

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION**

BANDSPEED, LLC,

Plaintiff,

v.

CYPRESS SEMICONDUCTOR CORP.

Defendant.

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CASE NO. 1:19-cv-936

COMPLAINT

Plaintiff Bandspeed, LLC (“Bandspeed”), by and through its attorneys, files its Complaint against defendant Cypress Semiconductor Corp. (“Defendant”), and hereby alleges as follows:

I. NATURE OF ACTION

1. This is a patent infringement action to end Defendant’s unauthorized and infringing manufacture, use, sale, offering for sale, and/or importation of methods and products incorporating Bandspeed’s patented inventions.

2. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 7,027,418 (“the ’418 Patent”), issued on April 11, 2006 for “Approach for Selecting Communications Channels Based on Performance.”

3. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 7,477,624 (“the ’624 Patent”), issued on January 13, 2009 for “Approach for Managing the Use of Communications Channels Based on Performance.”

4. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 7,570,614 (“the ’614 patent”), issued on August 4, 2009 for “Approach for Managing Communications Channels Based on Performance.”

5. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 7,903,608 (“the ’608 Patent”), issued on March 8, 2011 for “Approach for Managing the Use of Communications Channels Based on Performance.”

6. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 8,542,643 (“the ’643 Patent), issued on September 24, 2013 for “Approach for Managing the Use of Communications Channels Based on Performance.”

7. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 8,873,500 (“the ’500 Patent), issued on October 28, 2014 for “Approach for Managing the Use of Communications Channels Based on Performance.”

8. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 9,379,769 (“the ’769 Patent), issued on June 28, 2016 for “Approach for Managing the Use of Communications Channels Based on Performance.”

9. Bandspeed is the owner of all right, title, and interest in and to United States Patent No. 9,883,520 (“the ’520 Patent), issued on January 30, 2018 for “Approach for Managing the Use of Communications Channels Based on Performance.”

10. The ’418 Patent, ’624 Patent, ’614 Patent, ’608 Patent, ’643 Patent, ’500 Patent, ’769 Patent, and ’520 Patent are, collectively, the “Bluetooth Classic Patents.”

11. The ’608 Patent, ’643 Patent, ’500 Patent, ’769 Patent, and ’520 Patent are, collectively, the “Bluetooth LE Patents.”

12. The Bluetooth Classic Patents and the Bluetooth LE Patents are, collectively, the “Patents.”

13. Upon information and belief, Defendant has been and currently is infringing, contributing to the infringement of, and/or inducing the infringement of Bandspeed’s Patents, by,

among other things, making, using, selling, importing, and/or offering for sale, within the territorial boundaries of the United States, products that are covered by one or more claims of Bandspeed's Patents.

14. Defendant manufactures, provides, sells, offers for sale, imports, and/or distributes infringing products and services; and/or induces others to make and use its products and services in an infringing manner; and/or contributes to the making and use of infringing products and services by others, including its customers, who directly infringe the Patents.

II. THE PARTIES

15. Plaintiff Bandspeed is a Texas limited liability company with its principal place of business located in Austin, Texas.

16. Upon information and belief, Defendant is a Delaware corporation with its principal places of business located at 9442 North Capital of Texas Highway, Austin, Texas 78759 and 5204 Ben White Boulevard, Austin, Texas 78741. Upon information and belief, Defendant is authorized to do business in Texas. Defendant may be served by serving its registered agent Corporation Service Company d/b/a CSC-Lawyers Incorporating Service Company, 211 E. 7th Street, Suite 620, Austin, TX 78701.

17. On information and belief, Defendant has had knowledge of some or all of the Patents and the infringing nature of its products in connection with Defendant's acquisition of Broadcom's Wireless Internet of Things (IoT) business. Bandspeed previously asserted more than one of the Patents against Broadcom and Cypress received information about Bandspeed's Patents and the infringing nature of Cypress's products from Broadcom in or around June or July 2016.

18. Defendant has knowledge of the Patents by virtue of a letter sent by Bandspeed to Cypress on January 15, 2019 notifying Cypress of its infringement of Bandspeed's Patents (the "Notice Letter").

19. Finally, Defendant has knowledge of the Patents and the infringing nature of its activities at least as early as the date when Bandspeed effected service of the Complaint.

III. JURISDICTION AND VENUE

20. This is an action for patent infringement arising under the Patent Laws of the United States, in particular 35 U.S.C. §271, 281, 283, 284, and 285. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §1331 and 1338(a).

21. This Court has personal jurisdiction over Defendant and venue is proper in this Court pursuant to 28 U.S.C. §1391(c).

IV. PLAINTIFF'S PATENTS

22. The claims of the Patents describe inventive features and combinations relating to adaptive frequency hopping and the ability to avoid interference over communications channels that improved upon prior art systems and methods. In other words, the claims of the Patents generally describe novel techniques “for selecting sets of communications channels based on channel performance.” ’418 Patent at 4:49-50.

23. The Patents improve upon frequency hopping communications systems that existed at the time of the invention. One problem with frequency hopping communications systems is that coexistence problems arise between the frequency hopping communications system and non-frequency hopping communications systems that operate in the same frequency band. While the frequency hopping communications system hops over the entire frequency band, the non-frequency hopping communications systems occupy separate parts of the frequency band. When the frequency hopping communications system hops over part of the frequency band occupied by a non-frequency hopping communications system, there may be interference between the systems. Although the use of a frequency hopping protocol helps to lessen the interference problem because not all of the frequency hopping channels will interfere with other communications systems, there

nevertheless remains interference on those channels that coincide with the non-frequency hopping communications systems. An example of the interference situation is the coexistence problem between the frequency hopping IEEE 802.15.1 WPAN and the non-frequency hopping IEEE 802.11b Wireless Local Area Network (WLAN) because both share the 2.4 GHz ISM band. '418 Patent at 2:51-3:2. Interference results in data transmission errors, such as an increase in the bit error rate (BER) or the loss of data packets, resulting in reduced transmission quality and performance and the need to retransmit the data. '418 Patent at 3:17-20.

24. One approach for managing the coexistence problem is to increase the power used in the transmissions so that the other interfering system have less of an impact on the system transmitting at the increased power. However, this increased power approach drains batteries used by the participants, and thus the required power increase may be impractical. Also, the increased power approach only benefits the system using the increased power and results in a bigger interference impact on other systems. '418 Patent at 3:12-29.

25. Another approach for managing the coexistence problem is to skip a "bad" channel that suffers from interference, such as by moving onto the next channel in the sequence or by jumping to another randomly selected channel. However, this skipping approach does not necessarily avoid other bad channels because the next channel used may also have an interference problem. Also, known "bad" and "good" channels may change over time due to the transient nature of some types of interference. '418 Patent at 3:30-38.

26. The claims of the Patents solve the coexistence problem by using a method or system not conventional at the time of the invention: adaptive frequency hopping. As described in the Patents, a set of channels is used for communication between devices according to a frequency hopping ("FH") protocol. Another set of communications channels is selected in a similar manner

when a specified criterion is satisfied after expiration of a specified length of time, when the performance of at least one of the channels in the set of channels satisfies another performance criterion, or when a specified number of the set of channels satisfies yet another performance criterion. *See, e.g.*, '608 Patent at 4:64-5:6. "For example, the selection criteria may be to select the good channels but not the bad channels." *Id.* at 6:62-64. The claimed system first selects an initial set of channels, and then periodically selects sets of channels based on later performance of the communications channels. *Id.* at 6:28-30; 4:22-24. The claimed system classifies a communication channel based on channel performances and one or more classification criteria. *Id.* at 15:8-10. "For example, a channel may be classified as 'good' or 'bad' based on the results of the channel performance testing by applying one or more performance measurements." *Id.* at 15:10-14.

27. The Patents teach a method or device using a frequency hopping protocol that "transmits data on one channel, hops to the next channel in the hopping sequence to transmit more data, and continues by transmitting data on subsequent channels in the hopping sequence." *See, e.g.*, '500 Patent at 2:34-38. "When the FH communications system hops over part of the frequency band occupied by an NFH [non-frequency hopping] communications system, there may be interference between the systems." *Id.* at 3:33-36. "Interference results in data transmission errors, such as an increase in the bit error rate (BER) or the loss of data packets, resulting in reduced transmission quality and performance and the need to retransmit the data." *Id.* at 3:58-61. The invention avoids these problems by testing the plurality of communications channels and using a subset of channels that have been identified as good after testing for communications between participants using an adapted hopping sequence. *Id.* at 12:34-41 and 18:8-12. "Each channel of a communications system may be tested repeatedly by using master test packet 360 and slave test

packet 380 described herein.” *Id.* at 12:34-36. For example, in a Bluetooth or IEEE 802.15.1 FH communications system, the frequency hopping rate is 1,600 hops per second, and there are 79 channels. Therefore, in one second, each of the 79 channels may be tested both from the master to the slave and from the slave to the master 20 times.” *Id.* at 12:36-41. “[A] master may select the channels classified as ‘good,’ generate a special packet that identifies the selected set of good communications channels in the payload, and send the special packet to one or more other participants in the communications network.” *Id.* at 18:8-12.

28. The Patents specifically include a particular embodiment labeled the “referendum” approach that considers the channel performance as determined by a master and a certain number of slaves (collectively “participants”). *See, e.g.*, ’624 Patent at 16:47-49. Using the “referendum” approach, a participant has a vote on whether to use a given channel or not to use the channel. *Id.* at 16:65-66. “A certain number of votes (*e.g.*, the ‘passing mark’) is required for the channel to be judged ‘good’ and therefore available for use by the frequency hopping communications system.” *Id.* at 17:5-7.

29. The invention described in the Patents generally includes a device loading a set of default channels into a default channel register and a set of good channels into a good channel register. When a selection kernel addresses a bad channel stored in the default channel register, the bad channel is replaced by a good channel from the good channel register. *See, e.g.*, ’643 Patent at 20:1-21:14.

V. DEFENDANT’S ACTS

A. Infringing Bluetooth Classic (BR/EDR) Products

30. Defendant manufactures, provides, sells, offers for sale, and/or distributes products that that use, practice and/or comply with the Bluetooth Core Specification Version 2.0+EDR or

higher and other products that operate in a reasonably similar manner (“Infringing Bluetooth Classic Products”).

31. The CYW20819 Bluetooth (BT) MCU shall be referred to as the “Exemplary Infringing Bluetooth Classic Product.”

32. Through its actions, Defendant has infringed the Patents and actively induced others to infringe and contributed to the infringement by others of the Patents, throughout the United States.

33. Adaptive frequency hopping is material to practicing the invention described by the Patents.

34. Defendant intentionally manufactures and sells Infringing Bluetooth Classic Products that are designed to provide adaptive frequency hopping in a manner that infringes the Patents.

35. On information and belief, Defendant takes steps to test the Infringing Bluetooth Classic Products to ensure compliance with the Bluetooth Core Specification and to qualify an Infringing Bluetooth Classic Product for Bluetooth certification.

36. The Infringing Bluetooth Classic Products are certified as compliant with the Bluetooth Core Specification Version 2.0+EDR or higher. In connection with compliance, for qualifying Bluetooth products, Defendant submitted a Core Implementation Compliance Statement (or Core ICS). The Core ICS requires Defendant to disclose certain product capabilities, including adaptive frequency hopping (AFH), which is found in Table 26 of the Link Manager Protocol section.

37. On information and belief, Defendant has submitted Core ICSs that indicate “Yes” for support of certain features of adaptive frequency hopping that infringe the Patents.

38. On information and belief, Defendant has certified that the Infringing Bluetooth Classic Products are compliant with “Adaptive Frequency Hopping Kernel” as defined by Item 2 of the Physical Channel table within the Baseband section of the Implementation Conformance Statement (ICS). For example, on information and belief, the Exemplary Infringing Bluetooth Classic Product implements an “Adaptive Frequency Hopping Kernel” as defined by Item 2 of the Physical Channel table within the Baseband section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

39. On information and belief, the Infringing Bluetooth Classic Products implement “Adaptive Frequency Hopping” as defined by Item 16 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS. On information and belief, Defendant has certified that the Infringing Bluetooth Classic Products are compliant with “Adaptive Frequency Hopping” as defined by Item 16 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS.

40. On information and belief, the Exemplary Infringing Bluetooth Classic Product implements “Adaptive Frequency Hopping” as defined by Item 16 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product. On information and belief, Defendant has certified that the Exemplary Infringing Bluetooth Classic Product is compliant with “Adaptive Frequency Hopping” as defined by Item 16 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

41. On information and belief, the Infringing Bluetooth Classic Products implement “AFH Switch as master” as defined by Item 1 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS. On information and belief, Defendant has certified

that the Infringing Bluetooth Classic Products are compliant with “AFH Switch as master” as defined by Item 1 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS.

42. On information and belief, the Exemplary Infringing Bluetooth Classic Product implements “AFH Switch as master” as defined by Item 1 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product. On information and belief, Defendant has certified that the Exemplary Infringing Bluetooth Classic Product is compliant with “AFH Switch as master” as defined by Item 1 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

43. On information and belief, the Infringing Bluetooth Classic Products include “Support of Channel Classification” as defined by Item 6 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS. On information and belief, Defendant has certified that the Infringing Bluetooth Classic Products are compliant with “Support of Channel Classification” as defined by Item 6 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS.

44. On information and belief, the Exemplary Infringing Bluetooth Classic Product includes “Support of Channel Classification” as defined by Item 6 of the Adaptive Frequency Hopping table (i.e., Table 26) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product. On information and belief, Defendant has certified that the Exemplary Infringing Bluetooth Classic Product is compliant with “Support of Channel Classification” as defined by Item 6 of the Adaptive Frequency Hopping table (i.e., Table 26)

within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

45. On information and belief, the Infringing Bluetooth Classic Products implement “Power Control” as defined by Item 10 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS. On information and belief, Defendant has certified that the Infringing Bluetooth Classic Products are compliant with “Power Control” as defined by Item 10 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS.

46. On information and belief, the Exemplary Infringing Bluetooth Classic Product implements “Power Control” as defined by Item 10 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product. On information and belief, Defendant has certified that the Exemplary Infringing Bluetooth Classic Product is compliant with “Power Control” as defined by Item 10 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

47. On information and belief, the Infringing Bluetooth Classic Products implement “Enhanced Power Control” as defined by Item 20 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS. On information and belief, Defendant has certified that the Infringing Bluetooth Classic Products are compliant with “Enhanced Power Control” as defined by Item 20 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS.

48. On information and belief, the Exemplary Infringing Bluetooth Classic Product implements “Enhanced Power Control” as defined by Item 20 of the Supported Features table (i.e.,

Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

49. On information and belief, Defendant has certified that the Exemplary Infringing Bluetooth Classic Product is compliant with “Enhanced Power Control” as defined by Item 20 of the Supported Features table (i.e., Table 2) within the Link Manager section of the ICS for the Exemplary Infringing Bluetooth Classic Product.

50. The Infringing Bluetooth Classic Products are capable of performing adaptive frequency hopping.

51. The Exemplary Infringing Bluetooth Classic Product is capable of performing adaptive frequency hopping.

52. The Infringing Bluetooth Classic Products are capable of operating in the 2.4 GHz ISM frequency band.

53. The Exemplary Infringing Bluetooth Classic Product is capable of operating in the 2.4 GHz ISM frequency band.

54. The Infringing Bluetooth Classic Products are capable of participating in Bluetooth piconets with one or more other devices.

55. The Exemplary Infringing Bluetooth Classic Product is capable of participating in Bluetooth piconets with one or more other devices.

56. The Infringing Bluetooth Classic Products are capable of transmitting data packets to other devices.

57. The Exemplary Infringing Bluetooth Classic Product is capable of transmitting data packets to other devices.

58. The Infringing Bluetooth Classic Products are capable of receiving data packets from other devices.

59. The Exemplary Infringing Bluetooth Classic Product is capable of receiving data packets from other devices.

60. The Infringing Bluetooth Classic Products are capable of transmitting and/or receiving data packets on multiple frequencies.

61. The Exemplary Infringing Bluetooth Classic Product is capable of transmitting and/or receiving data packets on multiple frequencies.

62. The Infringing Bluetooth Classic Products are capable of transmitting and/or receiving data packets using a sequence of fewer than the total number of frequencies in the available band for a particular period of time.

63. The Exemplary Infringing Bluetooth Classic Product is capable of transmitting and/or receiving data packets using a sequence of fewer than the total number of frequencies in the available band for a particular period of time.

64. The Infringing Bluetooth Classic Products are capable of transmitting and/or receiving data in defined time slots.

65. The Exemplary Infringing Bluetooth Classic Product is capable of transmitting and/or receiving data in defined time slots.

66. The Infringing Bluetooth Classic Products are capable of changing the set of channels on which they transmit and/or receive data packets with other devices in a particular piconet during the connection lifetime of that piconet.

67. The Exemplary Infringing Bluetooth Classic Product is capable of changing the set of channels on which they transmit and/or receive data packets with other devices in a particular piconet during the connection lifetime of that piconet.

68. The Infringing Bluetooth Classic Products are capable of sending and/or receiving the LMP_set_AFH PDU (packet data unit) or functional equivalent as it is defined in the Bluetooth Core Specification version 2.0+EDR.

69. The Exemplary Infringing Bluetooth Classic Product is capable of sending and/or receiving the LMP_set_AFH PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 2.0+EDR.

70. The Infringing Bluetooth Classic Products are capable of sending and/or receiving any packet that includes the AFH_Instant parameter or functional equivalent as it is defined in the Bluetooth Core Specification version 2.0+EDR.

71. The Exemplary Infringing Bluetooth Classic Product is capable of sending and/or receiving any packet that includes the AFH_Instant parameter or functional equivalent as it is defined in the Bluetooth Core Specification version 2.0+EDR.

72. The Infringing Bluetooth Classic Products are capable of sending and/or receiving data packets that include the AFH_Channel_Map parameter or functional equivalent as it is defined in the Bluetooth Core Specification version 2.0+EDR.

73. The Exemplary Infringing Bluetooth Classic Product is capable of sending and/or receiving data packets that include the AFH_Channel_Map parameter or functional equivalent as it is defined in the Bluetooth Core Specification Version 2.0+EDR.

74. The Infringing Bluetooth Classic Products are capable of selecting channels for transmission of data using the basic hop selection kernel in conformance with the Bluetooth Core Specification Version 2.0+EDR.

75. The Exemplary Infringing Bluetooth Classic Product is capable of selecting channels for transmission of data using the basic hop selection kernel in conformance with the Bluetooth Core Specification Version 2.0+EDR.

76. The Infringing Bluetooth Classic Products are capable of classifying channels in the available frequency band as at least used or unused for communication within a particular piconet at a particular time.

77. The Exemplary Infringing Bluetooth Classic Product is capable of classifying channels in the available frequency band as at least used or unused for communication within a particular piconet at a particular time.

78. The Infringing Bluetooth Classic Products are capable of using index and/or other data structures that represent frequency channels.

79. The Exemplary Infringing Bluetooth Classic Product is capable of using index and/or other data structures that represent frequency channels.

80. The Infringing Bluetooth Classic Products are capable of using one or more registers or functionally equivalent data structures to store representations of frequency channels.

81. The Exemplary Infringing Bluetooth Classic Product is capable of using one or more registers or functionally equivalent data structures to store representations of frequency channels.

82. The Infringing Bluetooth Classic Products are capable of using one or more remapping and/or substitution functions to select a channel for transmission of data.

83. The Exemplary Infringing Bluetooth Classic Product is capable of using one or more remapping and/or substitution functions to select a channel for transmission of data.

84. The Infringing Bluetooth Classic Products are capable of using one or more reindexing and/or substitution operations to select a channel for transmission of data.

85. The Exemplary Infringing Bluetooth Classic Product is capable of using one or more reindexing and/or substitution operations to select a channel for transmission of data.

86. The Infringing Bluetooth Classic Products are capable of representing a channel's status as at least good, bad, and/or unknown for transmission using a single bit.

87. The Exemplary Infringing Bluetooth Classic Product is capable of representing a channel's status as at least good, bad, and/or unknown for transmission using a single bit.

88. The Infringing Bluetooth Classic Products are capable of representing a channel's status as at least used or unused for transmission using a single bit.

89. The Exemplary Infringing Bluetooth Classic Product is capable of representing a channel's status as at least used or unused for transmission using a single bit.

90. Certain of Defendant's customers request, require, and/or engage features and capabilities, including adaptive frequency hopping, that comply with the Bluetooth Core Specification, and Defendant markets and advertises one or more of its Infringing Bluetooth Classic Products' compliance with the Bluetooth Core Specification regarding such features and capabilities.

91. Defendant advertises and provides a downloadable manual for the Exemplary Infringing Bluetooth Classic Product on its website.



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Home > Technical Documents > Application Notes > AN225684 – Getting Started with CYW20819

AN225684 – Getting Started with CYW20819

Last Updated: Feb 25, 2019

Version: **

AN225684 introduces you to the CYW20819 Bluetooth (BT) MCU, a BT 5.0-compliant, Arm® Cortex®-M4 CPU-based ultra-low-power MCU that supports both Classic BT and Bluetooth Low Energy (BLE). This application note helps you get started on the CYW20819 device with an overview of the device architecture, development kits and software development tools. It shows how to create a simple BLE application using the ModusToolbox IDE and the Bluetooth Software Design Kit (SDK). It also guides you to more resources available online to accelerate your learning about CYW20819.

<https://www.cypress.com/documentation/application-notes/an225684-getting-started-cyw20819>

92. Defendant’s website for the Exemplary Infringing Bluetooth Classic Product touts the infringing Bluetooth functionality by marketing the product as a “a BT 5.0-compliant, Arm® Cortex®-M4 CPU-based ultra-low-power MCU that supports both Classic BT and Bluetooth Low Energy (BLE).” *See id.*

93. Defendant states that the Exemplary Infringing Product “Complies with Bluetooth Core Specification version 5.0.” <https://www.cypress.com/file/463076/download>.


94. Defendant encourages customers to use the infringing Bluetooth functionality in the Exemplary Infringing Bluetooth Classic Product by marketing the product as follows:

Introduction

Applications featuring Bluetooth connectivity are trending towards lower power, more application-level features, and smaller BoM cost and board space. The CYW20819 Bluetooth Wireless MCU enables you to meet all these critical requirements. In terms of the core Bluetooth functionality, the device is Bluetooth 5.0-compliant with support for dual-mode Bluetooth operation, and it supports BLE (1 Mbps & 2 Mbps) and (EDR 2 Mbps & 3 Mbps) data rates. CYW20819 also fully implements the Bluetooth Mesh 1.0 specification. CYW20819 also supports value-add application features by having a powerful Arm Cortex-M4 CPU and a host of peripheral blocks like ADC, SPI, UART, and I²C that aid in interfacing with external on-board sensors. The presence of these peripheral blocks, on-chip flash memory, and integrated buck and LDO regulators also enables reduced BoM cost and PCB footprint. Cypress’ advanced CMOS manufacturing process and the support for various system power modes enable you to design battery-operated, low-power applications using CYW20819.

The device is intended for use in audio (source), sensors (medical, home, security), HID and remote-control functionality, as well as a host of other IoT applications.

<https://www.cypress.com/file/463076/download>.



PRELIMINARY

CYW20819

**Ultra Low Power, BLE/BR/EDR
Bluetooth 5.0 SoC**

The CYW20819 is a best-in-class Bluetooth 5 single-chip solution targeted at Bluetooth Mesh, audio, voice, wearables, mice, keyboards, gaming consoles, remote controls, home automation, and a wide range of other Internet of Things (IoT) applications. The CYW20819 fully implements the Bluetooth Mesh 1.0 specification, and employs the highest level of integration to eliminate external components, allowing device makers to reduce product footprints and slash costs.

The CYW20819 integrates Ultra-Low Power (ULP) BLE along with the capability to add audio functionality to enhance the user experience for wearables and trackers. It also provides best-in-class receiver sensitivity for both BLE and EDR. Using advanced design techniques and process technology to reduce active and idle power, the CYW20819 also addresses the needs of a diverse class of low power Bluetooth 5-enabled devices that require minimal power consumption and compact size. The device is intended for use in audio (source only, other than SCO), IOT, sensors (medical, home, security and industrial), and HID markets. The datasheet provides details of the functional, operational, and electrical characteristics of the CYW20819 device. It is intended for hardware, design, application, and OEM engineers.

<https://www.cypress.com/file/462851/download>

95. Defendant further encourages customers to use the infringing Bluetooth functionality in the Exemplary Infringing Bluetooth Classic Product by advertising to customers the “Device Features”:

2.1 Device Features

- Bluetooth Subsystem
 - Complies with Bluetooth Core Specification version 5.0
 - Includes support for BLE (1 Mbps and 2 Mbps), Basic Rate (BR), Extended Data Rate (EDR) 2 Mbps and 3 Mbps, eSCO.
 - Programmable TX Output Power up to +4 dBm
 - Excellent receiver sensitivity (-95.5 dBm for BLE 1 Mbps)
- Microcontroller
 - Powerful Arm Cortex-M4 core with a maximum speed of 96 MHz
 - 256 KB on-chip flash, 176 KB on-chip RAM
 - Bluetooth stack, Peripheral drivers, and Security functions built into ROM (1 MB) allowing applications to efficiently use on-chip flash for standalone operation without the need for an external MCU
 - AES-128 and True Random Number Generator (TRNG)
 - Security functions in ROM including Elliptic Curve Digital Signature Algorithm (ECDSA) signature verification
 - Over-the-air (OTA) firmware update support

<https://www.cypress.com/file/463076/download>.

96. Defendant further encourages customers to use the Exemplary Infringing Bluetooth Classic Product in certain “Target Applications:”

2.2 Target Applications	
▪ Wearables and fitness bands	▪ Proximity sensors
▪ Audio source applications	▪ Key fobs
▪ BLE Mesh Home and Industrial automation	▪ Thermostats and thermometers
▪ Blood pressure monitors and other medical applications	▪ Toys
	▪ Remotes

<https://www.cypress.com/file/463076/download>.

97. The Exemplary Infringing Bluetooth Classic Product is backward compatible to Bluetooth 2.0 or 1.2 systems.

98. In its marketing materials, Defendant states that “Adaptive Frequency Hopping” is one of the “Key Bluetooth Features Supported By CYW2819:

Table 1 lists key BT features supported by the CYW20819.

Table 1. Key Bluetooth Features Supported By CYW20819

Bluetooth 1.0	Bluetooth 1.2	Bluetooth 2.0
Basic Rate	Interlaced Scans	EDR 2 Mbps and 3 Mbps
SCO	Adaptive Frequency Hopping	–
Paging and Inquiry	eSCO	–
Page and Inquiry Scan	–	–
Sniff	–	–

<https://www.cypress.com/file/462851/download>.

99. Defendant markets and instructs its users about the Exemplary Infringing Bluetooth Classic Product, including how to engage Bluetooth functionality.

100. Upon information and belief, Defendant’s customers follow the instructions provided by Defendant to activate the Bluetooth functionality, and therefore intends for its customers to use the Exemplary Infringing Bluetooth Classic Product in a manner that infringes the Patents.

101. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing instructions to set up and engage infringing Bluetooth functionality in the Exemplary Infringing Bluetooth Classic Product.

102. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing instructions to set up and engage infringing Bluetooth functionality in the Infringing Bluetooth Classic Products.

103. Defendant induces its customers to infringe and contributes to such infringement by instructing or specifying that its customers engage Bluetooth functionality such that the Infringing Bluetooth Classic Products operate in an infringing manner. Defendant specifies that the Infringing Bluetooth Classic Products operate in an infringing manner by providing source code or firmware on the integrated circuit that causes it to operate in an infringing manner.

104. The normal, intended operation of the Infringing Bluetooth Classic Products is to provide certain capabilities and features, including adaptive frequency hopping, in compliance with Version 1.2 or later of the Bluetooth Core Specification, that infringe the Patents. The Infringing Products therefore have no substantial non-infringing uses.

105. Therefore, Defendant induces its customers to directly infringe or contribute to the direct infringement of its customers.

106. Bandspeed has been and will continue to suffer damages as a result of Defendant's infringing acts.

B. Infringing Bluetooth Low Energy Products

107. Defendant manufactures, provides, sells, offers for sale, and/or distributes infringing products, such as integrated circuits, or a set of integrated circuits for wireless communications devices, that use, practice and/or comply with the Bluetooth low energy protocol

as described in Version 4.0 and any later version of the Bluetooth Core Specification (“Infringing Bluetooth LE Products”).

108. The Infringing Bluetooth LE Products infringe the ’608 Patent, ’643 Patent, ’500 Patent, ’769 Patent and ’520 Patent (“LE Patents”). The PSoC MCU with Bluetooth Low Energy (BLE) Connectivity product shall be referred to as the “Exemplary Infringing Bluetooth LE Product.”

109. Through its actions, Defendant has infringed the LE Patents, has actively induced others to infringe, and has contributed to the infringement by others of the LE Patents, throughout the United States.

110. Defendant manufactures, provides, sells, offers for sale, and/or distributes integrated circuits, or sets of integrated circuits, that are compliant with the low energy protocol in Version 4.0 and any later version of the Bluetooth Core Specification.

111. Bluetooth low energy is material to practicing the invention described by the LE Patents.

112. Defendant intentionally manufactures and sells Infringing Bluetooth LE Products that are designed to provide low energy functionality.

113. Defendant certifies that the Infringing Bluetooth LE Products are compliant with Version 4.0 or later of the Bluetooth Core Specification.

114. On information and belief, Defendant takes steps to test these products to ensure compliance with the Bluetooth Core Specification and to qualify an Infringing Bluetooth LE Product for Bluetooth certification. On information and belief, in connection with compliance, for qualifying Bluetooth products, Defendant prepares a Core ICS. On information and belief, portions

of the Core ICS require Defendant to acknowledge whether the product supports certain capabilities, including compliance and features consistent with the Bluetooth low energy protocol.

115. The Exemplary Infringing LE Product is capable of performing adaptive frequency hopping.

116. The Infringing LE Products are capable of performing adaptive frequency hopping.

117. The Exemplary Infringing Bluetooth LE Product is capable of communicating wirelessly.

118. The Infringing Bluetooth LE Products are capable of communicating wirelessly.

119. The Exemplary Infringing Bluetooth LE Product is capable of participating in a Bluetooth piconet.

120. The Infringing Bluetooth LE Products are capable of participating in a Bluetooth piconet.

121. The Exemplary Infringing Bluetooth LE Product is capable of performing as a master in a Bluetooth piconet.

122. The Infringing Bluetooth LE Products are capable of performing as a master in a Bluetooth piconet.

123. The Exemplary Infringing Bluetooth LE Product is capable of performing as a slave in a Bluetooth piconet.

124. The Infringing Bluetooth LE Products are capable of performing as a slave in a Bluetooth piconet.

125. The Exemplary Infringing Bluetooth LE Product is compliant with Bluetooth Core Specification Version 4.0 or higher.

126. The Infringing Bluetooth LE Products are compliant with Bluetooth Core Specification Version 4.0 or higher.

127. The Exemplary Infringing Bluetooth LE Product has been certified as compliant with Bluetooth Core Specification Version 4.0 or higher.

128. The Infringing Bluetooth LE Products are certified as compliant with Bluetooth Core Specification Version 4.0 or higher.

129. The Exemplary Infringing Bluetooth LE Product is compliant with Bluetooth Low Energy.

130. The Infringing Bluetooth LE Products are compliant with Bluetooth Low Energy.

131. The Exemplary Infringing Bluetooth LE Product has been certified as compliant with Bluetooth Low Energy.

132. The Infringing Bluetooth LE Products have been certified as compliant with Bluetooth Low Energy.

133. The Exemplary Infringing Bluetooth LE Product is capable of transmitting and/or receiving packets wirelessly.

134. The Infringing Bluetooth LE Products are capable of transmitting and/or receiving packets wirelessly.

135. The Exemplary Infringing Bluetooth LE Product is capable of operating in the 2.4 GHz ISM band.

136. The Infringing Bluetooth LE Products are capable of operating in the 2.4 GHz ISM band.

137. The Exemplary Infringing Bluetooth LE Product is capable of using a frequency hopping transceiver.

138. The Infringing Bluetooth LE Products are capable of using a frequency hopping transceiver.

139. The Exemplary Infringing Bluetooth LE Product is capable of Bluetooth frequency hopping.

140. The Infringing Bluetooth LE Products are capable of Bluetooth frequency hopping.

141. The Exemplary Infringing Bluetooth LE Product is capable of Bluetooth adaptive frequency hopping.

142. The Infringing Bluetooth LE Products are capable of Bluetooth adaptive frequency hopping.

143. The Exemplary Infringing Bluetooth LE Product uses a random or pseudo-random ordering of channels in the 2.4 GHz ISM band for data transmission.

144. The Infringing Bluetooth LE Products uses a random or pseudo-random ordering of channels in the 2.4 GHz ISM band for data transmission.

145. The Exemplary Infringing Bluetooth LE Product uses a random or pseudo-random ordering of 37 channels in the 2.4 GHz ISM band for data transmission.

146. The Infringing Bluetooth LE Products use a random or pseudo-random ordering of 37 channels in the 2.4 GHz ISM band for data transmission.

147. The Exemplary Infringing Bluetooth LE Product uses a frequency hopping pattern that is capable of being adapted to exclude one or more channels where interference is observed or measured.

148. The Infringing Bluetooth LE Products use a frequency hopping pattern that is capable of being adapted to exclude one or more channels where interference is observed or measured.

149. The Exemplary Infringing Bluetooth LE Product uses a frequency hopping pattern that is capable of being adapted to exclude channels on which interference is observed or suspected.

150. The Infringing Bluetooth LE Products use a frequency hopping pattern that is capable of being adapted to exclude channels on which interference is observed or suspected.

151. The Exemplary Infringing Bluetooth LE Product uses a frequency hopping pattern that is capable of being adapted to exclude channels based at least in part on the performance of those channels.

152. The Infringing Bluetooth LE Products use a frequency hopping pattern that is capable of being adapted to exclude channels based at least in part on the performance of those channels.

153. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving a CONNECT_PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0.

154. The Infringing Bluetooth LE Products are capable of sending and/or receiving a CONNECT_PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0.

155. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving a CONNECT_PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 that contains an LLData field or functional equivalent.

156. The Infringing Bluetooth LE Products are capable of sending and/or receiving a CONNECT_PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 that contains an LLData field or functional equivalent.

157. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains a ChM field or functional equivalent.

158. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains a ChM field or functional equivalent.

159. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains a Hop field or functional equivalent.

160. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains a Hop field or functional equivalent.

161. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving a ChM field or functional equivalent that contains a subset of channels to be used for communication.

162. The Infringing Bluetooth LE Products are capable of sending and/or receiving a ChM field or functional equivalent that contains a subset of channels to be used for communication.

163. The Exemplary Infringing Bluetooth LE Product is capable of classifying channels used or unused for communication at a particular time.

164. The Infringing Bluetooth LE Products are capable of classifying channels used or unused for communication at a particular time.

165. The Exemplary Infringing Bluetooth LE Product is capable of classifying channels used or unused for communication at a particular time based at least in part on performance measurements.

166. The Infringing Bluetooth LE Products are capable of classifying channels used or unused for communication at a particular time based at least in part on performance measurements.

167. The Exemplary Infringing Bluetooth LE Product is capable of indexing channels to be used for communication at a particular time.

168. The Infringing Bluetooth LE Products are capable of indexing channels to be used for communication at a particular time.

169. The Exemplary Infringing Bluetooth LE Product uses a Hop field or functional equivalent that contains an increment value as input to the channel selection algorithm of the frequency hopping implementation.

170. The Infringing Bluetooth LE Products use a Hop field or functional equivalent that contains an increment value as input to the channel selection algorithm of the frequency hopping implementation.

171. The Exemplary Infringing Bluetooth LE Product uses an LLData field or functional equivalent that contains timing information that includes the sent or transmission time of the packets.

172. The Infringing Bluetooth LE Products use an LLData field or functional equivalent that contains timing information that includes the sent or transmission time of the packets.

173. The packet data transmitted by the Exemplary Infringing Bluetooth LE Product includes timing information indicative of the number of time slots to wait between packet transmissions.

174. The packet data transmitted by the Infringing Bluetooth LE Products includes timing information indicative of the number of time slots to wait between packet transmissions.

175. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains an Interval field or functional equivalent.

176. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains an Interval field or functional equivalent.

177. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains a Latency field or functional equivalent.

178. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains a Latency field or functional equivalent.

179. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that is usable for establishing a timing reference point and time period that is used to determine the timing of subsequent packet transmissions.

180. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that is usable for establishing a timing reference point and time period that is used to determine the timing of subsequent packet transmissions.

181. The Exemplary Infringing Bluetooth LE Product is capable of measuring time in the number of transmission slots or events.

182. The Infringing Bluetooth LE Products are capable of measuring time in the number of transmission slots or events.

183. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains on or more fields determinative of a frequency hopping pattern.

184. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains one or more fields determinative of a frequency hopping pattern.

185. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LLData field or functional equivalent that contains one or more fields usable as inputs to a frequency hopping algorithm.

186. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LLData field or functional equivalent that contains one or more fields usable as inputs to a frequency hopping algorithm.

187. The Exemplary Infringing Bluetooth LE Product is capable of using a frequency hopping pattern for data transmission that is a specific ordering of data channels by index position in a data structure.

188. The Infringing Bluetooth LE Products are capable of using a frequency hopping pattern for data transmission that is a specific ordering of data channels by index position in a data structure.

189. The Exemplary Infringing Bluetooth LE Product is capable of using a hopping pattern for data transmission that can be adapted to exclude a portion of the frequencies that are used by interfering devices.

190. The Infringing Bluetooth LE Products are capable of using a hopping pattern for data transmission that can be adapted to exclude a portion of the frequencies that are used by interfering devices.

191. The Exemplary Infringing Bluetooth LE Product is capable of reducing the number of channels used for data transmission through the channel map indicating only the used channels.

192. The Infringing Bluetooth LE Products are capable of reducing the number of channels used for data transmission through the channel map indicating only the used channels.

193. The Exemplary Infringing Bluetooth LE Product is capable of adjusting the channel set to exclude one or more channels from use by the frequency hopping implementation.

194. The Infringing Bluetooth LE Products are capable of adjusting the channel set to exclude one or more channels from use by the frequency hopping implementation.

195. The Exemplary Infringing Bluetooth LE Product is capable of using a data structure for indexing channels to be used for frequency hopping communication.

196. The Infringing Bluetooth LE Products are capable of using a data structure for indexing channels to be used for frequency hopping communication.

197. The Exemplary Infringing Bluetooth LE Product is capable of using a register for indexing channels to be used for frequency hopping communication.

198. The Infringing Bluetooth LE Products are capable of using a register for indexing channels to be used for frequency hopping communication.

199. The Exemplary Infringing Bluetooth LE Product is capable of loading channel indices into a register.

200. The Infringing Bluetooth LE Products are capable of loading channel indices into a register.

201. The Exemplary Infringing Bluetooth LE Product is capable of storing channel indices in a register.

202. The Infringing Bluetooth LE Products are capable of storing channel indices in a register.

203. The Exemplary Infringing Bluetooth LE Product is capable of updating the subset of channels to be used for communication in a piconet.

204. The Infringing Bluetooth LE Products are capable of updating the subset of channels to be used for communication in a piconet.

205. The Exemplary Infringing Bluetooth LE Product is capable of updating a channel map by sending an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0.

206. The Infringing Bluetooth LE Products are capable of updating a channel map by sending an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0.

207. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 containing a new channel map with an associated indexing and initial index position.

208. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 containing a new channel map with an associated indexing and initial index position.

209. The Exemplary Infringing Bluetooth LE Product is capable of sending and/or receiving an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 containing an Instant field or functional equivalent, which indicates when the new channel map shall take effect.

210. The Infringing Bluetooth LE Products are capable of sending and/or receiving an LL_CHANNEL_MAP_REQ PDU or functional equivalent as it is defined in the Bluetooth Core Specification version 4.0 containing an Instant field or functional equivalent, which indicates when the new channel map shall take effect.

211. The Exemplary Infringing Bluetooth LE Product uses a hop index and channel map to identify a physical channel. If the identified channel is identified as to be used and is the next usable channel according to the channel selection and hopping algorithms, it is used for communication. If the identified channel is not identified as to be used, it is not used and instead the next available used channel according to the channel selection, hopping, and remapping algorithms and procedures is selected.

212. The Infringing Bluetooth LE Products use a hop index and channel map to identify a physical channel. If the identified channel is identified as to be used and is the next usable channel according to the channel selection and hopping algorithms, it is used for communication. If the identified channel is not identified as to be used, it is not used and instead the next available used channel according to the channel selection, hopping, and remapping algorithms and procedures is selected.

213. Certain of Defendant's customers request, require, and/or engage features and capabilities, including the low energy protocol, that comply with the Bluetooth Core Specification, and Defendant markets and advertises its Infringing Bluetooth LE Products' compliance with the Bluetooth Core Specification regarding such features and capabilities.

214. Defendant induces its customers to infringe and contributes to such infringement by instructing or specifying that its customers install the infringing integrated circuits in products such that the Infringing Bluetooth LE Products operate in an infringing manner. Defendant

specifies that the Infringing Bluetooth LE Products operate in an infringing manner by providing source code or firmware on the integrated circuit that causes it to operate in an infringing manner.

215. Defendant markets Exemplary Infringing Bluetooth LE Product and other similar Bluetooth Low Energy devices on its website. <https://www.cypress.com/> .

216. Defendant markets the Exemplary Infringing Bluetooth LE Product to customers as follows:

AN210781 introduces you to PSoC® 6 MCU with Bluetooth Low Energy (BLE) Connectivity, a dual-CPU Arm® Cortex®-M4 and Cortex-M0+ based programmable system-on-chip that integrates a BLE 5.0 system, the latest-generation of CapSense® technology, and a host of security features. This application note helps you explore the PSoC 6 MCU with BLE architecture and development tools and shows you how to create your first project using PSoC Creator, export the project to a third-party integrated development environment (IDE), and continue your firmware development. It also guides you to more resources available online to accelerate your learning about PSoC 6 MCU with BLE Connectivity. To get started with the PSoC 6 MCU device family, see AN221774 – Getting Started with PSoC 6 MCU.

<https://www.cypress.com/file/385696/download>.

217. The Exemplary Infringing Bluetooth LE Product is compliant with the BLE 5.0 specification.

BLE is an ultra-low-power wireless standard defined by the Bluetooth Special Interest Group (SIG) for short-range communication. PSoC 6 BLE integrates a BLE 4.2 radio and a royalty-free protocol stack with enhanced security, privacy, and throughput compliant with the BLE 5.0 specification.

<https://www.cypress.com/file/385696/download>.

218. The Exemplary Infringing Bluetooth LE Product includes link layer functions such as Adaptive Frequency Hopping (AFH), which Defendant states “changes the communication channel used for packet transmission so that the interference from other devices is reduced.”

B.3 Link Layer (LL)

The link layer implements key procedures to establish a reliable physical link (using an acknowledgement and flow-control-based architecture) and features that help make the BLE protocol robust and low-power. Some link layer functions include:

- Advertising, scanning, creating, and maintaining connections to establish a physical link
- 24-bit CRC and AES-128-bit encryption for robust and secure data exchange
- Establishing fast connections and low-duty-cycle advertising for low-power operation
- Adaptive Frequency Hopping (AFH), which changes the communication channel used for packet transmission so that the interference from other devices is reduced

<https://www.cypress.com/file/385696/download>.

219. Defendant markets the Exemplary Infringing Bluetooth LE Product as suitable for a variety of applications:

PSoC 6 BLE is suitable for a variety of power-sensitive connected applications such as:

- Smart watches and fitness trackers
- Connected medical devices
- Smart home sensors and controllers
- Smart home appliances
- Gaming controllers
- Sports, smart phone, and virtual reality (VR) accessories
- Industrial sensor nodes
- Industrial logic controllers
- Advanced remote controllers

<https://www.cypress.com/file/385696/download>.

220. The normal, intended operation of the Infringing Bluetooth LE Products is to provide certain capabilities and features that infringe the LE Patents, including Bluetooth Low Energy capabilities and features in compliance with Version 4.0 or later of the Bluetooth Core Specification. The Infringing Bluetooth LE Products have no substantial non-infringing uses.

221. Therefore, Defendant induces its customers to directly infringe or contribute to the direct infringement of its customers.

222. Bandspeed has been and will continue to suffer damages as a result of Defendant's infringing acts.

COUNT ONE

**PATENT INFRINGEMENT – U.S. PATENT NO. 7,027,418
(AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS
AND INFRINGING BLUETOOTH LE PRODUCTS)**

223. Bandspeed realleges and incorporates preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

224. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '418 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Bluetooth Classic Products and Infringing Bluetooth LE Products (collectively, "Infringing Products").

225. For example, claim 5 of the '418 Patent states:

1. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels at a first time and channel selection criteria, a first set of two or more communications channels from the plurality of communications channels;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time and the channel selection criteria, a second set of two or more communications channels from the plurality of communications channels;

wherein the communications system is a frequency hopping communications system and the plurality of communications channels correspond to a set of frequencies to be used based on a hopping sequence according to a frequency hopping protocol; and

wherein at each hop in the hopping sequence, only one communications channel is used for communications between a pair of participants.

5. The method as recited in claim 1, further comprising the steps of:

generating first channel identification data that identifies the first set of two or more communications channels;

transmitting the first channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol;

generating second channel identification data that identifies the second set of two or more communications channels; and

transmitting the second channel identification data to one or more participants in the communications system over one communications channel of the plurality of communications channels based on the hopping sequence according to the frequency hopping protocol.

226. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of claim 5 of the '418 Patent.

227. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of other claims of the '418 Patent.

228. Defendant jointly infringes the '418 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

229. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

230. Defendant has indirectly infringed and continues to indirectly infringe, the '418 Patent by inducing direct infringement of the '418 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Bluetooth Classic Products in this District and elsewhere in the United States.

231. On information and belief, despite having knowledge of the '418 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '418 Patent.

232. Defendant knew or should have known that its actions were inducing infringement.

233. Defendant had knowledge of the '418 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

234. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '418 Patent.

235. With knowledge of the '418 Patent, Defendant directs and aids third parties to infringe the '418 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their

customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '418 Patent, all with knowledge that the induced acts constitute patent infringement.

236. With knowledge of the '418 Patent, Defendant directs and aids third parties to infringe the '418 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '418 Patent, all with knowledge that the induced acts constitute patent infringement.

237. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

238. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '418 patent by contributing to the infringement of the '418 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

239. Defendant has knowledge of the '418 Patent by virtue of the Notice Letter and the Complaint.

240. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '418 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '418 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

241. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '418 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '418 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

242. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '418 Patent. Bandspeed has been damaged as a result of

Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT TWO

**PATENT INFRINGEMENT – U.S. PATENT NO. 7,477,624
(AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS)**

243. Bandspeed realleges and incorporates the preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

244. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '624 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Bluetooth Classic Products.

245. For example, claim 15 of the '624 Patent states:

13. A communications device for use in a network of devices, comprising:

a memory for storing instructions;

a processor that is communicatively coupled to the memory, wherein the memory includes instructions which, when processed by the processor, causes:

selecting, based upon performance of a plurality of communications channels at a first time, a first set of two or more communications channels from the plurality of communications channels;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time, a second set of two or more communications channels from the plurality of communications channels; and

a transceiver that is communicatively coupled to the memory and that is configured to transmit to and receive from another communications device, wherein:

for a first period of time, the first set of two or more communications channels is used to transmit to and receive from the other communications device; and

for a second period of time that is after the first period of time, the second set of two or more communications channels is used to transmit to and receive from the other communications device instead of the first set of two or more communications channels, and

wherein the memory further includes instructions, which when processed by the processor, causes:

after selecting the first set of two or more communications channels, causing the first set of two or more communications channels to be loaded into a first register of the communications device and a second register of the other communications device; and

after selecting the second set of two or more communications channels, causing the second set of two or more communications channels to be loaded into the first register of the communications device and the second register of the other communications device.

15. A communications device as recited in claim 13, wherein:

the instructions for selecting the first set of two or more communications channels further includes instructions which, when processed by the processor, cause selecting, based upon the performance of the plurality of communications channels at the first time and channel selection criteria, the first set of two or more communications channels from the plurality of communications channels;

the instructions for selecting the second set of two or more communications channels further includes instructions which, when processed by the processor, cause selecting, based upon the performance of the plurality of communications channels at the second time and the channel selection criteria, the second set of two or more communications channels from the plurality of communications channels; and

the channel selection criteria specifies that for a particular communications channel to be selected, the particular communications channel receives a specified number of votes to use the particular communications channel from among a plurality of votes.

246. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of claim 15 of the '624 Patent.

247. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of other claims of the '624 Patent.

248. Defendant jointly infringes the '624 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

249. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Bluetooth Classic Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Bluetooth Classic Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Bluetooth Classic Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

250. Defendant has indirectly infringed and continues to indirectly infringe, the '624 Patent by inducing direct infringement of the '624 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Bluetooth Classic Products in this District and elsewhere in the United States.

251. On information and belief, despite having knowledge of the '624 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Bluetooth Classic Products, including without limitation end-users of the Infringing Bluetooth Classic Products, to acquire and use such devices in such a way that infringes one or more claims of the '624 Patent.

252. Defendant knew or should have known that its actions were inducing infringement.

253. Defendant had knowledge of the '624 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

254. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Bluetooth Classic Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Bluetooth Classic Products in their normal, customary way to infringe the '624 Patent.

255. With knowledge of the '624 Patent, Defendant directs and aids third parties to infringe the '624 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality communication protocol in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '624 Patent, all with knowledge that the induced acts constitute patent infringement.

256. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Bluetooth Classic Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

257. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '624 patent by contributing to the infringement of the '624 Patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Bluetooth Classic Products.

258. Defendant has knowledge of the '624 Patent by virtue of the Notice Letter and the Complaint.

259. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '624 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '624 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

260. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '624 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT THREE

PATENT INFRINGEMENT – U.S. PATENT NO. 7,570,614 (AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS)

261. Bandspeed realleges and incorporates preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

262. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '614 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Bluetooth Classic Products.

263. For example, claim 100 of the '614 Patent states:

1. A method for selecting communications channels for a communications system, the method comprising the computer-implemented steps of:

selecting, based upon performance of a plurality of communications channels and at least one performance criterion, a first communications channel from the plurality of communications channels;

generating channel identification data that identifies the first communications channel;

providing the channel identification data to a first participant;

receiving a first communication from the first participant over a second communications channel from the plurality of communications channels;

wherein the plurality of communications channels correspond to a set of frequencies and the first communication received from the first participant is based on a hopping sequence among at least two communications channels of the plurality of communications channels, according to a frequency hopping protocol; and

wherein the channel identification data specifies that the first communications channel is not to be used by the first participant for the first communication;

sending a second communication to the first participant over a third communications channel;

receiving a third communication from the first participant that includes first performance quality data for the third communications channel, wherein the first performance quality data specifies the performance quality of the third communications channel between the particular participant and the first participant, and is generated by the first participant based on information contained in the second communication; and

updating a set of channel data maintained by the particular participant using the first performance quality data.

100. The method of claim 1, wherein the particular participant is a master and the first participant is a slave.

264. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of claim 100 of the '614 Patent.

265. Defendant's Infringing Bluetooth Classic Products meet each and every claim limitation of other claims of the '614 Patent.

266. Defendant jointly infringes the '614 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can

be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

267. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Bluetooth Classic Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Bluetooth Classic Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Bluetooth Classic Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

268. Defendant has indirectly infringed and continues to indirectly infringe, the '614 Patent by inducing direct infringement of the '614 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Bluetooth Classic Products in this District and elsewhere in the United States.

269. On information and belief, despite having knowledge of the '614 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Bluetooth Classic Products, including without limitation end-users of the Infringing Bluetooth Classic Products, to acquire and use such devices in such a way that infringes one or more claims of the '614 Patent.

270. Defendant knew or should have known that its actions were inducing infringement.

271. Defendant had knowledge of the '614 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

272. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Bluetooth Classic Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Bluetooth Classic Products in their normal, customary way to infringe the '614 Patent.

273. With knowledge of the '614 Patent, Defendant directs and aids third parties to infringe the '614 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '614 Patent, all with knowledge that the induced acts constitute patent infringement.

274. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Bluetooth Classic Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

275. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '614 patent by contributing to the infringement of the '614 patent under 35 U.S.C. §

271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Bluetooth Classic Products.

276. Defendant has knowledge of the '614 Patent by virtue of the Notice Letter and the Complaint.

277. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '614 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '614 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

278. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '614 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT FOUR

PATENT INFRINGEMENT – U.S. PATENT NO. 7,903,608 (AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS AND INFRINGING BLUETOOTH LE PRODUCTS)

279. Bandspeed realleges and incorporates preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

280. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '608 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Products.

281. For example, claim 1 of the '608 Patent states:

1. A communications device for use in a network of devices, comprising:

a memory for storing instructions;

a processor that is communicatively coupled to the memory, wherein the memory includes instructions which, when processed by the processor, causes:

selecting, based upon performance of a plurality of communications channels at a first time, a first set of two or more communications channels from the plurality of communications channels;

selecting, based upon performance of the plurality of communications channels at a second time that is later than the first time, a second set of two or more communications channels from the plurality of communications channels; and

a transceiver that is communicatively coupled to the memory and that is configured to transmit to and receive from another communications device, wherein:

for a first period of time, the first set of two or more communications channels is used to transmit to and receive from the other communications device; and

for a second period of time that is after the first period of time, the second set of two or more communications channels is used to transmit to and receive from the other communications device instead of the first set of two or more communications channels, and

wherein the number of distinct channels in the first set of two or more communications channels varies from the number of distinct channels in the second set of two or more communications channels.

282. Defendant's Infringing Products meet each and every claim limitation of claim 1 of the '608 Patent.

283. Defendant's Infringing Products meet each and every claim limitation of other claims of the '608 Patent.

284. Defendant jointly infringes the '608 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

285. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

286. Defendant has indirectly infringed and continues to indirectly infringe, the '608 Patent by inducing direct infringement of the '608 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Products in this District and elsewhere in the United States.

287. On information and belief, despite having knowledge of the '608 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '608 Patent.

288. Defendant knew or should have known that its actions were inducing infringement.

289. Defendant had knowledge of the '608 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

290. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '608 Patent.

291. With knowledge of the '608 Patent, Defendant directs and aids third parties to infringe the '608 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '608 Patent, all with knowledge that the induced acts constitute patent infringement.

292. With knowledge of the '608 Patent, Defendant directs and aids third parties to infringe the '608 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for

using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '608 Patent, all with knowledge that the induced acts constitute patent infringement.

293. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

294. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '608 patent by contributing to the infringement of the '608 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

295. Defendant has knowledge of the '608 Patent by virtue of the Notice Letter and the Complaint.

296. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '608 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '608 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the

infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

297. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '608 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '608 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

298. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '608 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT FIVE

PATENT INFRINGEMENT – U.S. PATENT NO. 8,542,643 (AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS AND INFRINGING BLUETOOTH LE PRODUCTS)

299. Bandspeed realleges and incorporates preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

300. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '643 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Products.

301. For example, claim 5 of the '643 Patent states:

1. A method, comprising:

loading a set of default channels into a default channel register;

loading a set of good channels into a good channel register;

if a selection kernel addresses a bad channel stored in a particular location of the default channel register, then replacing, by the selection kernel, the bad channel stored in the particular location of the default channel register with a good channel selected from the set of good channels loaded in the good channel register;

wherein the method is performed using one or more computing devices.

5. The method of claim 1, further comprising: rescanning the default channels, based at least in part on the number of good channels.

302. Defendant's Infringing Products meet each and every claim limitation of claim 5 of the '643 Patent.

303. Defendant's Infringing Products meet each and every claim limitation of other claims of the '643 Patent.

304. Defendant jointly infringes the '643 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

305. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in

the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

306. Defendant has indirectly infringed and continues to indirectly infringe, the '643 Patent by inducing direct infringement of the '643 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Products in this District and elsewhere in the United States.

307. On information and belief, despite having knowledge of the '643 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '643 Patent.

308. Defendant knew or should have known that its actions were inducing infringement.

309. Defendant had knowledge of the '643 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

310. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '643 Patent.

311. With knowledge of the '643 Patent, Defendant directs and aids third parties to infringe the '643 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2

and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '643 Patent, all with knowledge that the induced acts constitute patent infringement.

312. With knowledge of the '643 Patent, Defendant directs and aids third parties to infringe the '643 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '643 Patent, all with knowledge that the induced acts constitute patent infringement.

313. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

314. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '643 patent by contributing to the infringement of the '643 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

315. Defendant has knowledge of the '643 Patent by virtue of the Notice Letter and the Complaint.

316. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '643 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '643 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

317. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '643 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '643 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

318. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '643 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT SIX

**PATENT INFRINGEMENT – U.S. PATENT NO. 8,873,500
(AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS
AND INFRINGING BLUETOOTH LE PRODUCTS)**

319. Bandspeed realleges and incorporates preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

320. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '500 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Products.

321. For example, claim 28 of the '500 Patent states:

16. A frequency hopping wireless communication device comprising:
at least one processor;

a memory storing instructions which, when executed by the at least one processor, causes:

communicating with another frequency hopping wireless communication device over a plurality of communication channels according to a default hopping sequence;

testing the plurality of communication channels;

selecting a subset of the plurality of communication channels based on results of the testing;

communicating with the other device over the subset of communication channels according to an adapted hopping sequence;

monitoring the subset of communications channels;

based on results of the monitoring or after a specified period of time, reverting back to communicating with the other device over the plurality of communication channels according to the default hopping sequence.

28. The device of claim 16, wherein monitoring the subset of communications channels is performed while communicating with the other device over the subset of communication channels according to the adapted hopping sequence.

322. Defendant's Infringing Products meet each and every claim limitation of claim 28 of the '500 Patent.

323. Defendant's Infringing Products meet each and every claim limitation of other claims of the '500 Patent.

324. Defendant jointly infringes the '500 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

325. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

326. Defendant has indirectly infringed and continues to indirectly infringe, the '500 Patent by inducing direct infringement of the '500 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Products in this District and elsewhere in the United States.

327. On information and belief, despite having knowledge of the '500 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '500 Patent.

328. Defendant knew or should have known that its actions were inducing infringement.

329. Defendant had knowledge of the '500 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

330. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '500 Patent.

331. With knowledge of the '500 Patent, Defendant directs and aids third parties to infringe the '500 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and

compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '500 Patent, all with knowledge that the induced acts constitute patent infringement.

332. With knowledge of the '500 Patent, Defendant directs and aids third parties to infringe the '500 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '500 Patent, all with knowledge that the induced acts constitute patent infringement.

333. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

334. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '500 patent by contributing to the infringement of the '500 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

335. Defendant has knowledge of the '500 Patent by virtue of the Notice Letter and the Complaint.

336. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency

hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '500 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '500 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

337. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '500 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '500 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

338. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '500 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT SEVEN

**PATENT INFRINGEMENT – U.S. PATENT NO. 9,379,769
(AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS
AND INFRINGING BLUETOOTH LE PRODUCTS)**

339. Bandspeed realleges and incorporates the preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

340. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '769 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Products.

341. For example, claim 1 of the '769 Patent states:

1. A wireless communications device for use in a frequency hopping communication system, the wireless communications device comprising:

one or more processors; and

one or more memories storing instructions which, when processed by the one or more processors, cause the wireless communications device to perform:

monitoring a plurality of communication channels, the plurality of communication channels used by the wireless communications device for communicating, according to a frequency hopping sequence, with another wireless communications device in the frequency hopping communication system;

based at least on results of the monitoring, classifying one or more communications channels of the plurality of communication channels as good and classifying one or more communications channels of the plurality of communication channels as bad;

transmitting information to the other wireless communications device identifying at least one of: a) the one or more communication channels classified as good, or b) the one or more communication channels classified as bad;

communicating, according to a frequency hopping sequence, with the other wireless communications device over the one or more communication channels classified as good while avoiding communicating with the other wireless communications device over the one or more communication channels classified as bad.

342. Defendant's Infringing Products meet each and every claim limitation of claim 1 of the '769 Patent.

343. Defendant's Infringing Products meet each and every claim limitation of other claims of the '769 Patent.

344. Defendant jointly infringes the '769 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

345. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

346. Defendant has indirectly infringed and continues to indirectly infringe, the '769 Patent by inducing direct infringement of the '769 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Products in this District and elsewhere in the United States.

347. On information and belief, despite having knowledge of the '769 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including

without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '769 Patent.

348. Defendant knew or should have known that its actions were inducing infringement.

349. Defendant had knowledge of the '769 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

350. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '769 Patent.

351. With knowledge of the '769 Patent, Defendant directs and aids third parties to infringe the '769 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '769 Patent, all with knowledge that the induced acts constitute patent infringement.

352. With knowledge of the '769 Patent, Defendant directs and aids third parties to infringe the '769 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the

Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '769 Patent, all with knowledge that the induced acts constitute patent infringement.

353. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

354. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '769 patent by contributing to the infringement of the '769 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

355. Defendant has knowledge of the '769 Patent by virtue of the Notice Letter and the Complaint.

356. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '769 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '769 Patent. Moreover, the Bluetooth combination of hardware and

software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

357. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '769 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '769 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

358. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '769 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

COUNT EIGHT

PATENT INFRINGEMENT – U.S. PATENT NO. 9,883,520 (AGAINST INFRINGING BLUETOOTH CLASSIC PRODUCTS AND INFRINGING BLUETOOTH LE PRODUCTS)

359. Bandspeed realleges and incorporates the preceding paragraphs herein.

A. Direct Infringement (35 U.S.C. § 271(a))

360. Defendant has directly infringed, and continues to directly infringe, individually and/or jointly with others, one or more claims of the '520 Patent by, among other things, making, using, offering for sale, selling, and/or importing Infringing Products.

361. For example, claim 1 of the '520 Patent states:

1. A wireless communications device configured to:

send packet data to another wireless communications device in a wireless communications network, the packet data specifying a subset of communications channels used for frequency hopping communications of a set of communications channels in a frequency band, the packet data further comprising timing information indicating when to begin using the subset of communications channels for frequency hopping communications;

identify a communications channel from the set of communications channels;

use the identified communications channel for frequency hopping communications with the other wireless communications device at a time slot at or after the wireless communications device and the other wireless communications device begin using the subset of communications channels for frequency hopping communications, if the identified communications channel is used for frequency hopping communications; and

use a communications channel in the subset of communications channels for frequency hopping communications with the other wireless communications device at the time slot, if the identified communications channel is not used for frequency hopping communications.

362. Defendant's Infringing Products meet each and every claim limitation of claim 1 of the '520 Patent.

363. Defendant's Infringing Products meet each and every claim limitation of other claims of the '520 Patent.

364. Defendant jointly infringes the '520 Patent to the extent that the acts necessary to give rise to liability for direct infringement are shared between Defendant and a third party but can be legally attributed to Defendant. Defendant conditions participation in an activity or receipt of a

benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.

365. Specifically, Defendant provides third parties, including customers and/or end-users, with Infringing Products. Defendant directs and controls its customers to use Bluetooth functionality in an infringing manner by providing user manuals containing instructions about how to activate, pair, set up and engage infringing Bluetooth functionality in the Infringing Products. *See, e.g.*, SP230 User Manual; Downloadable SP230 User Manual. When an Infringing Bluetooth Classic Product or Infringing Bluetooth LE Product is engaged to use Bluetooth functionality in the manner designed and established by Defendant, the performance of the infringing functionality occurs. Defendant dictates when and how infringement occurs by virtue of providing software and hardware in the Infringing Products that dictate when and how the performance of the infringing functionality occurs.

B. Indirect Infringement (Inducement - 35 U.S.C. § 271(b))

366. Defendant has indirectly infringed and continues to indirectly infringe, the '520 Patent by inducing direct infringement of the '520 Patent by third parties, including Defendant's customers, including without limitation manufacturers, resellers, and/or end users of the products that contain Infringing Products in this District and elsewhere in the United States.

367. On information and belief, despite having knowledge of the '520 Patent, Defendant has specifically intended for persons who acquire and use the Infringing Products, including without limitation end-users of the Infringing Products, to acquire and use such devices in such a way that infringes one or more claims of the '520 Patent.

368. Defendant knew or should have known that its actions were inducing infringement.

369. Defendant had knowledge of the '520 Patent and the infringing nature of its activities when it received the Notice Letter or at least as early as the date when Plaintiff effected service of the original Complaint.

370. Direct infringement is the result of activities performed by third parties, including Defendant's customers, in relation to the Infringing Products, including without limitation by third parties, including Defendant's customers, enabled and encouraged by Defendant to use the Infringing Products in their normal, customary way to infringe the '520 Patent.

371. With knowledge of the '520 Patent, Defendant directs and aids third parties to infringe the '520 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth Classic Products to use adaptive frequency hopping and associated functionality in Version 1.2 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth Classic Products in their customary way; (iii) advertising the Infringing Bluetooth Classic Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '520 Patent, all with knowledge that the induced acts constitute patent infringement.

372. With knowledge of the '520 Patent, Defendant directs and aids third parties to infringe the '520 Patent by, among other things, (i) enabling a user of the Infringing Bluetooth LE Products to use Bluetooth low energy functionality in Version 4.0 and any later version of the Bluetooth Core Specification; (ii) providing instructions (including, by way of example, the tutorials, user guides, product guides, help library, and other documentation) to third parties for using the Infringing Bluetooth LE Products in their customary way; (iii) advertising the Infringing

Bluetooth LE Products' support and compliance with the Bluetooth Core Specification; and (iv) providing to third parties the products and software and related equipment that may be required for or associated with infringement of the '520 Patent, all with knowledge that the induced acts constitute patent infringement.

373. Defendant possesses specific intent to encourage infringement by third parties, including Defendant's customers and end users of the Infringing Products.

C. Indirect Infringement (Contribution - 35 U.S.C. §§ 271(c) and/or 271(f))

374. Defendant has indirectly infringed and continues to indirectly infringe one or more claims of the '520 patent by contributing to the infringement of the '520 patent under 35 U.S.C. § 271(c) and/or 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the Infringing Products.

375. Defendant has knowledge of the '520 Patent by virtue of the Notice Letter and the Complaint.

376. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the adaptive frequency hopping communication functionality as described in Version 1.2 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '520 Patent. The combination of hardware and software used to provide Bluetooth functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '520 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing Bluetooth Classic Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

377. Defendant sells, or offers to sell, a component of a patented combination or material, and more specifically, components used for or in systems that use the low energy protocol in Version 4.0 and later versions of the Bluetooth Core Specification, and other infringing Bluetooth functionality. The infringing Bluetooth low energy functionality in the Infringing Bluetooth Classic Products constitutes a material part of the inventions claimed in the '520 Patent. The combination of hardware and software used to provide Bluetooth low energy functionality in the Infringing Bluetooth Classic Products is especially made or adapted to infringe the '520 Patent. Moreover, the Bluetooth combination of hardware and software used in the Infringing LE Products are specially designed such that the infringing Bluetooth functionality has no non-infringing use, and therefore are not staple articles or commodities of commerce suitable for non-infringing use.

378. Bandspeed is informed and believes that Defendant intends to and will continue to directly and indirectly infringe the '520 Patent. Bandspeed has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Bandspeed in an amount that adequately compensates Bandspeed for its infringement.

VI. WILLFULNESS

379. Bandspeed realleges and incorporates the preceding paragraphs herein.

380. On information and belief, Defendant has had knowledge of some or all of the Patents and the infringing nature of its products in connection with Defendant's acquisition of Broadcom's Wireless Internet of Things (IoT) business. Bandspeed previously asserted more than one of the Patents against Broadcom and Cypress received information about Bandspeed's Patents and the infringing nature of Cypress's products from Broadcom in or around June or July 2016. Despite having knowledge of the Patents in connection with Defendant's acquisition of Broadcom's Wireless Internet of Things (IoT) business, Defendant nonetheless continued to make,

use, sell and/or import Infringing Products despite knowing that its actions constituted infringement of a valid patent.

381. Further, Defendant has knowledge of the Patents by virtue of a letter sent by Bandspeed to Cypress on January 15, 2019 notifying Cypress of its infringement of Bandspeed's Patents. Despite being notified of the Patents in the Notice Letter, Defendant nonetheless continued to make, use, sell and/or import Infringing Products despite knowing that its actions constituted infringement of a valid patent.

382. Accordingly, Defendant acted egregiously and/or knowingly or intentionally when it infringed the Patents.

383. Bandspeed seeks enhanced damages pursuant to 35 U.S.C. §284.

VII. JURY DEMAND

384. Plaintiff Bandspeed hereby demands a jury on all issues so triable.

VIII. REQUEST FOR RELIEF

WHEREFORE, Plaintiff Bandspeed respectfully requests that the Court:

- A. Enter judgment that Defendant infringes one or more claims of the Patents literally and/or under the doctrine of equivalents;
- B. Award Plaintiff Bandspeed past and future damages together with prejudgment and post-judgment interest to compensate for the infringement by Defendant of the Patents in accordance with 35 U.S.C. §284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. §284;
- C. Award plaintiff Bandspeed its costs, disbursements, attorneys' fees, and such further and additional relief as is deemed appropriate by this Court.

Dated: September 23, 2019

Respectfully submitted,

By: /s/ Adam G. Price
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**ATTORNEYS FOR PLAINTIFF
BANDSPEED, LLC**