

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

NORTHSTAR SYSTEMS LLC,)	
)	Case No.
)	
Plaintiff,)	<u>JURY TRIAL DEMANDED</u>
)	
v.)	
)	
BROADCOM INC.,)	
)	
)	
Defendant.)	
)	

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff NorthStar Systems LLC (“NorthStar” or “Plaintiff”) for its Complaint against Defendant Broadcom Inc. (“Broadcom” or “Defendant”) alleges as follows:

THE PARTIES

1. NorthStar is a limited liability company organized and existing under the laws of the State of Texas, with its principal place of business located at 104 E. Houston Street, Marshall, Texas 75670.

2. Upon information and belief, Defendant Broadcom is a corporation organized under the laws of the State of Delaware with a regular and established place of business at 5465 Legacy Drive, Plano, TX 75024. Broadcom is registered to conduct business in the state of Texas and has appointed the Corporation Service Company d/b/a CSC-Lawyers Incorporating Service Company, located at 211 E. 7th St., Suite 620, Austin, TX 78701, as its agent for service of process.

JURISDICTION

3. 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).

4. This Court has personal jurisdiction over Defendant. Defendant regularly conducts business and has committed acts of patent infringement and/or has induced acts of patent infringement by others in this Judicial District and/or has contributed to patent infringement by others in this Judicial District, the State of Texas, and elsewhere in the United States.

5. Venue is proper in this Judicial District pursuant to 28 U.S.C. § 1391 because, among other things, 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).

6. Defendant is subject to this Court's jurisdiction pursuant to due process and/or the Texas Long Arm Statute due at least to its substantial business in this State and Judicial District, including (a) at least part of its past infringing activities, (b) regularly doing or soliciting business in Texas, and/or (c) engaging in persistent conduct and/or deriving substantial revenue from goods and services provided to customers in Texas.

PATENTS-IN-SUIT

7. On January 20, 2004, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,681,181 (the "'181 Patent") entitled "GPS Receiver with Improved Immunity to Burst Transmissions". A true and correct copy of the '181 Patent is available at: <https://pdfpiw.uspto.gov/.piw?PageNum=0&docid=06681181>.

8. On September 20, 2005, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,947,840 (the "'840 Patent") entitled "GPS Receiver with Improved

Immunity to Burst Transmissions”. A true and correct copy of the ’840 Patent is available at: <https://pdfpiw.uspto.gov/.piw?PageNum=0&docid=06947840>.

9. On February 7, 2006, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 6,995,708 (the “’708 Patent”) entitled “Local Positioning System”. A true and correct copy of the ’708 Patent is available at: <https://pdfpiw.uspto.gov/.piw?PageNum=0&docid=6995708>.

10. On August 12, 2014, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,805,416 (the “’416 Patent”) entitled “Method and System for Mobile Device Selectively Reporting of GPS Position Information to Others.” A true and correct copy of the ’416 Patent is available at: <https://pdfpiw.uspto.gov/.piw?PageNum=0&docid=8805416>.

11. NorthStar is the sole and exclusive owner of all right, title, and interest in the ’181 Patent, the ’840 Patent, and the ’708 Patent, and the ’416 Patent (collectively, the “Patents-in-Suit”) and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit, including the filing of this patent infringement lawsuit. NorthStar also has the right to recover all damages for past, present, and future infringement of the Patents-in-Suit and to seek injunctive relief as appropriate under the law.

FACTUAL ALLEGATIONS

12. The ’181 Patent and the ’840 Patent generally relate to technology methods and apparatuses containing a radio front-end and back-end used to sense overload conditions and reduce noise. On information and belief, the technology described in the ’181 and ’840 Patents was developed by inventor Dennis Artur Fielder at Sige Semiconductor Inc. For example, this technology is implemented in devices that include GPS receivers and/or radio receivers with radio-

front and back-ends that operate to reduce interference. Infringing products include, but are not limited to, the BCM4778, BCM47765, BCM47531, and BCM47755, among other products.

13. The '708 Patent generally relates to technology for determining the position of a mobile device using an earth-based position system. On information and belief, the technology described in the '708 Patent was developed by Dominik J. Schmidt at Gallitzin Allegheny LLC. For example, this technology is implemented in devices that include assisted GPS capabilities. Infringing products include, but are not limited to, Broadcom SoCs and GPS modules including, but not limited to, Broadcom Long Term Orbit (LTO) with Assisted GPS (A-GPS) functionality, which, upon information and belief, is used in combination with the BCM4778, BCM47765, BCM47531, BCM47755, among other products.

14. The '416 Patent generally relates GPS receivers that generate an indication of signal interference, communicate that indication of signal interference to a remote source, and receiving navigation information. On information and belief, the technology described in the '416 Patent was developed by inventor Scott Harris. For example, this technology is implemented in devices that include GPS modules which can detect signal interference and communicate with a remote device to receive navigation information in response to the signal interference. Infringing products include, but are not limited to, Broadcom SoCs and GPS modules including, but not limited to, BCM4778, BCM47765, BCM47531, and BCM47755, among other products

15. Broadcom has infringed and is continuing to infringe the Patents-in-Suit by making, using, selling, offering to sell, and/or importing, and by actively inducing others to make, use, sell, offer to sell, and/or import SoC chips, and/or products that include SoC chips, which chips include radio capabilities and/or GPS capabilities including, but not limited to, the BCM4778, BCM47765, BCM47531, and BCM47755:

GNSS/GPS SoCs Contact Sales Request Info

Global Navigation Satellite System (GNSS) receivers use radio signals from orbiting satellites to determine precise ground locations, enabling advanced navigation and location-based services in a variety of mobile and consumer devices.

Broadcom has an extensive portfolio of standalone GNSS receiver chips and combination GNSS receiver and Sensor Hub -- or Location Hub -- chips, with over 1 billion GNSS chips sold globally.

In addition to the GNSS receiver chips, Broadcom provides Assisted-GNSS (A-GNSS) and Long Term Orbits (LTO) services. These services are provided from highly reliable cloud-based servers that are fed from a proprietary World-Wide Reference Network (WWRN) stations that collect world-wide GNSS satellite data.

Search by product names, numbers or categories

Select up to four products for detailed comparison. Compare Clear All Download Table Display 10 of 6 results

Select	Product Line	Part Number	Distrib. Inventory	Lifecycle
<input type="checkbox"/>	GNSS/GPS SoCs	BCM4778	No	Active
<input type="checkbox"/>	GNSS/GPS SoCs	BCM47765	No	Active
<input type="checkbox"/>	GNSS/GPS SoCs	BCM47531	No	Not Recommended for New Design
<input type="checkbox"/>	GNSS/GPS SoCs	BCM47756	No	Not Recommended for New Design
<input type="checkbox"/>	GNSS/GPS SoCs	LTO-AGPS	No	Active
<input type="checkbox"/>	GNSS/GPS SoCs	A-GPS-WWRN	No	Active

Upon information and belief, Broadcom SoC GPS chips are included in certain mobile devices.

COUNT I
(Infringement of the '181 Patent)

16. Paragraphs 1 through 15 are incorporated by reference as if fully set forth herein.

17. NorthStar has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '181 Patent.

18. Defendant has and continues to directly infringe the '181 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '181 Patent. Such products include, but are not limited to, SoC GPS that include GPS capabilities, such as Broadcom BCM4778, BCM47765,

¹ <https://www.broadcom.com/products/wireless/gnss-gps-socs>.

BCM47531, and BCM47755, among other products.

19. Defendant has and continues to directly infringe at least claim 1 of the '181 Patent by making, using, offering to sell, selling, and/or importing into the United States products such as the Broadcom BCM47755, which includes a GPS receiver with a radio front-end and a radio back-end. Upon information and belief, the radio front-end performs down-conversion of at least one GPS radio signal received at a Radio Frequency (RF) to an Intermediate Frequency (IF), and the radio back-end deriving a bit stream of digital data from the at least one GPS radio signal after it has been down converted to the IF and processing the bit-stream of digital data. Upon information and belief, the Broadcom BCM47755 senses an overload condition in the radio front-end when the received radio signal is above a threshold. Upon information and belief, the Broadcom BCM47755 generates an overload signal upon sensing the overload condition of the radio front-end. Upon information and belief, the Broadcom BCM47755 couples the overload signal into the radio backend. Upon information and belief, the Broadcom BCM47755 substitutes in the radio back-end the bit-stream of digital data with a locally generated bit pattern in response to the presence of the overload signal, the locally generated bit pattern being selected such that when processed it causes less noise to accumulate in the radio back-end than if the bit-stream of digital data were processed.

20. Defendant has and continues to indirectly infringe one or more claims of the '181 Patent by knowingly and intentionally inducing others, including Broadcom customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

21. Defendant, with knowledge that these products, or the use thereof, infringe the '181

Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '181 Patent by providing these products to end-users for use in an infringing manner.

22. Defendant has and continues to induce infringement by others, including end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '181 Patent, but while remaining willfully blind to the infringement.

23. NorthStar has suffered damages as a result of Defendant's direct and indirect infringement of the '181 Patent in an amount to be proved at trial.

24. NorthStar has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '181 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

COUNT II
(Infringement of the '840 Patent)

25. Paragraphs 1 through 15 are incorporated by reference as if fully set forth herein.

26. NorthStar has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '840 Patent.

27. Defendant has and continues to directly infringe the '840 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '840 Patent. Such products include, but are not limited to, SoC chips that include GPS capabilities, such as the Broadcom BCM4778, BCM47765, BCM47531, and BCM47755, among other products.

28. Defendant has and continues to directly infringe at least claim 1 of the '840 Patent

by making, using, offering to sell, selling, and/or importing into the United States products such as the Broadcom BCM47755, which includes a radio receiver with a radio front-end and a radio back-end. Upon information and belief, the Broadcom BCM47755 performs the function of sensing an overload condition in the radio receiver front-end when a received radio signal is above a threshold. Upon information and belief, Broadcom BCM47755 generates an overload signal in response to sensing the overload condition. Upon information and belief, Broadcom BCM47755 couples the signal received into a radio back-end. Upon information and belief, the Broadcom BCM47755 couples the locally generated bit pattern in the back-end in response to the overload signal, and the locally generated bit pattern being selected such that when processed it causes less noise to accumulate in the back-end than if a bit-stream derived from the received radio signal were processed.

29. Defendant has and continues to indirectly infringe one or more claims of the '840 Patent by knowingly and intentionally inducing others, including Broadcom customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

30. Defendant, with knowledge that these products, or the use thereof, infringe the '840 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '840 Patent by providing these products to end-users for use in an infringing manner.

31. Defendant has and continues to induce infringement by others, including end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '840 Patent, but while

remaining willfully blind to the infringement.

32. NorthStar has suffered damages as a result of Defendant's direct and indirect infringement of the '840 Patent in an amount to be proved at trial.

33. NorthStar has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '840 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

COUNT III
(Infringement of the '708 Patent)

34. Paragraphs 1 through 15 are incorporated by reference as if fully set forth herein.

35. NorthStar has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '708 Patent.

36. Defendant has and continues to directly infringe the '708 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '708 Patent. Such products include, but are not limited to Broadcom SoCs and GPS chips with Assisted GPS (A-GPS) functionality such as BCM4778, BCM47765, BCM47531, BCM47755, among other products including, but not limited to Broadcom Long Term Orbit (LTO) with Assisted GPS(A-GPS).

37. Defendant has and continues to directly infringe at least claim 1 of the '708 Patent by making, using, offering to sell, selling, and/or importing into the United States products such SoCs and/or associated software, which performs a method to determine position of a user, comprising sniffing for one or more earth-based media with a mobile device; and if the one or more earth-based media is present (*e.g.*, Assisted GPS or A-GPS), using an earth-based positioning system receiving of the mobile device selected from one of a short-range wireless receiver of the

mobile device and a cellular receiver of the mobile device to determine the position, otherwise, upon information and belief, using a satellite-based positioning system (*e.g.*, GPS) receiver of the mobile device to determine the position only if the one or more earth-based media are not present, using the code of the mobile device to fix the mobile device to favor use of the earth based positioning system receiver over the satellite-based positioning system receiver:


LTO-AGPS

Contact Sales
Request Info

Long Term Orbit (LTO) with Assisted-GPS (A-GPS)

Overview
Specifications
Documentation
Optional Products

Long Term Orbit (LTO) technology brings GPS assistance data to mobile device users who do not have the benefit of Assisted-GPS (A-GPS) infrastructure in their wireless networks. GPS-enabled mobile devices equipped with LTO deliver AGPS-enhanced performance without sacrificing the freedom of autonomous operation. GPS receivers typically need clear lines of sight to the satellites to download the orbit data (ephemeris) that is required for computing a position. The download process can take several minutes, and the data must be refreshed every two to four hours. This download cycle is cumbersome for mobile devices, where subscribers demand GPS fixes in seconds, not minutes.



Features

- Shorter time-to-first-fix and better sensitivity than autonomous mode. Autonomous receivers often fail to compute a fix in indoor environments and urban canyons, where as the LTO-enhanced receiver continues generating the timely, accurate position fixes required for navigation and emergency services
- Enables A-GPS performance when operating out of network. After downloading LTO into a device, a wireless subscriber travelling outside of the home network will enjoy the accuracy and reliability of A-GPS performance for the full LTO validity period Airtime savings, reduced network traffic.
- Downloading LTO files requires a brief GPRS or docked Internet connection every few days. This saves considerable airtime, and contrasts sharply with A-GPS solutions in which data must be refreshed every two-to-four hours

Applications

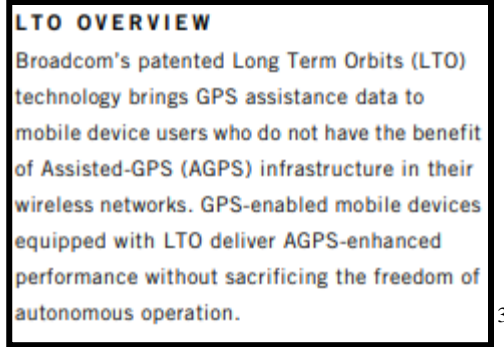
- Location-based Services
- GPS
- Smartphones
- Tablets

Lifecycle Status

Active

2

² <https://www.broadcom.com/products/wireless/gnss-gps-socs/lto-agps>.



38. Defendant has and continues to indirectly infringe one or more claims of the '708 Patent by knowingly and intentionally inducing others, including Broadcom customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

39. Defendant, with knowledge that these products, or the use thereof, infringe the '708 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce, direct infringement of the '708 Patent by providing these products to end-users for use in an infringing manner.

40. Defendant has and continues to induce infringement by others, including end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '708 Patent, but while remaining willfully blind to the infringement.

41. NorthStar has suffered damages as a result of Defendant's direct and indirect infringement of the '708 Patent in an amount to be proved at trial.

42. NorthStar has suffered, and will continue to suffer, irreparable harm as a result of

³ Long Term Orbits LTO: Technical Brief at 1: Available at <https://docs.broadcom.com/doc/1211168563565>.

Defendant's infringement of the '708 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

COUNT IV
(Infringement of the '416 Patent)

43. Paragraphs 1 through 15 are incorporated by reference as if fully set forth herein.

44. NorthStar has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '416 Patent.

45. Defendant has and continues to directly infringe the '416 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '416 Patent. Such products include, but are not limited to, SoC chips that include GPS capabilities, such as the Broadcom BCM4778, BCM47765, BCM47531, and BCM47755, among other products.

46. Defendant has and continues to directly infringe at least claim 1 of the '416 Patent by making, using, offering to sell, selling, and/or importing into the United States products, such as the Broadcom BCM47755, which utilizes a method for: receiving information about a current location of a mobile communication device, wherein the information about the current location includes global position system (GPS) information; detecting by the mobile communication device, signal interference. The Broadcom BCM47755 generates, by the mobile communication device, an indication of the signal interference. Upon information and belief the Broadcom BCM47755 further communicates, by the mobile communication device, with a remote source over a wireless network, wherein said communication comprises sending both the indication of the signal interference and the GPS information from the mobile communication device to the remote source. Upon information and belief, the Broadcom BCM47755 further receives, by the

mobile communication device, navigation information from the remote source in response to sending both the indication of the signal interference and the GPS information, wherein the navigation information comprises data for plotting a course on a map including the current location of the mobile communication device. The accused products further displaying by the mobile communication device, the map based on the navigation information. For example, Broadcom advertises that its SoCs are utilized for “highest levels of navigation performance” in smartphones, tablets, mobile accessories, and wearables.⁴

47. Defendant has and continues to indirectly infringe one or more claims of the '416 Patent by knowingly and intentionally inducing others, including Broadcom customers and end-users, to directly infringe, either literally or under the doctrine of equivalents, by making, using, offering to sell, selling, and/or importing into the United States products that include infringing technology.

48. Defendant, with knowledge that these products, or the use thereof, infringe the '416 Patent at least as of the date of this Complaint, knowingly and intentionally induced, and continues to knowingly and intentionally induce direct infringement of the '416 Patent by providing these products to end-users for use in an infringing manner.

49. Defendant has and continues to induce infringement by others, including end-users, with the intent to cause infringing acts by others or, in the alternative, with the belief that there was a high probability that others, including end-users, infringe the '416 Patent, but while remaining willfully blind to the infringement.

50. NorthStar has suffered damages as a result of Defendant's direct and indirect infringement of the '416 Patent in an amount to be proved at trial.

⁴ See, e.g., <https://docs.broadcom.com/doc/12379501>

51. NorthStar has suffered, and will continue to suffer, irreparable harm as a result of Defendant's infringement of the '416 Patent, for which there is no adequate remedy at law, unless Defendant's infringement is enjoined by this Court.

DEMAND FOR JURY TRIAL

Plaintiff hereby demands a jury for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, NorthStar prays for relief against Defendant as follows:

a. Entry of judgment declaring that Defendant has directly and/or indirectly infringed one or more claims of the Patents-in-Suit;

b. An order pursuant to 35 U.S.C. § 283 permanently enjoining Defendant, its officers, agents, servants, employees, attorneys, and those persons in active concert or participation with them, from further acts of infringement of the Patents-in-Suit;

c. An order awarding damages sufficient to compensate NorthStar for Defendant's infringement of the Patents-in-Suit, but in no event less than a reasonable royalty, together with interest and costs;

d. Entry of judgment declaring that this case is exceptional and awarding NorthStar its costs and reasonable attorney fees under 35 U.S.C. § 285; and

e. Such other and further relief as the Court deems just and proper.

Dated: May 11, 2022

Respectfully submitted,

/s/ Vincent J. Rubino, III

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