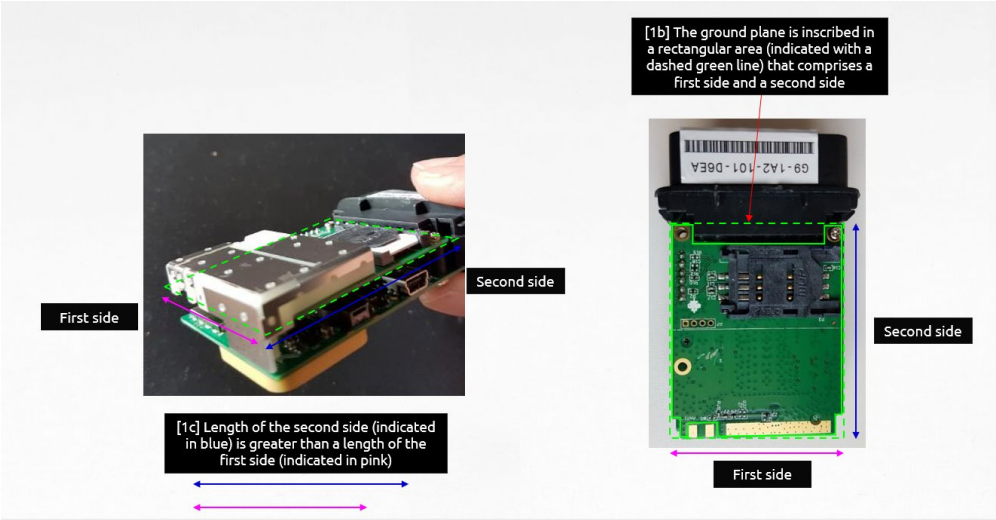
a. A wireless handheld or portable device comprising: a ground plane;



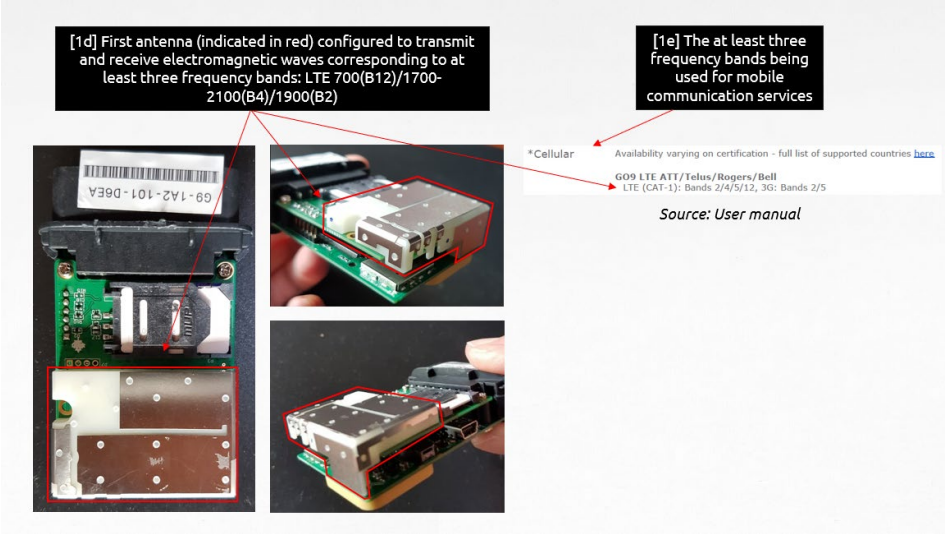
b. the ground plane is inscribed in a rectangular area comprising a first side and a second side, a length of the second side being greater than

[3] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each Infringing Product infringes the ’458 Patent.

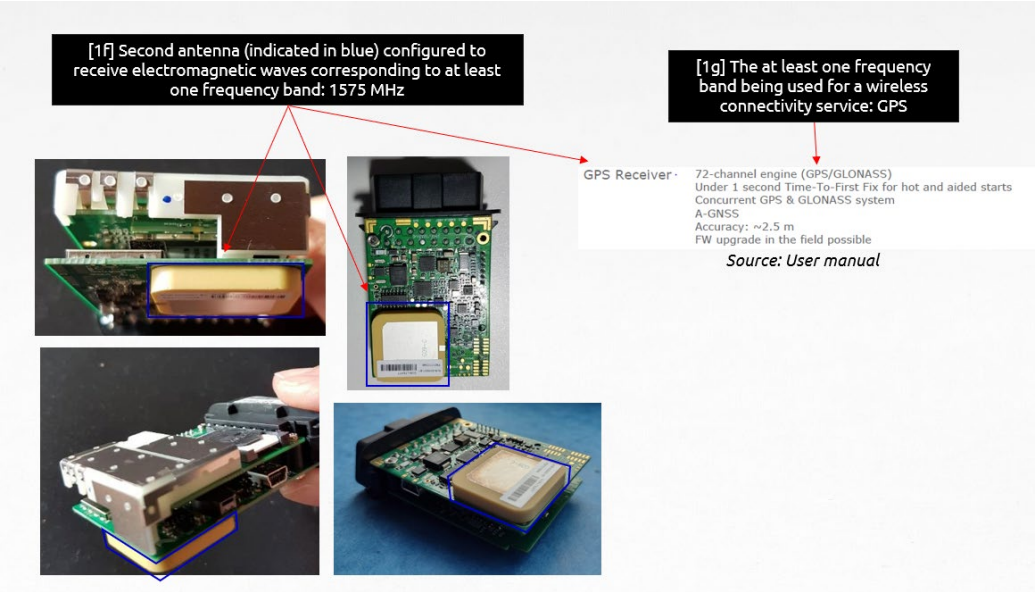
a length of the first side;



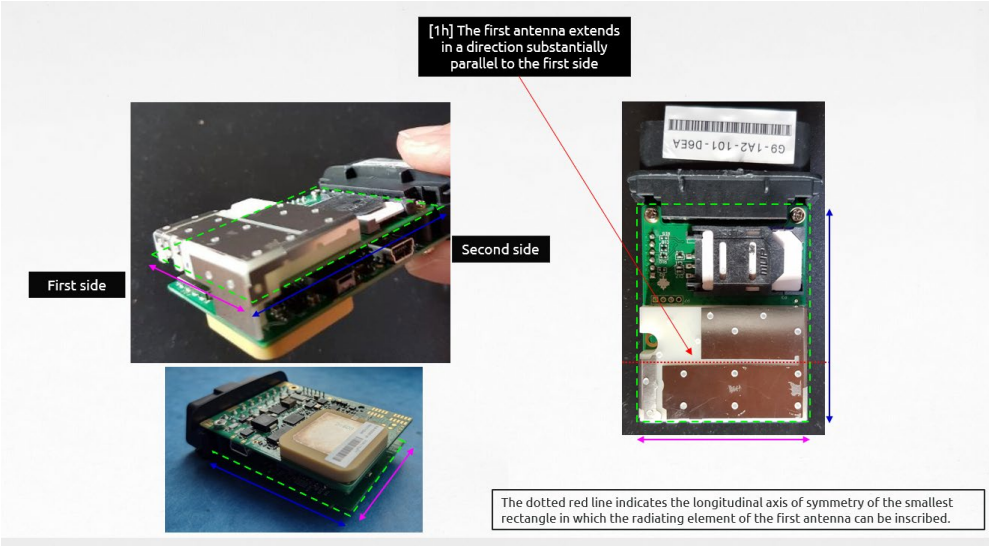
c. a first antenna configured to transmit and receive electromagnetic waves corresponding to at least three frequency bands; the at least three frequency bands being used for mobile communication services;



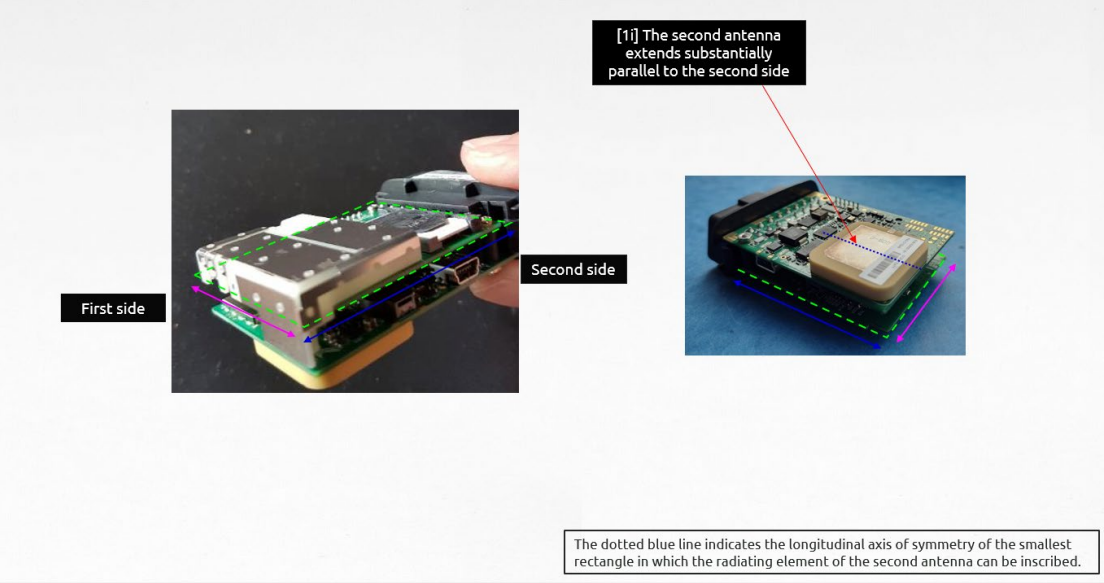
d. a second antenna configured to receive electromagnetic waves corresponding to at least one frequency band; the at least one frequency band being used for wireless connectivity services;



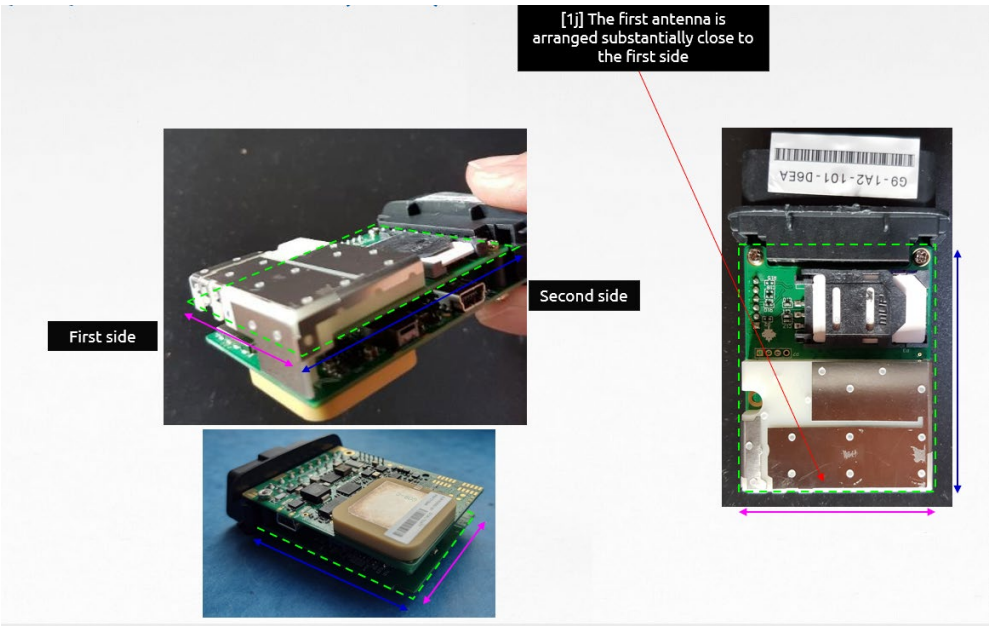
e. the first antenna extends in a direction substantially parallel to the first side;



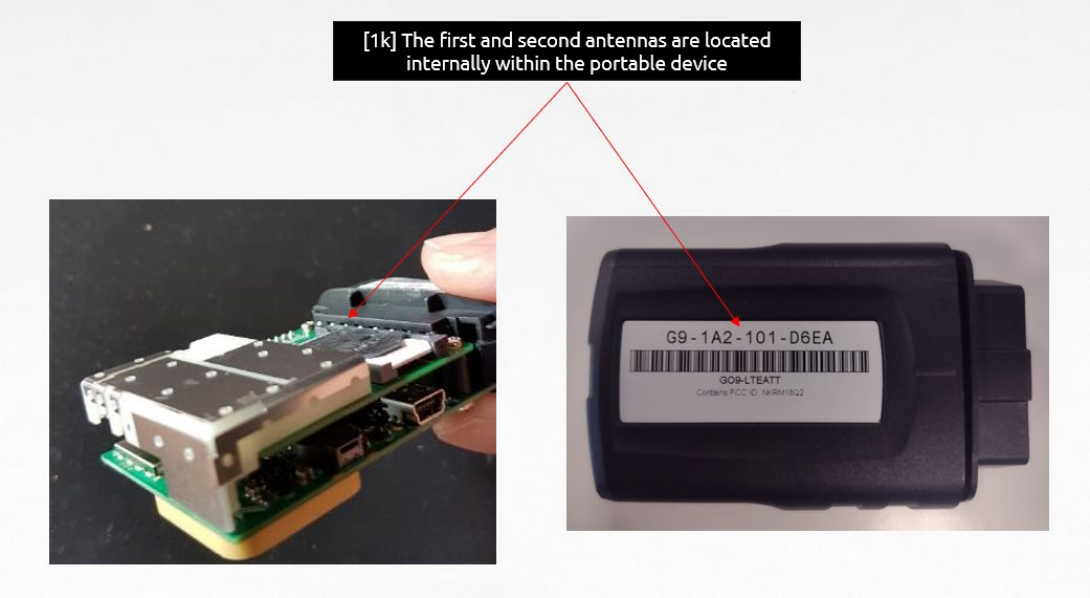
f. the second antenna extends in a direction substantially parallel to the second side;



g. the first antenna is arranged substantially close to the first side;



h. and the first antenna and the second antenna are located internally within the wireless handheld or portable device.



36. In addition to directly infringing the ’458 Patent, Defendant indirectly infringes at least claim 1 of the ’458 Patent by active inducement under 35 U.S.C. § 271(b). Defendant has induced, caused, urged, encouraged, aided, and abetted its direct and indirect customers, and/or one or more business partners, to make, use, sell, offer for sale, and/or import Infringing Products. Defendant has done so by acts including but not limited to selling Infringing Products to its customers; marketing Infringing Products; and providing instructions, technical support, and direct links to vendor websites (available via, e.g., https://www.geotab.com/vehicle-tracking-device/#models [https://perma.cc/2QVB-N6KU] (last accessed 12/6/2024)) for the use of Infringing Products. Such conduct by Defendant was intended to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Infringing Products in the United States.

37. The acts of infringement by Defendant have caused damage to Fractus, and Fractus is entitled to recover from Defendant the damages sustained by Fractus as a result of Defendant’s wrongful acts in an amount subject to proof at trial. The infringement of Fractus’s exclusive rights under the ’458 Patent by Defendant has damaged and will continue to damage Fractus,

causing irreparable harm, for which there is no adequate remedy at law, unless enjoined by this Court.

INFRINGEMENT OF U.S. PATENT NO. 11,031,677

38. On June 8, 2021, the '677 Patent was duly and legally issued for an invention entitled "Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices." A true and correct copy of the '677 Patent is attached as Exhibit 3.

39. The '677 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

40. The '677 Patent generally describes a wireless device which includes an antenna system.

41. As one example, claim 1 of the '677 Patent recites:

A wireless device comprising:

an antenna system comprising:

a ground plane;

a first antenna within the wireless device and configured to support at least three frequency bands contained within first and second frequency ranges of the electromagnetic spectrum, the second frequency range being higher in frequency than the first frequency range and at least one of the three frequency bands being associated with a 4G communication standard, the first antenna being proximate to a first short side of a ground plane rectangle enclosing the ground plane and defining a first antenna contour comprising an entire perimeter of the first antenna, wherein the first antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and complexity factor F_{32} having a value less than 1.75; and

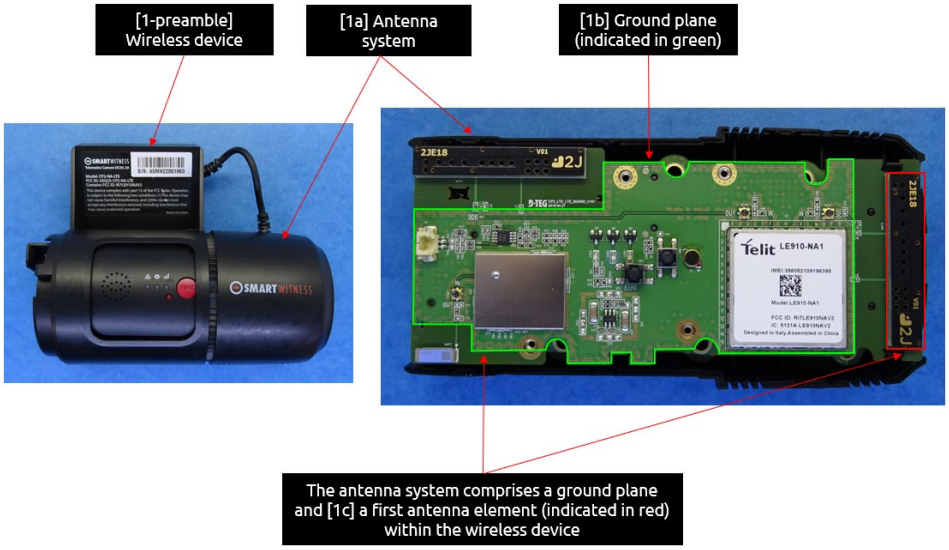
a second antenna within the wireless device and configured to support at least one frequency band different from the at least three frequency bands supported by the first antenna, the second antenna being arranged completely within the ground plane rectangle.

42. Defendant has directly infringed and continues to infringe at least claim 1 of the

’677 Patent in violation of 35 U.S.C. § 271(a) by its manufacture, use, sale, importation, and/or offer for sale of Infringing Products, including but not limited to telematics devices. As detailed below, the Infringing Products meet every limitation of the relevant claims of the ’677 Patent literally or under the doctrine of equivalents.[4]

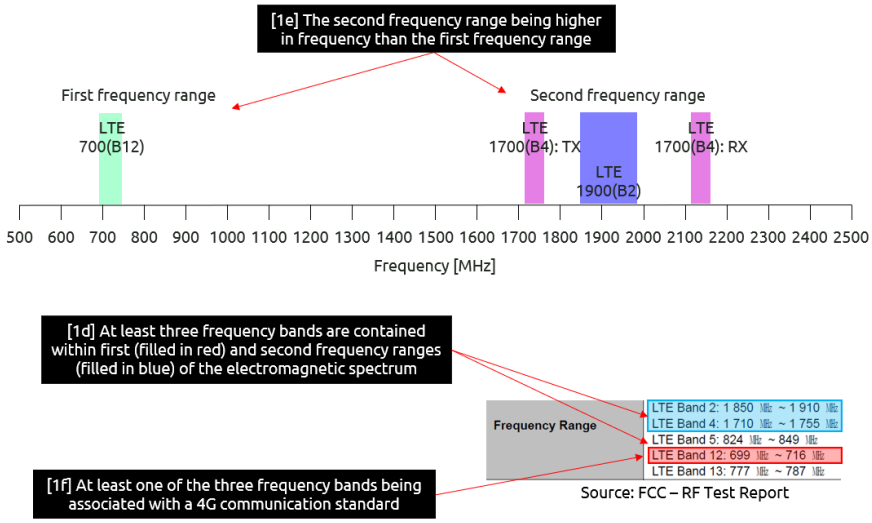
43. As an example, the SmartWitness CP2 satisfies all claim limitations of at least claim 1 of the ’677 Patent.

a. A wireless device comprising: an antenna system comprising: a ground plane; a first antenna within the wireless device

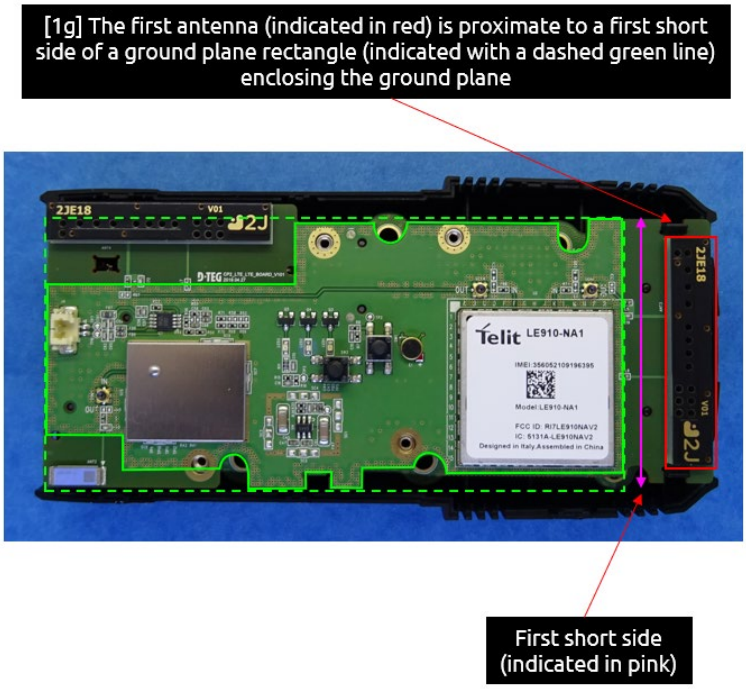


b. and configured to support at least three frequency bands contained within first and second frequency ranges of the electromagnetic spectrum, the second frequency range being higher in frequency than the first frequency range and at least one of the three frequency bands being associated with a 4G communication standard,

[4] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each Infringing Product infringes the ’677 Patent.

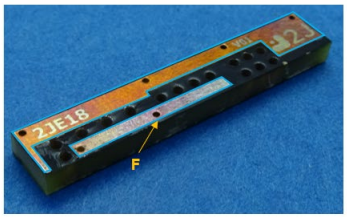


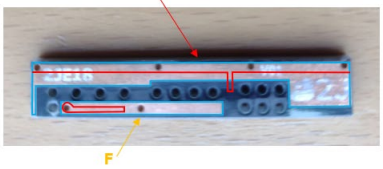
c. the first antenna being proximate to a first short side of a ground plane rectangle enclosing the ground plane and

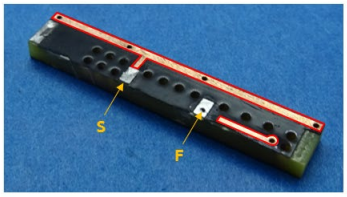


d. defining a first antenna contour comprising an entire perimeter of the first antenna,

[1h] The first antenna defines a first antenna contour (indicated in blue and red) comprising an entire perimeter of the first antenna

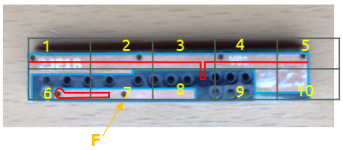






e. wherein the first antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and

[1i] The first antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20



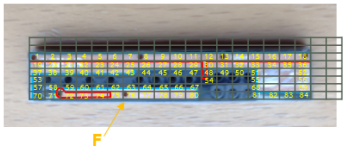
$N_1 = 10\ cells$

$$F_{21} = -\frac{\log(N_2) - \log(N_1)}{\log\left(\frac{1}{2}\right)} = \frac{\log(26/10)}{\log(2)} = 1.38 \geq 1.20$$

$N_2 = 26\ cells$

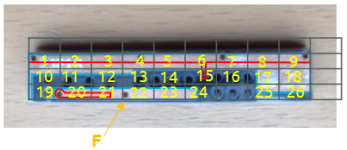
f. complexity factor F_{32} having a value less than 1.75;

[1j] The first antenna contour has a level of complexity defined by complexity factor F_{32} having a value less than 1.75



$N_3 = 84\ cells$

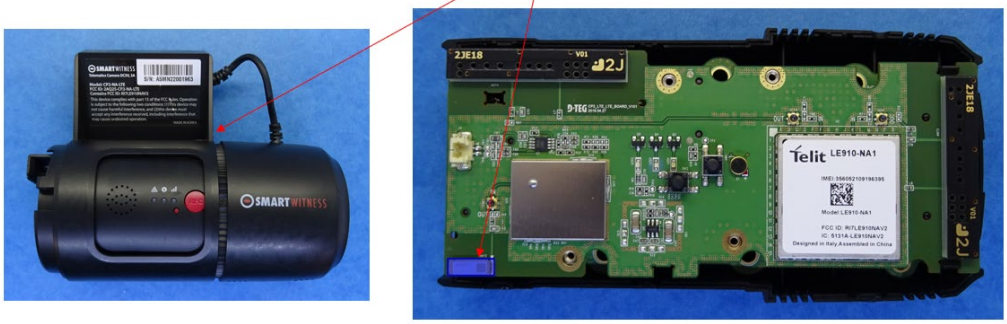
$$F_{32} = -\frac{\log(N_3) - \log(N_2)}{\log\left(\frac{1}{2}\right)} = \frac{\log(84/26)}{\log(2)} = 1.69 < 1.75$$



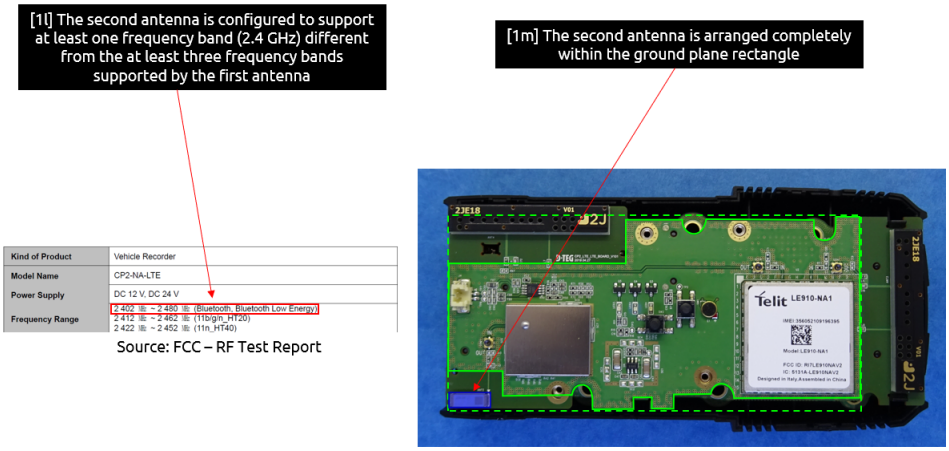
$N_2 = 26\ cells$

g. and a second antenna within the wireless device and

[1k] Second antenna (indicated in blue) within the wireless device



h. configured to support at least one frequency band different from the at least three frequency bands supported by the first antenna, the second antenna being arranged completely within the ground plane rectangle.



44. In addition to directly infringing the ’677 Patent, Defendant indirectly infringes at least claim 1 of the ’677 Patent by active inducement under 35 U.S.C. § 271(b). Defendant has induced, caused, urged, encouraged, aided, and abetted its direct and indirect customers, and/or one or more business partners, to make, use, sell, offer for sale, and/or import Infringing Products. Defendant has done so by acts including but not limited to selling Infringing Products to its customers; marketing Infringing Products; and providing instructions and technical support (available via, e.g., https://marketplace.geotab.com/solutions/gocam/solution-resources/ [https://perma.cc/NQ8F-R6GB] (last accessed 12/6/2024)) for the use of Infringing Products. Such conduct by Defendant was intended to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Infringing Products in the United States.

45. The acts of infringement by Defendant have caused damage to Fractus, and Fractus is entitled to recover from Defendant the damages sustained by Fractus as a result of Defendant’s wrongful acts in an amount subject to proof at trial. The infringement of Fractus’s exclusive rights under the ’677 Patent by Defendant has damaged and will continue to damage Fractus, causing irreparable harm, for which there is no adequate remedy at law, unless enjoined

by this Court.

INFRINGEMENT OF U.S. PATENT NO. 11,349,200

46. On May 31, 2022, the ’200 Patent was duly and legally issued for an invention entitled “Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices.” A true and correct copy of the ’200 Patent is attached as Exhibit 4.

47. The ’200 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The ’200 Patent is a continuation of the ’677 Patent.

48. The ’200 Patent describes a wireless device which includes an antenna system.

49. As one example, claim 11 of the ’200 Patent recites:

> A wireless device comprising:
>
> an antenna system comprising a ground plane and at least two antennas within the wireless device, the antenna system comprising:
>
> > a first antenna configured to provide operation in at least three frequency bands being used by 4G communication standards, the first antenna defining an antenna contour comprising an entire perimeter of the first antenna, the antenna contour comprising at least twenty segments, wherein the antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and complexity factor F_{32} having a value of at least 1.35, and wherein the first antenna defines an antenna box that is a minimum-sized parallelepiped that completely encloses a volume of the first antenna and wherein each face of the minimum-sized parallelepiped is tangent to at least one point of the volume of the first antenna, an orthogonal projection of the antenna box along a normal to a face with a largest area of the first antenna defining an antenna rectangle, an aspect ratio of the antenna rectangle being defined as a ratio between a width and a height of the antenna rectangle, wherein the aspect ratio has a value of at least 2; and
> >
> > a second antenna configured to provide operation in a first wireless service, the second antenna being proximate to a side of a ground plane rectangle enclosing the ground plane.

50. Defendant has directly infringed and continues to infringe at least claim 11 of the ’200 Patent in violation of 35 U.S.C. § 271(a) by its manufacture, use, sale, importation, and/or

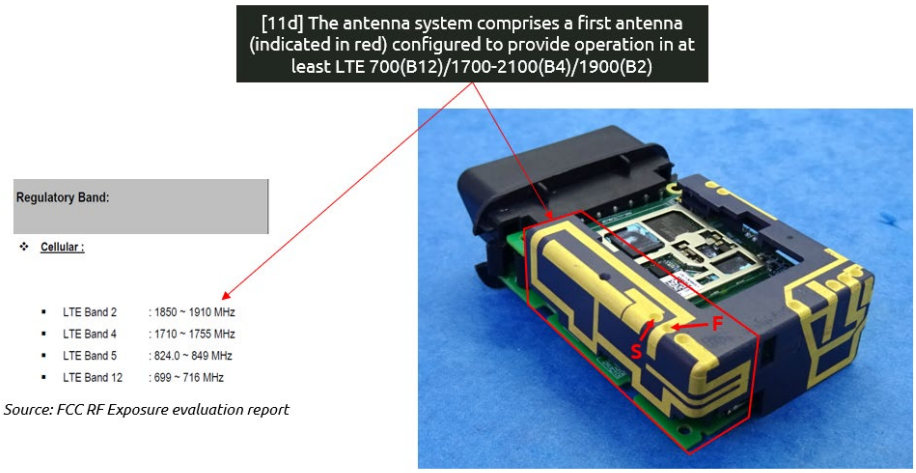
offer for sale of Infringing Products, including but not limited to telematics devices. As detailed below, the Infringing Products meet every limitation of the relevant claims of the ’200 Patent literally or under the doctrine of equivalents.[5]

51. As an example, the Geotab GO9+ satisfies all claim limitations of at least claim 11 of the ’200 Patent.

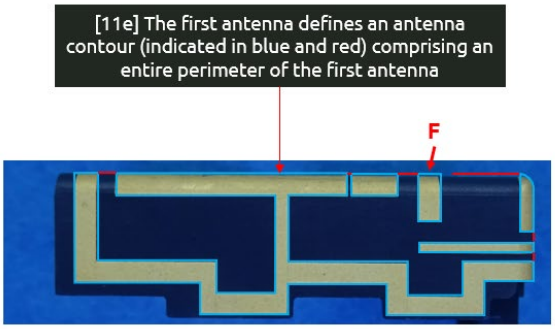
a. A wireless device comprising: an antenna system comprising a ground plane and at least two antennas within the wireless device, the antenna system comprising;

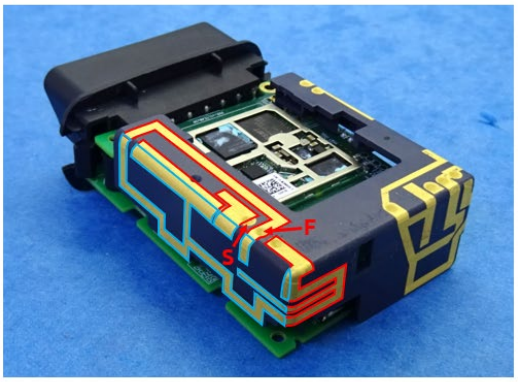
[5] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each Infringing Product infringes the ’200 Patent.

b. a first antenna configured to provide operation in at least three frequency bands being used by 4G communication standards;

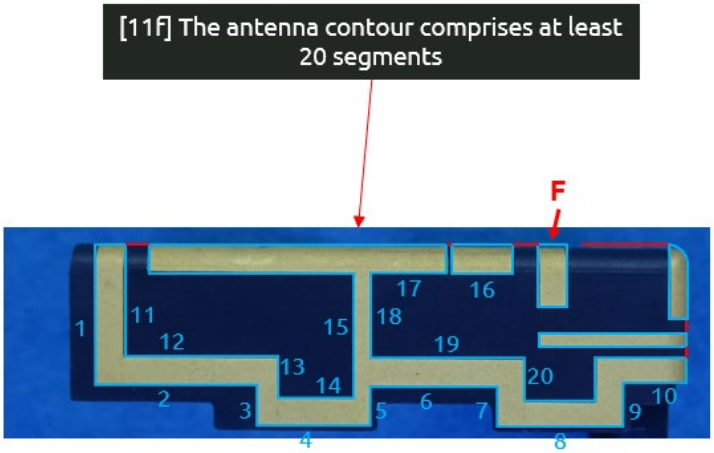


c. the first antenna defining an antenna contour comprising an entire perimeter of the first antenna,



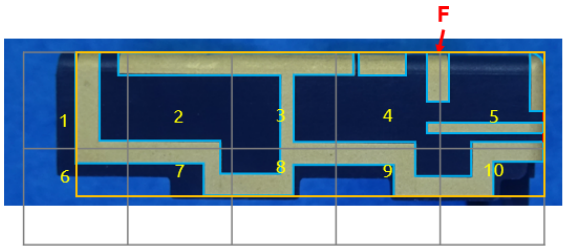


d. the antenna contour comprising at least twenty segments,

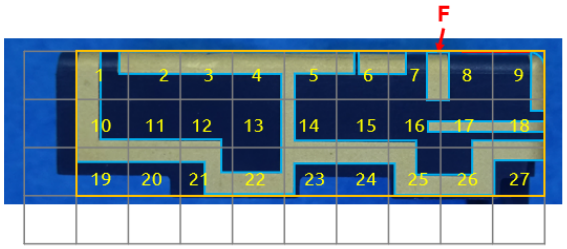


e. wherein the antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and

[11g] The antenna contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20



$N_1 = 10\ cells$

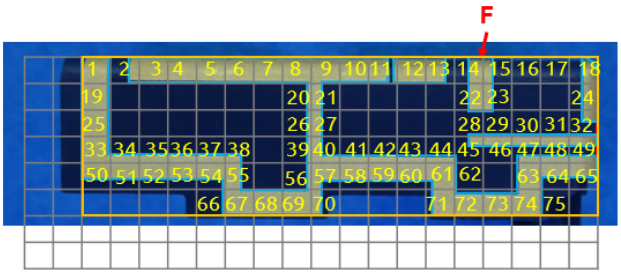


$N_2 = 27\ cells$

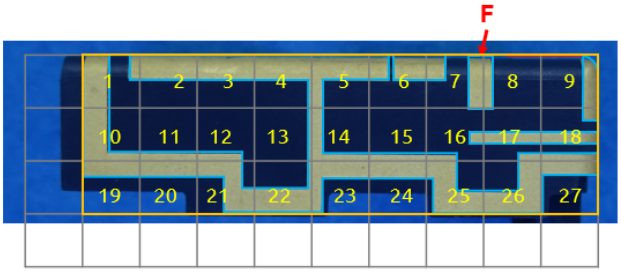
$$F_{21} = -\frac{\log(N_2) - \log(N_1)}{\log(1/2)} = -\frac{\log(27) - \log(10)}{\log(1/2)} = 1.43 \geq 1.20$$

f. complexity factor F_{32} having a value of at least 1.35,

[11h] The antenna contour has a level of complexity defined by complexity factor F_{32} having a value of at least 1.35



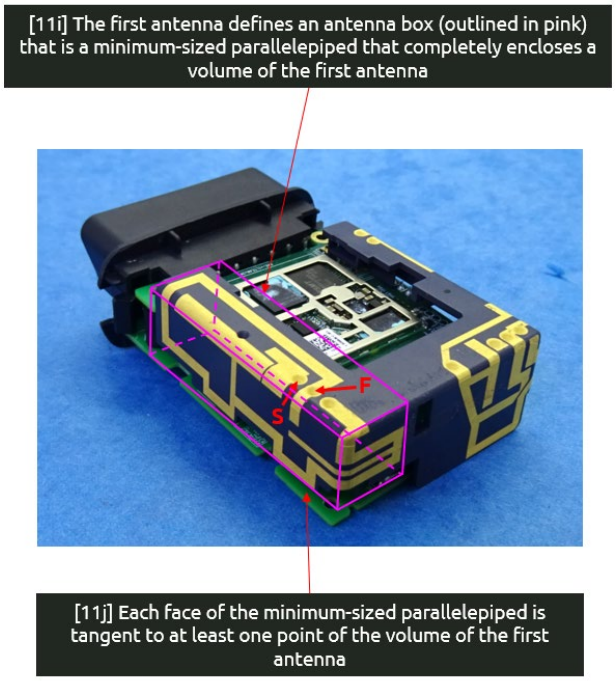
$N_3 = 75\ cells$



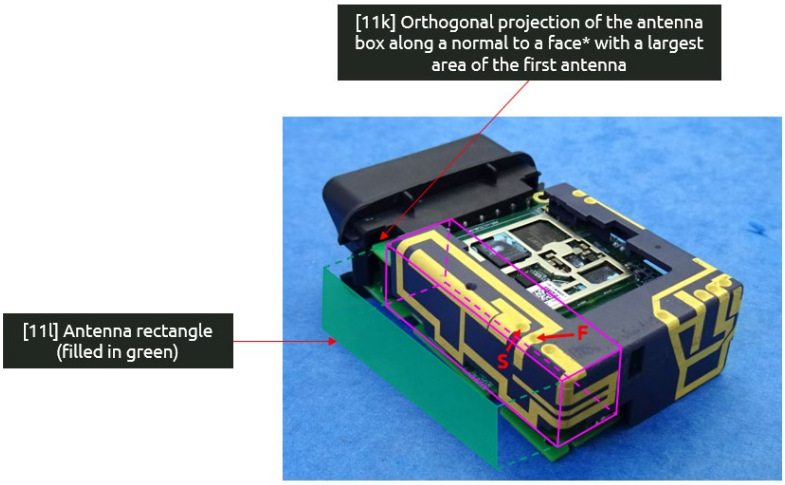
$N_2 = 27\ cells$

$$F_{32} = -\frac{\log(N_3) - \log(N_2)}{\log(1/2)} = -\frac{\log(75) - \log(27)}{\log(1/2)} = 1.47 \geq 1.35$$

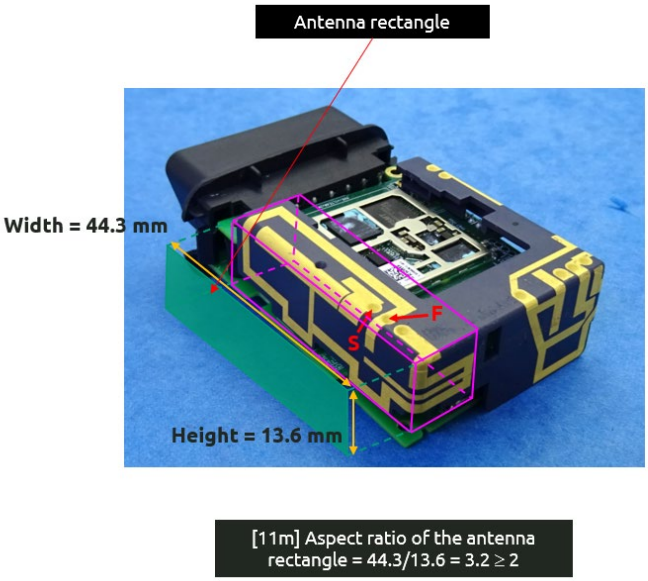
g. and wherein the first antenna defines an antenna box that is a minimum-sized parallelepiped that completely encloses a volume of the first antenna and wherein each face of the minimum-sized parallelepiped is tangent to at least one point of the volume of the first antenna,



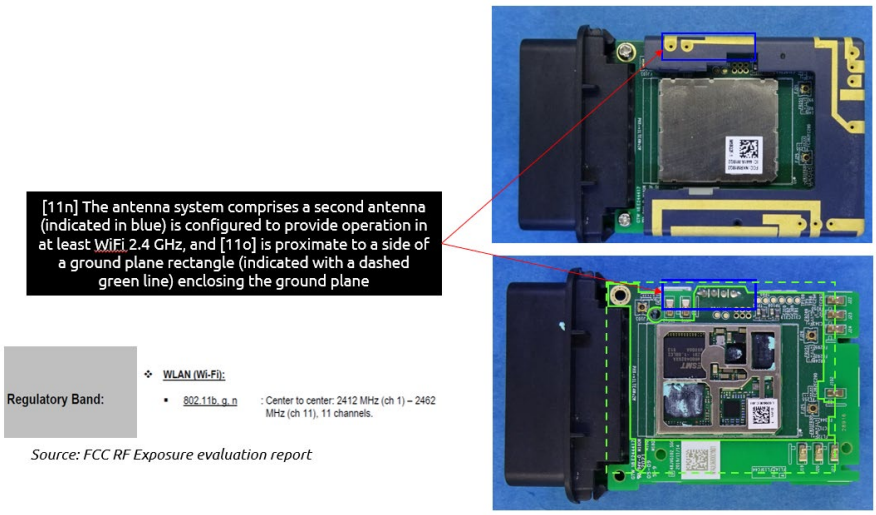
h. an orthogonal projection of the antenna box along a normal to a face with a largest area of the first antenna defining an antenna rectangle,



i. an aspect ratio of the antenna rectangle being defined as a ratio between a width and a height of the antenna rectangle, wherein the aspect ratio has a value of at least 2; and,



j. a second antenna configured to provide operation in a first wireless service, the second antenna being proximate to a side of a ground plane rectangle enclosing the ground plane.



52. In addition to directly infringing the ’200 Patent, Defendant indirectly infringes at least claim 11 of the ’200 Patent by active inducement under 35 U.S.C. § 271(b). Defendant has induced, caused, urged, encouraged, aided, and abetted its direct and indirect customers, and/or one or more business partners, to make, use, sell, offer for sale, and/or import Infringing Products. Defendant has done so by acts including but not limited to selling Infringing Products to its customers; marketing Infringing Products; and providing instructions, technical support, and direct links to vendor websites (available via, e.g., https://www.geotab.com/vehicle-tracking-device/#models [https://perma.cc/2QVB-N6KU] (last accessed 12/6/2024)) for the use of Infringing Products. Such conduct by Defendant was intended to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Infringing Products in the United States.

53. The acts of infringement by Defendant have caused damage to Fractus, and Fractus is entitled to recover from Defendant the damages sustained by Fractus as a result of Defendant’s wrongful acts in an amount subject to proof at trial. The infringement of Fractus’s exclusive rights under the ’200 Patent by Defendant has damaged and will continue to damage Fractus,

causing irreparable harm, for which there is no adequate remedy at law, unless enjoined by this Court.

INFRINGEMENT OF U.S. PATENT NO. 12,095,149

54. On September 17, 2024, the ’149 Patent was duly and legally issued for an invention entitled “Multiple-Body-Configuration Multimedia and Smartphone Multifunction Wireless Devices.” A true and correct copy of the ’149 Patent is attached as Exhibit 5.

55. The ’149 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The ’149 Patent is a continuation of the ’200 Patent.

56. The ’149 Patent describes a wireless device which includes an antenna system.

57. As one example, claim 7 of the ’149 Patent recites:

> A wireless device comprising:
>
> a ground plane;
>
> a first non-planar antenna proximate to a first side of a ground plane rectangle enclosing the ground plane, the first non-planar antenna being configured to support at least three frequency bands of the electromagnetic spectrum, a minimum-sized parallelepiped completely enclosing a volume of the first non-planar antenna, the minimum-sized parallelepiped having a face with a largest area;
>
> a second antenna proximate to a second side of the ground plane rectangle, and wherein the second antenna is configured to receive signals from at least two frequency bands of the at least three frequency bands;
>
> wherein the first non-planar antenna has a first contour defined as a perimeter of any portions of the first non-planar antenna arranged in the face, perimeters of any closed apertures of any portions of the first non-planar antenna arranged in the face, a perimeter of an orthogonal projection onto the face of any portions of the first non-planar antenna that are not arranged in the face, and perimeters of any closed apertures of the orthogonal projection;
>
> wherein the first contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and complexity factor F_{32} having a value of at least 1.35; and
>
> wherein the complexity factors F_{21} and F_{32} are given by:

$$F_{21} = -\frac{\log(N_2) - \log(N_1)}{\log(1/2)} \quad F_{32} = -\frac{\log(N_3) - \log(N_2)}{\log(1/2)}$$

where N_1 is a number of cells of a grid G_1 that include at least a point of the first contour, N_2 is a number of cells of a grid G_2 that include at least a point of the first contour, and N_3 is a number of cells of a grid G_3 that include at least a point of the first contour,

the grid G_2 divides the face into nine columns of equal width arranged along a long side of the face and an odd number of rows of equal height arranged along a short side of the face, wherein the number of rows results in the cells of grid G_2 being as square as possible,

the grid G_1 being aligned with a corner of the grid G_2 to cover the face, the cells of grid G_1 having widths and heights that respectively are double the widths and heights of the cells of the grid G_2, and

the grid G_3 being aligned with the grid G_2, the cells of the grid G_3 having widths and heights that respectively are half the widths and heights of the cells of the grid G_2, and

wherein the level of complexity of the first contour is configured to provide operation of the wireless device in the at least three frequency bands.

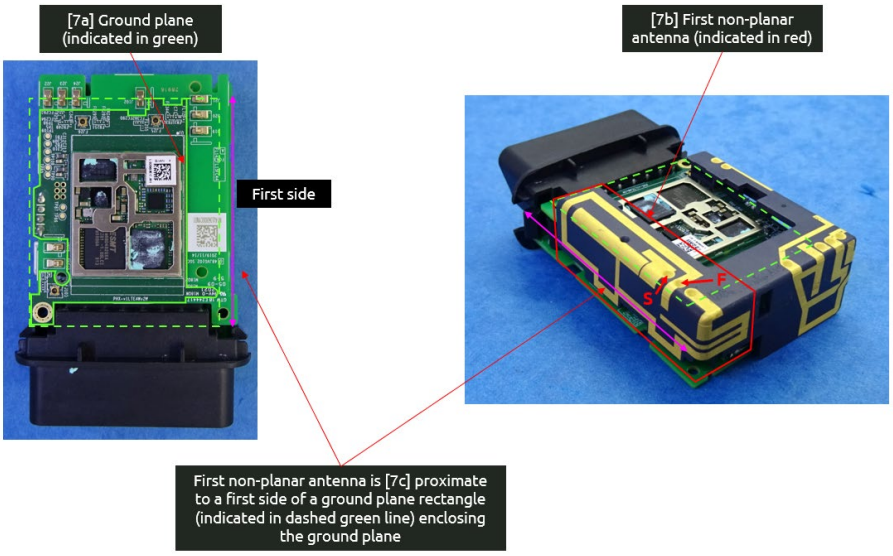
58. Defendant has directly infringed and continues to infringe at least claim 7 of the ’149 Patent in violation of 35 U.S.C. § 271(a) by its manufacture, use, sale, importation, and/or offer for sale of Infringing Products, including but not limited to telematics devices. As detailed below, the Infringing Products meet every limitation of the relevant claims of the ’149 Patent literally or under the doctrine of equivalents.[6]

59. As an example, the Geotab GO9+ satisfies all claim limitations of at least claim 7 of the ’149 Patent.

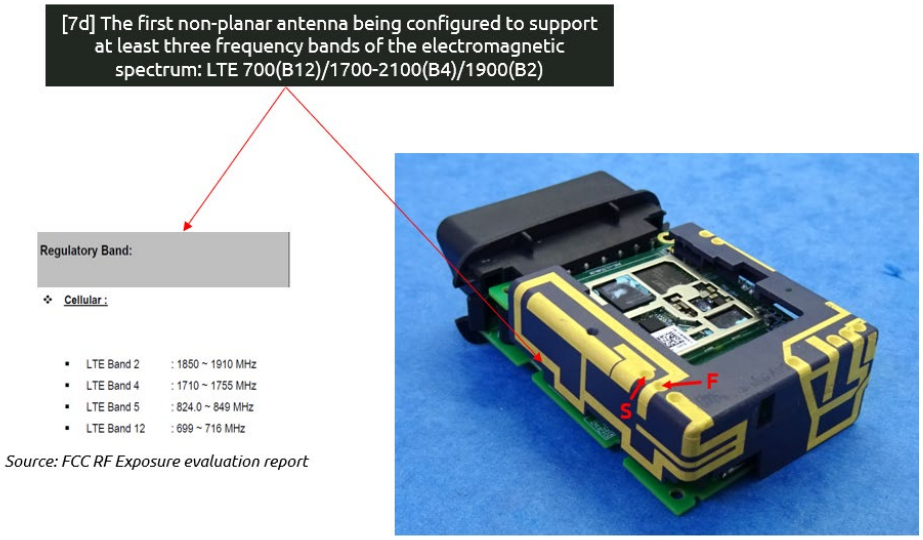
a. A wireless device comprising;

[6] This description is illustrative and is not intended to be an exhaustive or limiting explanation of every manner in which each Infringing Product infringes the ’149 Patent.

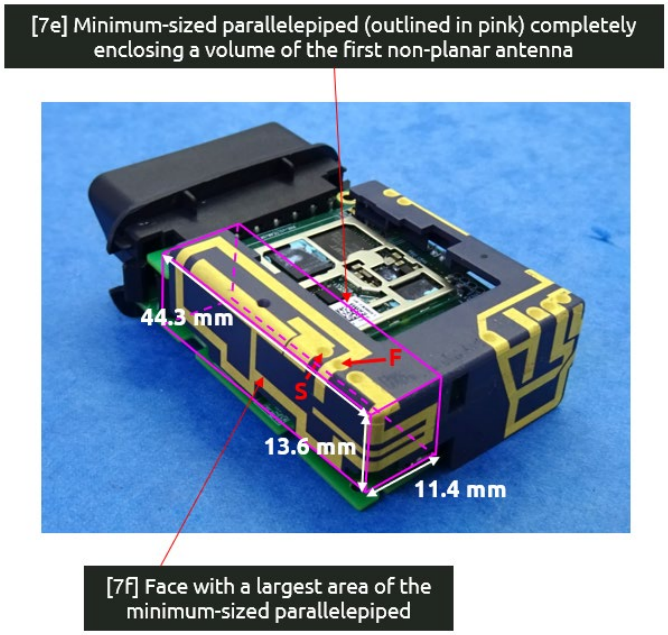
b. a ground plane; a first non-planar antenna proximate to a first side of a ground plane rectangle enclosing the ground plane;



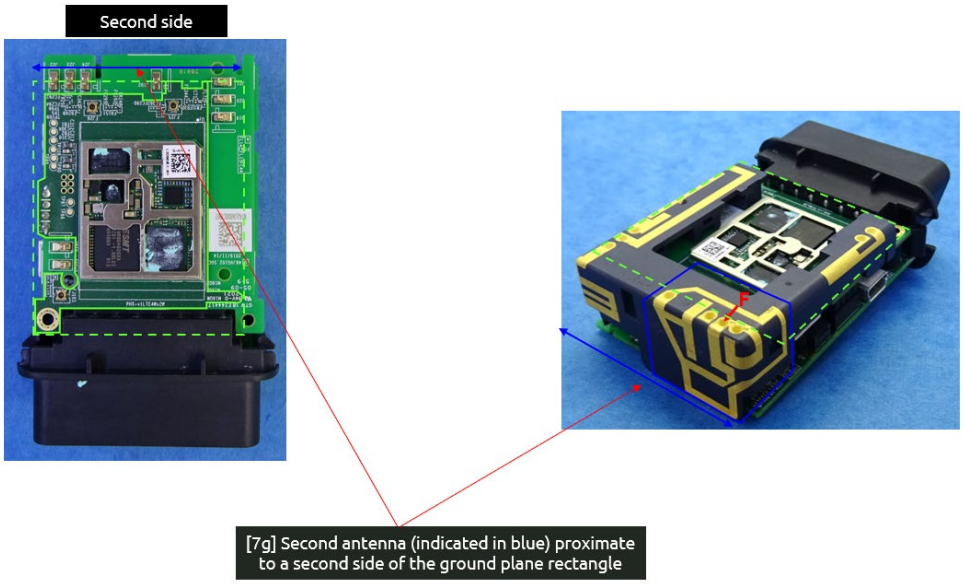
c. the first non-planar antenna being configured to support at least three frequency bands of the electromagnetic spectrum,



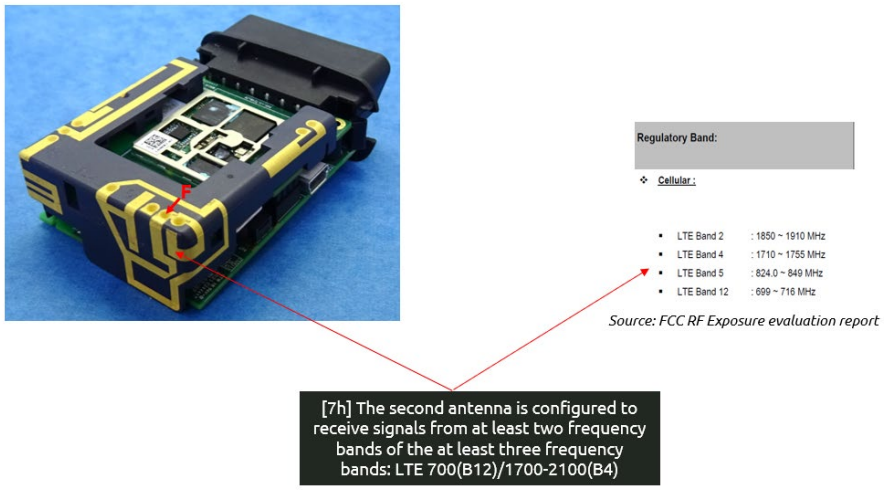
d. a minimum-sized parallelepiped completely enclosing a volume of the first non-planar antenna, the minimum-sized parallelepiped having a face with a largest area;



e. a second antenna proximate to a second side of the ground plane rectangle, and

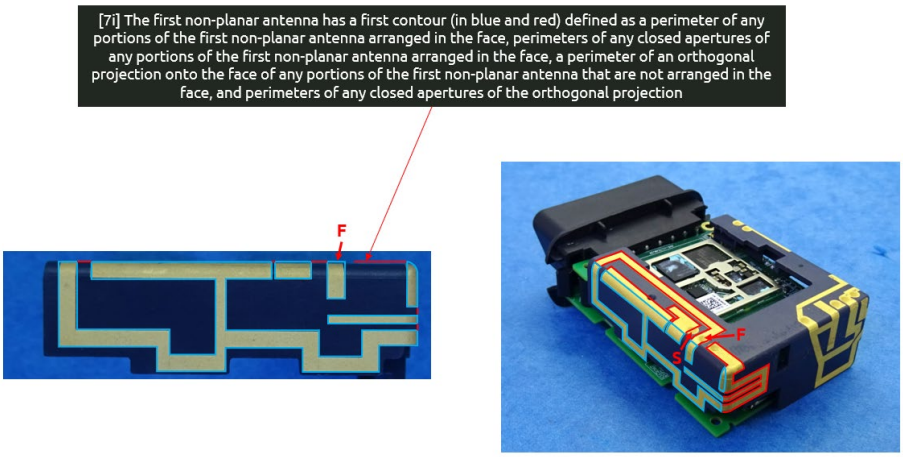


f. wherein the second antenna is configured to receive signals from at least two frequency bands of the at least three frequency bands;

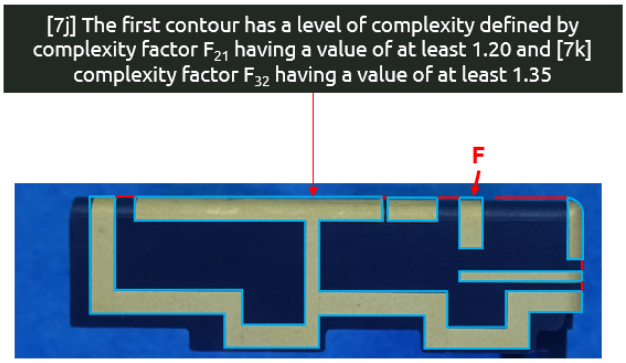


g. wherein the first non-planar antenna has a first contour defined as a perimeter of any portions of the first non-planar antenna arranged in the face, perimeters of any closed apertures of any portions of the first non-planar antenna arranged in the face, a perimeter of an orthogonal

projection onto the face of any portions of the first non-planar antenna that are not arranged in the face, and perimeters of any closed apertures of the orthogonal projection;



h. wherein the first contour has a level of complexity defined by complexity factor F_{21} having a value of at least 1.20 and complexity factor F_{32} having a value of at least 1.35;



$$F_{21} = -\frac{\log(N_2) - \log(N_1)}{\log(1/2)} = -\frac{\log(27) - \log(10)}{\log(1/2)} = 1.43 \geq 1.20$$

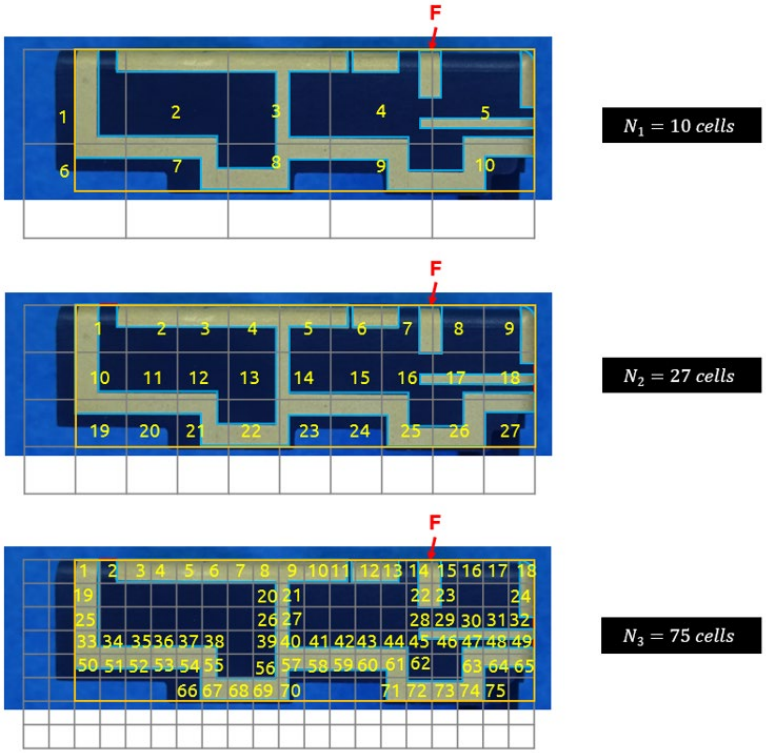
$$F_{32} = -\frac{\log(N_3) - \log(N_2)}{\log\left(\frac{1}{2}\right)} = -\frac{\log(75) - \log(27)}{\log\left(\frac{1}{2}\right)} = 1.47 \geq 1.35$$

i. wherein the complexity factors F_{21} and F_{32} are given by:

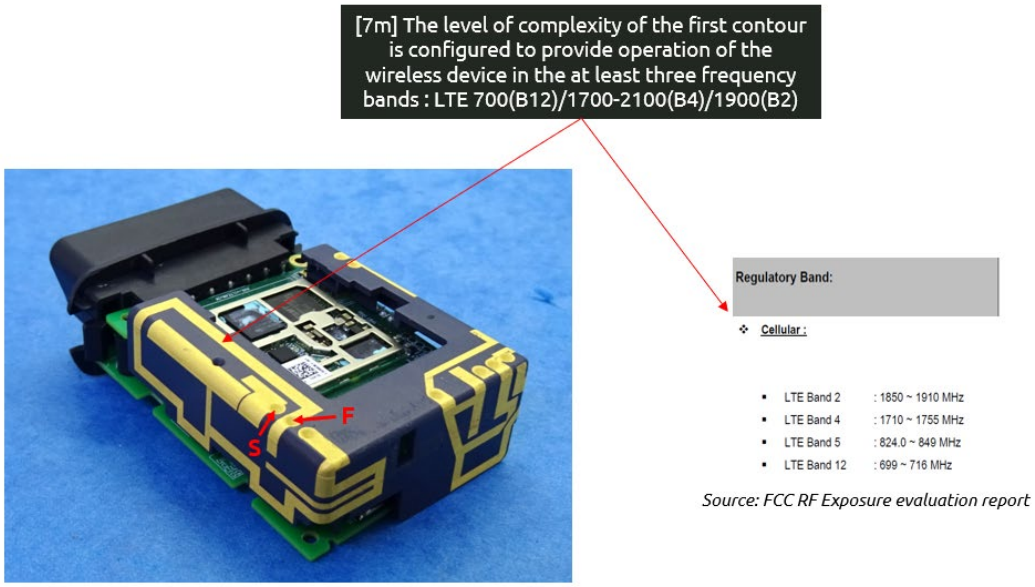
$$F_{21} = -\frac{\log(N_2) - \log(N_1)}{\log(1/2)}$$

$$F_{32} = -\frac{\log(N_3) - \log(N_2)}{\log(1/2)}$$

where N1 is a number of cells of a grid G1 that include at least a point of the first contour, N2 is a number of cells of a grid G2 that include at least a point of the first contour, and N3 is a number of cells of a grid G3 that include at least a point of the first contour, the grid G2 divides the face into nine columns of equal width arranged along a long side of the face and an odd number of rows of equal height arranged along a short side of the face, wherein the number of rows results in the cells of grid G2 being as square as possible, the grid G1 being aligned with a corner of the grid G2 to cover the face, the cells of grid G1 having widths and heights that respectively are double the widths and heights of the cells of the grid G2, and the grid G3 being aligned with the grid G2, the cells of the grid G3 having widths and heights that respectively are half the widths and heights of the cells of the grid G2, and



j. wherein the level of complexity of the first contour is configured to provide operation of the wireless device in the at least three frequency bands.



60. In addition to directly infringing the '149 patent, Defendant indirectly infringes at least claim 7 of the '149 Patent by active inducement under 35 U.S.C. § 271(b). Defendant has induced, caused, urged, encouraged, aided, and abetted its direct and indirect customers, and/or one or more business partners, to make, use, sell, offer for sale, and/or import Infringing Products. Defendant has done so by acts including but not limited to selling Infringing Products to its customers; marketing Infringing Products; and providing instructions, technical support, and direct links to vendor websites (available via, e.g., https://www.geotab.com/vehicle-tracking-device/#models [https://perma.cc/2QVB-N6KU] (last accessed 12/6/2024)) for the use of Infringing Products. Such conduct by Defendant was intended to and actually resulted in direct infringement, including the making, using, selling, offering for sale, and/or importation of Infringing Products in the United States.

61. The acts of infringement by Defendant have caused damage to Fractus, and Fractus is entitled to recover from Defendant the damages sustained by Fractus as a result of Defendant's wrongful acts in an amount subject to proof at trial. The infringement of Fractus's exclusive rights under the '149 Patent by Defendant has damaged and will continue to damage Fractus, causing

irreparable harm, for which there is no adequate remedy at law, unless enjoined by this Court.

PRAYER FOR RELIEF

WHEREFORE, Fractus prays for judgment against Geotab as follows:

a. A judgment in favor of Fractus that Geotab has infringed and is infringing either literally and/or under the doctrine of equivalents, the Patents-in-Suit;

b. An Order permanently enjoining Geotab, its respective officers, agents, employees, and those acting in privity with it, from further direct and/or indirect infringement of the Patents-in-Suit;

c. An award of damages to Fractus arising out of (1) Geotab's past infringement of the Patents-in-Suit, (2) Geotab's on-going infringement of the Patents-in-Suit, and (3) enhanced damages pursuant to 35 U.S.C. § 284, together with prejudgment and post-judgment interest, in an amount according to proof;

d. An award of attorney fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and

e. Granting Fractus its costs and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Federal Rule of Civil Procedure 38(b), Fractus hereby demands a trial by jury on all issues triable by jury.

Dated: December 6, 2024

Respectfully submitted,

By: *<u>/s/ Max L. Tribble</u>*

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