



4. The '701 Patent entitled "MOBILE COMMUNICATION SYSTEM WITH MOVING BASE STATION" is generally directed to a moving base station which is interposed between a moving mobile telephone unit and a fixed base station. A true and correct copy of the '701 Patent is attached as Exhibit B.

5. The '023 Patent entitled "MOBILE COMMUNICATION SYSTEM WITH MOVING BASE STATION" is generally directed to a moving base station which is interposed between a moving mobile telephone unit and a fixed base station. A true and correct copy of the '023 Patent is attached as Exhibit C.

6. The '177 Patent entitled "MOBILE COMMUNICATION SYSTEM WITH MOVING BASE STATION" is generally directed to a moving base station which is interposed between a moving mobile telephone unit and a fixed base station. A true and correct copy of the '177 Patent is attached as Exhibit D.

7. The '543 Patent entitled "MOBILE COMMUNICATION SYSTEM WITH MOVING BASE STATION" is generally directed to a moving base station which is interposed between a moving mobile telephone unit and a fixed base station. A true and correct copy of the '543 Patent is attached as Exhibit E.

8. On information and belief, Defendant General Motors Company ("GM") is a corporation organized under the laws of the State of Delaware with a principal place of business at 300 Renaissance Center, Detroit, Michigan 48265. GM has a registered agent for service, Corporation Service Company, located at 251 Little Falls Drive, Wilmington, Delaware 19808.

#### **JURISDICTION AND VENUE**

9. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.*

10. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

11. This Court has personal jurisdiction over the Defendant. On information and belief, Defendant conducts business and have committed acts of patent infringement in this District, the State of Texas, and elsewhere in the United States. On information and belief, Defendant conducts business within the State of Texas, directly or through intermediaries, which activities give rise to at least a portion of the infringements alleged herein and include: (i) manufacturing, distributing, offering for sale, selling, and advertising its vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot that infringe the Asserted Patents in the State of Texas and the Northern District of Texas; and (ii) purposefully and voluntarily placing its infringing vehicles in the stream of commerce with knowledge that, through Defendant's established distribution channels, its accused vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot will be sold and purchased by consumers in the State of Texas and the Northern District of Texas.

12. Venue is proper in the Northern District of Texas pursuant to 28 U.S.C. § 1400(b) because, among other things, (i) Defendant is subject to personal jurisdiction in this District; (ii) Defendant has a regular and established place of business in Texas and in this District—including a GM assembly plant (the General Motors Arlington Assembly Plant located in Arlington, Texas); (iii) on information and belief, Defendant provides new vehicle warranty services on GM products, including the accused vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot, to new GM customers through its independent dealerships located in this District; (iv) Defendant has purposely transacted business involving the accused vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot in this District, including the manufacture, distribution, marketing, and sale of its vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot

that infringe the Asserted Patents to one or more customers in Texas; and (v) certain of the infringing acts complained of herein occurred in this District.

13. On information and belief, GM is the owner of the webpage: <https://plants.gm.com/Facilities/public/us/en/arlington/news.html>, which states that “[t]he General Motors Arlington Assembly Plant has been building world class vehicles in Texas since January 6, 1954. . . . The plant converted to truck production in 1997 and now is the only GM facility in the world to produce and export GM’s portfolio of full-size sport utility vehicles – the award-winning Chevrolet Tahoe, Chevrolet Suburban, GMC Yukon, GMC Yukon XL and Cadillac Escalade.”

14. On information and belief, GM is the owner of the webpage: <https://www.gmc.com/prograde/protection>, which states that “[w]hen you build your vehicles with Professional Grade quality, you stand behind them. That’s why every GMC vehicle comes fully backed with a GM warranty.”

15. On information and belief, GM is the owner of the webpage: <https://www.gmc.com/owners/warranty-details>, which states that “[w]hen you purchase or lease a new GMC, your vehicle is backed by GMC Pro Grade Protection. This protection program does not require special enrollment—anyone who purchases or leases a new vehicle will be automatically enrolled and covered.” On information and belief, GM warrants to the original and each subsequent owner of new GM vehicles (i.e., GMC, Chevrolet, Buick, and Cadillac) that any authorized GM dealer will make any repairs or replacement necessary to correct defects in material or workmanship arising during the warranty period. Upon information and belief, all such warranty work is paid for and supervised by GM.

16. On information and belief, the authorized GM dealerships located within this District (e.g., Sewell Buick GMC located in Dallas, Texas; Friendly Chevrolet, LTD. located in Dallas, Texas; Freedom Chevrolet Buick GMC located in Dallas, Texas; Clay Cooley Chevrolet located in Irving, Texas; Freeman Buick-GMC located in Grapevine, Texas; Classic Chevrolet, Inc. located in Grapevine, Texas; Graff Chevrolet Company located in Grand Prairie, Texas; Classic Buick GMC located in Arlington, Texas; and Vandergriff Chevrolet located in Arlington, Texas) are Defendant's exclusive agents, instrumentalities, and representatives within this District for the provision of all new warranty service within this District for GM vehicles (i.e., GMC, Chevrolet, Buick, and Cadillac) sold both within the District and outside the District. Upon information and belief, if a GM customer located within this District needs to have new car warranty repairs performed within the District, Defendant requires the GM customer to have the work performed at one of their authorized GM dealers in the District.

17. On information and belief, Defendant is subject to this Court's jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to their substantial business in this State and District, including: (i) at least part of their infringing activities alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent conduct, and/or deriving substantial revenue from goods sold and services provided to Texas residents.

#### **GM VEHICLES INCLUDING A MOBILE WI-FI HOTSPOT**

18. Wi-Fi is a technology for radio wireless local area networking of devices based on the Institute of Electrical and Electronics Engineers ("IEEE") 802.11 standards.

19. On information and belief, at least some of the accused GM vehicles include an LG TC10AN3FU (the "GM Wi-Fi") which is a mobile wireless router that acts as a mobile Wi-Fi

hotspot in the GM vehicle<sup>1</sup>. The GM vehicles are constructed to move with traffic at a rate of speed which is comparable to the speed of the traffic because vehicles operate on roadways in traffic and typically move with a rate of speed comparable to traffic. As the GM Wi-Fi is installed in and connected to the GM vehicle, the GM Wi-Fi and the mobile devices connected to the GM Wi-Fi also move with traffic. The GM vehicle, the GM Wi-Fi located within the GM vehicle, and the mobile devices connected to the GM Wi-Fi all move relative to a plurality of fixed radio ports (e.g., cellular radio ports included in cellular base stations operated by cellular carriers).

20. On information and belief, the GM Wi-Fi operates in accordance with at least the 4G LTE communication standard and, therefore, receives cellular signals through multiple antennas including at least two spatially separated cellular antennas.<sup>2</sup>

21. On information and belief, the GM Wi-Fi and/or at least some of the accused GM vehicles include a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>3</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas. On information and belief, the multiple signals transmitted from each of the plurality of fixed radio ports (e.g. cellular radio ports included in cellular base stations) are within a frequency band having a lower limit greater than 300 megahertz. On information and belief, each of the foregoing cellular standards – LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE – transmits within a frequency band having a lower limit greater than 300 megahertz. The cellular signals are received from base station radio interface

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<sup>1</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

<sup>2</sup> 4G LTE requires receive diversity. See Exhibit G, available at <https://www.anandtech.com/show/6541/the-state-of-qualcomms-modems-wtr1605-and-mdm9x25>.

<sup>3</sup> See Exhibit H, available at [https://technology.ihc.com/Teardowns/Detail/549410\\_2842](https://technology.ihc.com/Teardowns/Detail/549410_2842).

circuits included in carrier cellular base stations. On information and belief, the accused GM vehicles and/or GM Wi-Fi may also include other chips that function in materially the same or similar manner.

22. On information and belief, the GM Wi-Fi provides Wi-Fi service and includes a transmitter configured to transmit an RF signal (Wi-Fi signal at about 2.4 GHz) to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.).<sup>4</sup>

23. On information and belief, as the GM Wi-Fi is installed in an automotive vehicle, the transmitter included in the GM Wi-Fi is configured to transmit the mobile device RF signal (Wi-Fi signal) while the GM Wi-Fi is moving relative to the base station interface circuits and relative to Earth.

24. On information and belief, the GM Wi-Fi is a mobile hotspot that provides Internet service to Wi-Fi enabled mobile devices via cellular networks. The mobile device RF signal (Wi-Fi signal) includes data extracted from the cellular signals (4G LTE and CDMA signals).

25. On information and belief, the GM Wi-Fi and/or at least some of the accused GM vehicles include a Qualcomm MDM9215 chip that includes a processor.<sup>5</sup> Upon information and belief, the MDM9215 chip's processor is programmed to maximize an amount of transferred information to the mobile unit by evaluating a quality of each of the plurality of signals transmitted from the plurality of fixed radio ports. On information and belief, the accused GM vehicles and/or GM Wi-Fi may also include other chips that include a processor that function in materially the same or similar manner.

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<sup>4</sup> See Exhibit I, Wi-Fi Certified Interoperability Certificate.

<sup>5</sup> See Exhibit H, available at [https://technology.ihc.com/Teardowns/Detail/549410\\_2842](https://technology.ihc.com/Teardowns/Detail/549410_2842).

26. Upon information and belief, the MDM9215 processor is programmed to determine a best fixed radio port (e.g., strongest cellular signal) of the plurality of fixed radio ports, the best fixed radio port enabling the maximization of the amount of transferred information to the mobile unit.

27. On information and belief, the MDM-9215 processor establishes the communication link based on an evaluation of signal quality indicators corresponding to each transmitted signal from the cellular network base stations (fixed radio ports).

### **COUNT I**

(INFRINGEMENT OF U.S. PATENT NO. 7,221,904)

28. Carucel Investments incorporates paragraphs 1 through 27 herein by reference.

29. The '904 Patent is valid, enforceable, and was duly and legally issued by the United States Patent and Trademark Office on May 22, 2007 after full and fair examination.

30. Carucel Investments is the owner of all rights, title, and interest in and to the '904 Patent and has standing to bring this lawsuit for infringement of the '904 Patent.

31. Defendant has and continues to directly infringe one or more claims of the '904 Patent in this judicial district and elsewhere in Texas and the United States, including at least claims 22, 23, 28, 29, 30, 31, 32, 33, 34, 35, 40, 50 and 51 by, among other things, making, using, offering for sale, selling and/or importing accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot.

32. Defendant directly infringes the '904 Patent by making, using, offering for sale, selling and/or importing the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot. Defendant is thereby liable for direct infringement.

33. Defendant has had knowledge of the '904 Patent, at least as early as service of this Complaint.

34. By way of illustration only, the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot include each and every element of claim 22 of the '904 Patent. For example, at least some of the accused GM vehicles include an LG TC10AN3FU which is a mobile wireless router that acts as a mobile Wi-Fi hotspot in the GM vehicle.<sup>6</sup>

35. The accused GM vehicles include “[a]n apparatus adapted to move in accordance with a movement of a mobile unit moving relative to a plurality of fixed radio ports.” For example, the Manual for the 2015 Tahoe/Suburban provides that the vehicle “has a WiFi hotspot that provides a high-speed, wireless Internet connection to connect multiple mobile devices”<sup>7</sup> which will move with the vehicle as it moves in traffic and relative to a plurality of fixed radio ports.

36. The accused GM vehicles include “a receiver adapted to receive a plurality of signals, each of the plurality of signals transmitted from each of the plurality of fixed radio ports within a frequency band having a lower limit greater than 300 megahertz.” For example, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>8</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas. On information and belief, the multiple signals transmitted from each of the plurality of

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<sup>6</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

<sup>7</sup> See *id.*

<sup>8</sup> See Exhibit H, available at [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).

fixed radio ports (e.g. cellular radio ports included in cellular base stations) are within a frequency band having a lower limit greater than 300 megahertz.

37. The accused GM vehicles include “a transmitter adapted to transmit, within the frequency band, a resultant signal to the mobile unit in accordance with at least one of the plurality of signals.” For example, the GM Wi-Fi, on information and belief, provides Wi-Fi service and includes a transmitter configured to transmit an RF signal (Wi-Fi signal at about 2.4 GHz) to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.).<sup>9</sup>

38. The accused GM vehicles also include “a processor adapted to maximize an amount of transferred information to the mobile unit by evaluating a quality of each of the plurality of signals transmitted from the plurality of fixed radio ports.” For example, at least some of the accused GM vehicles or GM Wi-Fi include a Qualcomm MDM9215 chip that includes a processor.<sup>10</sup> Upon information and belief, the MDM9215 chip’s processor is programmed to maximize an amount of transferred information to the mobile unit by evaluating a quality of each of the plurality of signals transmitted from the plurality of fixed radio ports.

39. Carucel Investments has been damaged as a result of Defendant’s infringing conduct described in this Count. Defendant is, thus, liable to Carucel Investments in an amount that adequately compensate it for Defendant’s infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284 and attorney fees under 35 U.S.C. § 285.

## **COUNT II**

(INFRINGEMENT OF U.S. PATENT NO. 7,848,701)

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<sup>9</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4; *see also* Exhibit I, Wi-Fi Certified Interoperability Certificate.

<sup>10</sup> See Exhibit H, *available at* [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).

40. Carucel Investments incorporates paragraphs 1 through 39 herein by reference.

41. The '701 Patent is valid, enforceable, and was duly and legally issued by the United States Patent and Trademark Office on December 7, 2010 after full and fair examination.

42. Carucel Investments is the owner of all rights, title, and interest in and to the '701 Patent and has standing to bring this lawsuit for infringement of the '701 Patent.

43. Defendant has and continues to directly infringe one or more claims of the '701 Patent in this judicial district and elsewhere in Texas and the United States, including at least claims 10, 15, 16, 17, 18, 31, 33, 34 and 35 by, among other things, making, using, offering for sale, selling and/or importing accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot.

44. Defendant directly infringes the '701 Patent by making, using, offering for sale, selling and/or importing the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot. Defendant is thereby liable for direct infringement.

45. Defendant has had knowledge of the '701 Patent, at least as early as service of this Complaint.

46. By way of illustration only, the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot include each and every element of claim 10 of the '701 Patent. For example, at least some of the accused GM vehicles include an LG TC10AN3FU which is a mobile wireless router that acts as a mobile Wi-Fi hotspot in the GM vehicle.<sup>11</sup>

47. The accused GM vehicles include “[a] movable base station configured to move relative to Earth.” For example, the Manual for the 2015 Tahoe/Suburban provides that the vehicle

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<sup>11</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

“has a WiFi hotspot that provides a high-speed, wireless Internet connection to connect multiple mobile devices”<sup>12</sup> which will move with the vehicle as it moves in traffic and relative to the earth.

48. The accused GM vehicles include “a plurality of spatially separated antennas.” For example, the GM Wi-Fi operates in accordance with at least the 4G LTE communication standard and, therefore, receives cellular signals through multiple antennas including at least two spatially separated cellular antennas.<sup>13</sup> Additionally, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>14</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas.

49. The accused GM vehicles include “a receiver configured to receive fixed port signals from a fixed port through the plurality of spatially separated antennas.” For example, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>15</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas. On information and belief, the multiple signals are transmitted from the fixed radio port (e.g. cellular radio port included in a cellular base station).

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<sup>12</sup> *See id.*

<sup>13</sup> 4G LTE requires receive diversity. *See Exhibit G, available at <https://www.anandtech.com/show/6541/the-state-of-qualcomms-modems-wtr1605-and-mdm9x25>.*

<sup>14</sup> *See Exhibit H, available at [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).*

<sup>15</sup> *See id.*

50. The accused GM vehicles include “a controller configured to align and combine the received fixed port signals.” For example, at least some of the accused GM vehicles or GM Wi-Fi include a Qualcomm MDM9215 chip that includes a processor.<sup>16</sup> Upon information and belief, the MDM9215 chip’s processor is programmed to align and combine received cellular signals (received fixed port signals).

51. The accused GM vehicles also include “a transmitter configured to transmit radio frequency signals to a mobile device corresponding to the received fixed port signals.” For example, the GM Wi-Fi, on information and belief, provides Wi-Fi service and includes a transmitter configured to transmit to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.) radio frequency signals (Wi-Fi signals at about 2.4 GHz).<sup>17</sup> Since the GM Wi-Fi provides Wi-Fi service to the mobile device, the radio frequency signals correspond to the received cellular signals (received fixed port signals).

52. Carucel Investments has been damaged as a result of Defendant’s infringing conduct described in this Count. Defendant is, thus, liable to Carucel Investments in an amount that adequately compensate it for Defendant’s infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284 and attorney fees under 35 U.S.C. § 285.

### **COUNT III**

(INFRINGEMENT OF U.S. PATENT NO. 7,979,023)

53. Carucel Investments incorporates paragraphs 1 through 52 herein by reference.

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<sup>16</sup> See Exhibit H, available at [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).

<sup>17</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4; see also Exhibit I, Wi-Fi Certified Interoperability Certificate.

54. The '023 Patent is valid, enforceable, and was duly and legally issued by the United States Patent and Trademark Office on July 12, 2011 after full and fair examination.

55. Carucel Investments is the owner of all rights, title, and interest in and to the '023 Patent and has standing to bring this lawsuit for infringement of the '023 Patent.

56. Defendant has and continues to directly infringe one or more claims of the '023 Patent in this judicial district and elsewhere in Texas and the United States, including at least claims 11, 16, 17, 18, 19, 20, 21, 22 and 23 by, among other things, making, using, offering for sale, selling and/or importing accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot.

57. Defendant directly infringes the '023 Patent by making, using, offering for sale, selling and/or importing the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot. Defendant is thereby liable for direct infringement.

58. Defendant has had knowledge of the '023 Patent, at least as early as service of this Complaint.

59. By way of illustration only, the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot include each and every element of claim 11 of the '023 Patent. For example, at least some of the accused GM vehicles include an LG TC10AN3FU which is a mobile wireless router that acts as a mobile Wi-Fi hotspot in the GM vehicle.<sup>18</sup>

60. The accused GM vehicles include “[a]n apparatus configured to move relative to Earth.” For example, the Manual for the 2015 Tahoe/Suburban provides that the vehicle “has a

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<sup>18</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

WiFi hotspot that provides a high-speed, wireless Internet connection to connect multiple mobile devices”<sup>19</sup> which will move with the vehicle as it moves in traffic and relative to the earth.

61. The accused GM vehicles include “a plurality of spatially separated antennas.” For example, the GM Wi-Fi operates in accordance with at least the 4G LTE communication standard and, therefore, receives cellular signals through multiple antennas including at least two spatially separated cellular antennas.<sup>20</sup> Additionally, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip<sup>21</sup>. On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas.

62. The accused GM vehicles include “a receiver configured to receive fixed port signals from a fixed port through the plurality of spatially separated antennas.” For example, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip<sup>22</sup>. At least because LTE requires reception of cellular signals through multiple antennas, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (fixed port signals) through the separated antennas. On information and belief, the multiple signals are transmitted from the fixed port (e.g. cellular radio port included in a cellular base station).

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<sup>19</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

<sup>20</sup> 4G LTE requires receive diversity. See Exhibit G, available at <https://www.anandtech.com/show/6541/the-state-of-qualcomms-modems-wtr1605-and-mdm9x25>.

<sup>21</sup> See Exhibit H, available at [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).

<sup>22</sup> See *id.*

63. The accused GM vehicles also include “a transmitter configured to transmit radio frequency signals to a mobile device corresponding to the received fixed port signals.” For example, the GM Wi-Fi, on information and belief, provides Wi-Fi service and includes a transmitter configured to transmit an RF signal (Wi-Fi signal at about 2.4 GHz) to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.).<sup>23</sup> On information and belief, the GM Wi-Fi provides wireless service to the mobile device by transmitting radio frequency signals that correspond to the received cellular signals (received fixed port signals).

64. Carucel Investments has been damaged as a result of Defendant’s infringing conduct described in this Count. Defendant is, thus, liable to Carucel Investments in an amount that adequately compensate it for Defendant’s infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284 and attorney fees under 35 U.S.C. § 285.

#### **COUNT IV**

(INFRINGEMENT OF U.S. PATENT NO. 8,463,177)

65. Carucel Investments incorporates paragraphs 1 through 64 herein by reference.

66. The ‘177 Patent is valid, enforceable, and was duly and legally issued by the United States Patent and Trademark Office on June 11, 2013 after full and fair examination.

67. Carucel Investments is the owner of all rights, title, and interest in and to the ‘177 Patent and has standing to bring this lawsuit for infringement of the ‘177 Patent.

68. Defendant has and continues to directly infringe one or more claims of the ‘177 Patent in this judicial district and elsewhere in Texas and the United States, including at least

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<sup>23</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4; see also Exhibit I, Wi-Fi Certified Interoperability Certificate.

claims 16, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 47, 48, 49, 51, 52, and 53 by, among other things, making, using, offering for sale, selling and/or importing accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot.

69. Defendant directly infringes the '177 Patent by making, using, offering for sale, selling and/or importing the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot. Defendant is thereby liable for direct infringement.

70. Defendant has had knowledge of the '177 Patent, at least as early as service of this Complaint.

71. By way of illustration only, the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot practices every step in the method described in claim 16 of the '177 Patent. For example, at least some of the accused GM vehicles include an LG TC10AN3FU which is a mobile wireless router that acts as a mobile Wi-Fi hotspot in the GM vehicle.<sup>24</sup>

72. The accused GM vehicles receive “fixed port signals from a fixed port through a plurality of spatially separated antennas moving relative to Earth.” For example, the Manual for the 2015 Tahoe/Suburban provides that the vehicle “has a WiFi hotspot that provides a high-speed, wireless Internet connection to connect multiple mobile devices”<sup>25</sup> which will move with the vehicle as it moves in traffic and relative to the earth. Additionally, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>26</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas. The

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<sup>24</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

<sup>25</sup> See *id.*

<sup>26</sup> See Exhibit H, available at [https://technology.ihs.com/Teardowns/Detail/549410\\_2842](https://technology.ihs.com/Teardowns/Detail/549410_2842).

cellular signals are received from base station radio interface circuits included in carrier cellular base stations.

73. The accused GM vehicles also transmit, “to a mobile device, radio frequency signals corresponding to the received fixed port signals.” For example, the GM Wi-Fi, on information and belief, provides Wi-Fi service and includes a transmitter configured to transmit an RF signal (Wi-Fi signal at about 2.4 GHz) to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.).<sup>27</sup> On information and belief, the GM Wi-Fi provides wireless service to the mobile device by transmitting radio frequency signals that correspond to the received cellular signals (received fixed port signals).

74. Carucel Investments has been damaged as a result of Defendant’s infringing conduct described in this Count. Defendant is, thus, liable to Carucel Investments in an amount that adequately compensate it for Defendant’s infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284 and attorney fees under 35 U.S.C. § 285.

### **COUNT V**

(INFRINGEMENT OF U.S. PATENT NO. 8,718,543)

75. Carucel Investments incorporates paragraphs 1 through 74 herein by reference.

76. The ‘543 Patent is valid, enforceable, and was duly and legally issued by the United States Patent and Trademark Office on May 6, 2014 after full and fair examination.

77. Carucel Investments is the owner of all rights, title, and interest in and to the ‘543 Patent and has standing to bring this lawsuit for infringement of the ‘543 Patent.

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<sup>27</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4; see also Exhibit I, Wi-Fi Certified Interoperability Certificate.

78. Defendant has and continues to directly infringe one or more claims of the '543 Patent in this judicial district and elsewhere in Texas and the United States, including at least claims 10, 12, 13, 18, 19, 20, 21, 23, 25, 26, 44, 45, 49, 50, 51, 52, 53, 54, and 55 by, among other things, making, using, offering for sale, selling and/or importing accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot.

79. Defendant directly infringes the '543 Patent by making, using, offering for sale, selling and/or importing the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot. Defendant is thereby liable for direct infringement.

80. Defendant has had knowledge of the '543 Patent, at least as early as service of this Complaint.

81. By way of illustration only, the accused GM vehicles with a mobile wireless router that acts as a mobile Wi-Fi hotspot includes each and every element of claim 10 of the '543 Patent. For example, at least some of the accused GM vehicles include an LG TC10AN3FU which is a mobile wireless router that acts as a mobile Wi-Fi hotspot in the GM vehicle.<sup>28</sup>

82. The accused GM vehicles include “a plurality of spatially separated antennas.” For example, the GM Wi-Fi operates in accordance with at least the 4G LTE communication standard and, therefore, receives cellular signals through multiple antennas including at least two spatially separated cellular antennas.<sup>29</sup> Additionally, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>30</sup> On information and belief, the WTR1605L chip

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<sup>28</sup> See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.

<sup>29</sup> 4G LTE requires receive diversity. See Exhibit G, available at <https://www.anandtech.com/show/6541/the-state-of-qualcomms-modems-wtr1605-and-mdm9x25>.

<sup>30</sup> See Exhibit H, available at [https://technology.ihc.com/Teardowns/Detail/549410\\_2842](https://technology.ihc.com/Teardowns/Detail/549410_2842).

includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas.

83. The accused GM vehicles include “a receiver configured to receive, through the plurality of spatially separated antennas, a plurality of cellular signals from a plurality of base station interface circuits.” For example, at least some of the accused GM vehicles and/or the GM Wi-Fi includes a Qualcomm WTR1605L chip, which is an LTE/HSPA+/CDMA2K/TD-SCDMA/EDGE/GPS cellular transceiver chip.<sup>31</sup> On information and belief, the WTR1605L chip includes a receiver configured to receive multiple cellular RF signals, e.g., 4G LTE and CDMA signals (cellular signals) through the separated antennas. On information and belief, the multiple signals are transmitted from each of the plurality of base station interface circuits (e.g. cellular circuits included in cellular base stations).

84. The accused GM vehicles also include “a transmitter configured to transmit a mobile device radio frequency signal to a mobile device moving relative to Earth while the apparatus is moving relative to the plurality of base station radio interface circuits and relative to Earth, the mobile device radio frequency signal including data extracted from the cellular signals.” For example, the Manual for the 2015 Tahoe/Suburban provides that the vehicle “has a WiFi hotspot that provides a high-speed, wireless Internet connection to connect multiple mobile devices”<sup>32</sup> which will move with the vehicle as it moves in traffic and relative to the earth. On information and belief, the GM Wi-Fi provides Wi-Fi service and includes a transmitter configured to transmit an RF signal (Wi-Fi signal at about 2.4 GHz) to a mobile device (e.g., a Wi-Fi enabled smartphone, tablet or laptop computer, etc.).<sup>33</sup> On information and belief, as the GM Wi-Fi is

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<sup>31</sup> *See id.*

<sup>32</sup> *See Exhibit F, 2015 Tahoe/Suburban Manual, pp. 14-2 and 14-4.*

<sup>33</sup> *See Exhibit I, Wi-Fi Certified Interoperability Certificate.*

installed in an automotive vehicle, the transmitter included in the GM Wi-Fi is configured to transmit the mobile device RF signal (Wi-Fi signal) while the GM Wi-Fi is moving relative to the base station interface circuits and relative to Earth. On information and belief, the GM Wi-Fi is a mobile hotspot that provides Internet service to Wi-Fi enabled mobile devices via cellular networks where the mobile device radio frequency signal (Wi-Fi signal) includes data extracted from the cellular signals (4G LTE and CDMA signals).

85. Carucel Investments has been damaged as a result of Defendant's infringing conduct described in this Count. Defendant is, thus, liable to Carucel Investments in an amount that adequately compensate it for Defendant's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284 and attorney fees under 35 U.S.C. § 285.

#### **JURY DEMAND**

86. Carucel Investments hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

#### **PRAYER FOR RELIEF**

87. Carucel Investments requests that the Court find in its favor and against Defendant, and that the Court grant Carucel Investments the following relief:

- a. Judgment that one or more claims of the '904, '701, '023, '177, and '543 Patents have been infringed, either literally and/or under the doctrine of equivalents, by Defendant;
- b. Judgment that Defendant account for and pay to Carucel Investments all damages to and costs incurred by Carucel Investments because of Defendant's infringing activities and other conduct complained of herein;
- c. That Carucel Investments be granted pre-judgment and post-judgment interest on the damages caused by Defendant's infringing activities and other conduct complained of herein; and

- d. That Carucel Investments be granted such other and further relief as the Court may deem just and proper under the circumstances;

Dated: December 18, 2018

Respectfully submitted,

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