UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

SMART MOBILE TECHNOLOGIES LLC, Plaintiff, v. SAMSUNG ELECTRONICS CO. LTD. and SAMSUNG ELECTRONICS AMERICA, INC., Defendant.	Civil Action No. 6:21-cv-00701 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Smart Mobile Technologies LLC ("Smart Mobile"), by and through its attorneys, hereby alleges the following:

I. NATURE OF THE ACTION

1. This is a patent infringement action for damages and other appropriate remedies for Defendants Samsung Electronics Co. Ltd. ("SEC") and Samsung Electronics America, Inc.'s ("SEA") (collectively, "Samsung" or "Defendants") unauthorized and infringing manufacture, use, sale, offering for sale, and/or importation of products incorporating Smart Mobile's patented inventions.

2. Smart Mobile is the owner of all right, title, and interest in and to United States Patent No. 8,442,501 (the "'501 Patent"), issued May 14, 2013 and titled "Dynamically Configurable IP Based Wireless Devices And Networks." A true and correct copy of the '501 Patent is attached hereto as Exhibit A.

3. Smart Mobile is the owner of all right, title, and interest in and to United States Patent No. 8,472,936 (the "'936 Patent"), issued June 25, 2013 and titled "Dynamically Configurable IP Based Wireless Devices And Wireless Networks." A true and correct copy of the '936 Patent is attached hereto as Exhibit B.

4. Smart Mobile is the owner of all right, title, and interest in and to United States Patent No. 8,472,937 (the "'937 Patent"), issued June 25, 2013 and titled "Dynamically Configurable IP Based Mobile Devices And Networks." A true and correct copy of the '937 Patent is attached hereto as Exhibit C.

5. Smart Mobile is the owner of all right, title, and interest in and to United States Patent No. 8,761,739 (the "'739 Patent"), issued June 24, 2014 and titled "Dynamically Configurable IP Based Wireless Devices And Networks." A true and correct copy of the '739 Patent is attached hereto as Exhibit D.

6. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 8,824,434 (the "'434 Patent"), issued September 2, 2014 and titled "Portable Wireless Device With Dual RF Communication And Antennas." A true and correct copy of the '434 Patent is attached hereto as Exhibit E.

7. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 8,842,653 (the "'653 Patent"), issued September 23, 2014 and titled "Wireless Devices With Transmission Control And Multiple Paths Of Communication." A true and correct copy of the '653 Patent is attached hereto as Exhibit F.

8. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,019,946 (the "'946 Patent"), issued April 28, 2015 and titled "Wireless And Cellular

Voice And Data Transmission With Multiple Paths Of Communication." A true and correct copy of the '946 Patent is attached hereto as Exhibit G.

9. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,049,119 (the "'119 Patent"), issued June 2, 2015 and titled "Dynamically Configurable Mobile Device and Cellular Phones With Functions." A true and correct copy of the '119 Patent is attached hereto as Exhibit H.

10. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,084,291 (the "'291 Patent"), issued July 14, 2015 and titled "Interfacing Internet Protocol-Based Wireless Devices With Networks." A true and correct copy of the '291 Patent is attached hereto as Exhibit I.

11. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,191,083 (the "'083 Patent"), issued November 17, 2015 and titled "Wireless Device With Multichannel Data Transfer." A true and correct copy of the '083 Patent is attached hereto as Exhibit J.

12. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,614,943 (the "'943 Patent"), issued April 4, 2017 and titled "System To Interface Internet Protocol (IP) Based Wireless Devices With Subtasks And Channels." A true and correct copy of the '943 Patent is attached hereto as Exhibit K.

13. Smart Mobile is also the owner of all right, title, and interest in and to United States Patent No. 9,756,168 (the "'168 Patent"), issued September 5, 2017 and titled "Multifunction Mobile Devices And Appliance Control." A true and correct copy of the '168 Patent is attached hereto as Exhibit L.

14. Samsung makes, uses, offers for sale, sell, and/or imports into the United States products that directly infringe the '501, '936, '937, '739, '434, '653, '946, '119, '291, '083, '943, and '168 Patents (collectively, the "Patents in Suit"). Further, Samsung indirectly infringes one or more of the Patents in Suit by inducing and contributing to infringement by others, including users of Samsung devices, and by exporting components used in the making of Samsung devices that would, if combined in the United States, infringe the Smart Mobile patents.

15. Smart Mobile seeks monetary damages, prejudgment interest, injunctive relief, and other relief for Samsung's infringement of the Patents in Suit.

II. PARTIES

16. Smart Mobile is a Delaware limited liability company having a principal place of business at 7600 Chevy Chase Drive, Building 2, Suite 300, Austin, Texas 78752. Smart Mobile develops mobile device software and technologies for scientists and engineers.

17. Upon information and belief, Defendant SEC is a corporation organized under the laws of South Korea, with its principal place of business at 129 Samsung-Ro, Maetan-3dong, Yeongtong-gu, Suwon, 443-742, South Korea.

18. Upon information and belief, SEA is a wholly owned subsidiary of SEC and is a corporation organized under the laws of the State of New York, with its principal place of business at 85 Challenger Road, Ridgefield Park, New Jersey 07660.

19. Samsung may be served with process through its registered agent for service in Texas: Richard Jung, 8310 N. Capital of Texas Hwy, Suite 305, Austin, Texas 78731.

III. JURISDICTION AND VENUE

20. This is an action for patent infringement, which arises under the Patent Laws of the United States, in particular, 35 U.S.C. §§ 271, 281, 282, 284, and 285. The 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 Samsung because Samsung has committed acts giving rise to this action within Texas and within this judicial district. Defendants regularly do business or solicit business in this District and in Texas, engage in other persistent courses of conduct and derive substantial revenue from products and services provided in this District and in Texas, and have purposefully established substantial, systematic, and continuous contacts within this District and should reasonably expect to be sued in a court in this District. For example, Samsung has offices within this district. The website www.samsung.com solicits sales of infringing products to consumers in this District and in Texas. Given these contacts, the Court's exercise of jurisdiction over Samsung will not offend traditional notions of fair play and substantial justice.

22. Venue in the Western District of Texas is proper pursuant to 28 U.S.C. §§ 1391(b), (c) and l400(b) because Samsung has regular and established places of business in this District, including at 12100 Samsung Boulevard, Austin, Texas, has committed acts within this judicial district giving rise to this action, and continues to conduct business in this judicial district, including multiple acts of making, selling, using, importing and/or offering for sale infringing products in this District.

IV. THE PATENTS-IN-SUIT

23. The '501, '936, '937, '739, '119, and '168 Patents share a common specification. The patents are related by a chain of continuation and divisional applications to an application filed on June 9, 2000, which was a continuation-in-part of an application filed on June 4, 1999. The ‘501, ‘936, ‘937, ‘739, and ‘119 Patents, in addition, claim priority to an even earlier application, filed December 16, 1996. The '501, '936, '937, '739, '119, and '168 Patents disclose and claim improved wireless communications systems and devices having voice and data communication capability,

the capability to switch dynamically between wireless networks, and the capability of communicating with a server that enhances the functionality of the devices.

24. The '434, '653, '946, ‘291, '083, and '943 Patents share a common specification. The patents are related by a chain of continuation applications to an application filed on July 17, 2000, which was a continuation-in-part of an application filed on June 4, 1999 (the same application that is related to the '168 and '936 Patents). The ‘434 Patent, in addition, claims priority to an even earlier application, filed December 16, 1996. The '434, '653, '946, ‘291, '083, and '943 Patents disclose and claim enhancements to mobile device communications functionality. The patents taught, among other things, that by using transmit and receive units, coupled with one or more processors configured to process multiple signal or data streams in parallel, transmission bottlenecks could be mitigated and enhanced transmission capabilities – such as the ability to multiplex signal streams or access multiple signal streams simultaneously or sequentially – could be achieved.

V. SAMSUNG'S KNOWLEDGE OF THE PATENTS-IN-SUIT

25. On information and belief, Samsung has known of at least the '501, '936, '937, '739, '434, '653, '946, '119, and ‘291 patents, as well as the applications that later issued as the '168, '083, and '943 patents, since at least in or around October 2015.

26. In or about May 2015, Global Technology Transfer Group, Inc. ("GTT"), a patent transaction advisory and consultancy company, was engaged to assist with the divestment or certain patents and patent applications owned by a prior owner of the patents (the "Smart Mobile Portfolio"), including the '501, '936, '937, '739, '434, '653, '946, '119, and ‘291 patents, as well as the applications that later issued as the '168, '083, and '943 patents.

27. GTT created, among other things, a thirteen page summary of the Smart Mobile Portfolio ("Portfolio Summary"). The Portfolio Summary noted that there were 24 issued US

patents and 27 US applications assigned to Smart Mobile. The Portfolio Summary identified "relevant markets" as including mobile devices, mobile streaming devices, wireless networks, and software defined networks. The Portfolio Summary highlighted seven "exemplary patents," including the '653 and '936 patents, and included an accompanying spreadsheet containing a full list.

28. As to the '936 Patent, the Portfolio Summary highlighted pertinence "for companies that provide both wireless devices and servers (application store servers). These targets provide application stores where applications with functional instructions can be downloaded to mobile devices. The mobile devices execute the instructions to provide new functionality at the mobile device."

29. As to the '653 patent, the Portfolio Summary stated, among other things, that "[c]laim 1 is applicable to mobile devices that support multipath TCP. … Claim 1 and 17 are also applicable to devices that supports Voice over LTE (VoLTE) along with Wi-Fi Calling and a handover between the two. Claim 14 is applicable to devices that maintain two separate IP addresses (one for Wi-Fi and another for cellular)."

30. As to the '291 Patent, the Portfolio Summary stated, among other things, that "[t]his patent covers a communication system for a portable handheld device with multiple antennas. The solution is "system on a chip"-based, and the system supports communication and processing of signals using multiple frequency bands and is configured for radio frequency transmission and receipt of multiple signal streams."

31. On information and belief, during the latter half of 2015, GTT contacted various potentially interested parties, including Samsung, to solicit interest in acquiring the Smart Mobile Portfolio.

32. Upon information and belief, GTT created a virtual "data room" that contained information and materials pertinent to the Smart Mobile Portfolio, including the Portfolio Summary and an accompanying spreadsheet containing a list of all of the patents and application in the Smart Mobile portfolio.

33. Upon information and belief, Samsung accessed the virtual data room, and the Portfolio Summary and spreadsheet, sometime in or around October 2015 and thereby gained notice of at least the '501, '936, '937, '739, '434, '653, '946, '119, and ‘291 patents, as well as the applications that later issued as the '168, '083, and '943 patents.

VI. THE INFRINGING SAMSUNG DEVICES

34. Samsung designs, markets and sells, among other things, wireless portable electronic devices, such as the Galaxy line of mobile electronic devices. Samsung's Galaxy S, Galaxy Note, Galaxy A, Galaxy J, Galaxy Z, Galaxy Tab and other Galaxy devices all run a version of the Android operating system with a proprietary user interface provided by Samsung.

35. Samsung's Galaxy devices are designed to function as part of an integrated ecosystem of products and services that includes Samsung's Galaxy Store (f/k/a Samsung Apps and Galaxy Apps) and the applications ("apps") that are available on Samsung's Galaxy Store. In order to access certain of these features, a user is prompted to create a Samsung account. In addition, Samsung supports its Galaxy products with periodic operating system updates.

36. Samsung's Galaxy devices are configured to communicate wirelessly via at least Wi-Fi. In addition, Samsung's Galaxy S, Galaxy Note, Galaxy A, Galaxy J, Galaxy Z and other Galaxy smartphones, and certain of Samsung's Galaxy Tab devices, are configured for communication via a cellular network.

37. Samsung has incorporated different functionalities for dynamically switching between cellular and Wi-Fi networks into its Galaxy devices. For example, on information and

belief, by no later than mid-2015, Samsung had incorporated Wi-Fi Calling, which enables a device to dynamically switch to a Wi-Fi from a cellular connection to support a voice call when cellular reception is poor, into most models of the Samsung Galaxy Devices.

38. As another example, on information and belief, by no later than the release of Android 6 in or about October 5, 2015, Samsung had incorporated Smart Network Switching, which enables a Samsung device to switch from a Wi-Fi to a cellular connection when Wi-Fi is unstable, into the Samsung Galaxy devices. This feature was subsequently rebranded as Adaptive Wi-Fi, and later rebranded again as Intelligent Wi-Fi.

39. On information and belief, by later than the release of the Galaxy S5 in early 2014, Samsung incorporated a new functionality branded "Download Booster" into various models of the Samsung Galaxy devices. The Download Booster functionality enables a device to download files in excess of 30 megabytes from the Galaxy Store or Play Store more quickly by using a Wi-Fi connection and a mobile data connection simultaneously to execute the download. The Samsung Galaxy devices use a technology called multipath TCP (MPTCP), a communications functionality involving the simultaneous use of cellular and Wi-Fi networks, to enable the Download Booster functionality.

40. On information and belief, Samsung incorporated yet another connectivity technology, "Multiple Input Multiple Output" (MIMO), into the Samsung Galaxy devices to support at least Wi-Fi communications by no later than the release of the Galaxy S5 and Note 4 in 2014. MIMO involves the use of multiple antennas on a device to enhance a wireless connection, such as a cellular or Wi-Fi connection.

COUNT I: INFRINGEMENT OF THE '501 PATENT

41. Smart Mobile incorporates paragraphs 1 through 40 herein by reference.

42. Samsung indirectly infringed at least claim 1 of the '501 Patent, including by (i) inducing users of Samsung devices to use, within the United States, claimed systems comprising a Samsung server and a Galaxy J1 (2015), Galaxy J3 Sky, Galaxy J3V, Galaxy Note 4, Galaxy Note5, Galaxy Note Edge, Galaxy S3, Galaxy S4, Galaxy S4 Mini, Galaxy S5, Galaxy S5 Active, Galaxy S5 Mini, Galaxy S5 Sport, Galaxy S6, Galaxy S6 Active, Galaxy S6 Edge, Galaxy S6 Edge+, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A 8.0, Galaxy Tab A 10.1, Galaxy Tab S 8.4, Galaxy Tab S 10.5, Galaxy Tab S2 8, Galaxy Tab S2 9.7, Galaxy Amp 2, Galaxy Amp Prime, Galaxy Core Prime, Galaxy E5, Galaxy Express 3, Galaxy Express Prime, Galaxy Grand Prime, Galaxy On5, or Galaxy Stardust device (all such devices referenced in this paragraph, collectively, "the '501 Infringing Devices"), and (ii) contributing to infringement of the '501 Patent.

43. As one non-limiting example of the claims of the '501 Patent infringed by systems comprising the '501 Infringing Devices, claim 1 of the '501 Patent recites:

What is claimed is:

1. A wireless communication system, comprising:

a wireless device which supports voice and data communications;

a server; and

a memory, wherein a processor is communicatively coupled with the memory,

wherein the memory stores functional instructions including instructions for use in providing a plurality of functions to the wireless device, at least one of the functional instructions provided for switching between one or more networks including at least one public network, and

wherein the memory further stores a plurality of communication protocols, that facilitate communication between the server and the wireless device, and wherein the server serves as a primary repository or exchange to deliver various functions to the wireless device, wherein the server enables dynamic conversion of the wireless device from a first function to a second function to provide a plurality of functions at the wireless device.

44. The '501 Infringing Devices were wireless devices which supported voice and data communications.

45. On information and belief, Samsung owned and/or used, or directed and controlled the use of, a server, including to provide operating system updates.

46. The '501 Infringing Devices each had a memory and a processor that were communicatively coupled with one another.

47. The memory of the '501 Infringing Devices stored functional instructions including instructions for use in providing a plurality of functions to the device, at least one of the functional instructions provided for switching between one or more networks including at least one public network. For example, functional instructions stored within the '501 Infringing Devices enabled the devices to switch between a public cellular network and a Wi-Fi network at least in connection

with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

48. The memory of the '501 Infringing Devices further stored a plurality of communication protocols that facilitated communication between Samsung's server and the device. For example, the memory of the '501 Infringing Devices stored protocols for LTE and Wi-Fi (at least IEEE 802.11ac), each of which facilitated communication between Samsung's server and the device.

49. Samsung's server served as a primary repository or exchange to deliver various functions to the '501 Infringing Devices. For example, Samsung's server delivered various functions to the devices by updating the operating system and other software on the devices. On information and belief, such updates included Android 6 (collectively, the "'501 Infringing Android Updates").

50. Samsung's server enabled dynamic conversion of the '501 Infringing Devices from a first function to a second function to provide a plurality of functions at the wireless device. For example, Android updates provided to the '501 Infringing Devices by Samsung's server enabled the devices to dynamically convert from communicating via LTE to communicating via Wi-Fi, and vice-versa, to enable a plurality of functions at the wireless device, at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

51. Samsung induced infringement of the '501 Patent by prompting and encouraging users of the '501 Infringing Devices to use the claimed system to download from a Samsung server and install various functions for the device, including in the form of or as provided by '501 Infringing Android Updates.

52. On information and belief, users of the '501 Infringing Devices directly infringed the '501 Patent at least by using a system comprising a '501 Infringing Device and a Samsung server by using the system at least to receive or install '501 Infringing Android Updates from Samsung's server.

53. On information and belief, based on at least the facts alleged above, Samsung knew of the '501 Patent since at least in or around October 2015.

54. On information and belief, Samsung intended that users of '501 Infringing Devices use the claimed system comprising a '501 Infringing Device and a Samsung server at least to receive Android updates from Samsung's server for the '501 Infringing Devices. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, users' using such systems comprising '501 Infringing Devices constituted infringement of the '501 Patent.

55. Samsung contributed to the infringement of the '501 Patent by offering to sell and selling within the United States, and/or importing into the United States, '501 Infringing Devices, each including the infringing structure and functionality identified above and each a component of the patented system of claim 1 of the '501 Patent that constituted a material part of the invention. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the '501 Infringing Devices were especially made or especially adapted for use in an infringement of the '501 Patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

56. In addition, Samsung contributed to infringement of at least claim 1 of the '501 Patent by, among other things, offering and providing one or more of the '501 Infringing Android Updates to users of the '501 Infringing Devices. The '501 Infringing Android Updates included code for providing the infringing functionalities referenced above, which constituted a material

part of the invention claimed in the '501 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the '501 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT II: INFRINGEMENT OF THE '936 PATENT

57. Smart Mobile incorporates paragraphs 1 through 56 herein by reference.

58. Samsung indirectly infringed at least claim 1 of the '936 Patent, including by (i) inducing users of Samsung devices to use, within the United States, claimed systems comprising a Samsung server and a Galaxy J1 (2015), Galaxy J3 Sky, Galaxy J3V, Galaxy Note 4, Galaxy Note5, Galaxy Note Edge, Galaxy S3, Galaxy S4, Galaxy S4 Mini, Galaxy S5, Galaxy S5 Active, Galaxy S5 Mini, Galaxy S5 Sport, Galaxy S6, Galaxy S6 Active, Galaxy S6 Edge, Galaxy S6 Edge+, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A 8.0, Galaxy Tab A 10.1, Galaxy Tab S 8.4, Galaxy Tab S 10.5, Galaxy Tab S2 8, Galaxy Tab S2 9.7, Galaxy Amp 2, Galaxy Amp Prime, Galaxy Core Prime, Galaxy E5, Galaxy Express 3, Galaxy Express Prime, Galaxy Grand Prime, Galaxy On5, or Galaxy Stardust device (all such devices referenced in this paragraph, collectively, "the '936 Infringing Devices"), and (ii) contributing to infringement of the '936 Patent.

59. As one non-limiting example of the claims of the '936 Patent infringed by systems comprising the '936 Infringing Devices, claim 1 of the '936 Patent recites:

> **1**. A wireless communication system, comprising:
> a wireless device which supports voice and data communications;
> a server; and
> a memory, wherein a processor is communicatively coupled with the memory,
> wherein the memory stores functional instructions including instructions for use in providing a plurality of functions to the wireless device, at least one of the functional instructions provided for switching between one or more networks including at least one public network, and
> wherein the memory further stores a plurality of communication protocols, that facilitate communication between the server and the wireless device, and wherein the server is configured to send to the wireless device a plurality of functions, wherein the wireless device is dynamically configurable from a first function to a second function to enable a plurality of functions at the wireless device and wherein the wireless device is configured for Internet access.

60. The '936 Infringing Devices were wireless devices which supported voice and data communications.

61. On information and belief, Samsung owned and/or used, or directed and controlled the use of, a server, including for Samsung's "Galaxy Store" and for providing operating system updates.

62. The '936 Infringing Devices each had a memory and a processor that were communicatively coupled with one another.

63. The memory of the '936 Infringing Devices stored functional instructions including instructions for use in providing a plurality of functions to the device, at least one of the functional instructions provided for switching between one or more networks including at least one public network. For example, functional instructions stored within the '936 Infringing Devices enabled

the devices to switch between a public cellular network and a Wi-Fi network at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

64. The memory of the '936 Infringing Devices further stored a plurality of communication protocols that facilitated communication between a Samsung server and the device. For example, the memory of the '936 Infringing Devices stored protocols for LTE and Wi-Fi (at least IEEE 802.11ac), each of which facilitated communication between a Samsung server and the device.

65. Samsung's server was configured to send to '936 Infringing Devices a plurality of functions. For example, Samsung's server was configured to send, upon a request to Samsung's Galaxy Store, software for various application functions on the devices. As another example, Samsung's server sent operating system updates for operating system functions on the devices, which updates included Android 6 (collectively, the "'936 Infringing Android Updates").

66. The '936 Infringing Devices were dynamically configurable from a first function to a second function to enable a plurality of functions at the devices. For example, the '936 Infringing Devices were dynamically configurable from communicating via LTE to communicating via Wi-Fi, and vice-versa, to enable a plurality of functions at the wireless device, at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

67. The '936 Infringing Devices were configured for Internet access. For example, the devices communicated with a Samsung server by accessing the Internet and using Internet Protocol.

68. Samsung induced infringement of the '936 Patent by prompting and encouraging users of the '936 Infringing Devices to use the claimed system to receive from a Samsung server and install various functions for the device, including in the form of applications from the Samsung Galaxy Store and in the form of, or as provided by, '936 Infringing Android Updates.

69. On information and belief, users of the '936 Infringing Devices directly infringed the '936 Patent at least by using a system comprising a '936 Infringing Device and a Samsung server by using the system at least to download to the user's '936 Infringing Device applications from the Samsung Galaxy Store and '936 Infringing Android Updates from Samsung's server.

70. On information and belief, based on at least the facts alleged above, Samsung knew of the '936 Patent since at least in or around October 2015.

71. On information and belief, Samsung intended that users of '936 Infringing Devices use the claim system as described above. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, users' using such systems comprising '936 Infringing Devices constituted infringement of the '936 Patent.

72. Samsung contributed to the infringement of the '936 Patent by offering to sell and selling within the United States, and/or importing into the United States, '936 Infringing Devices, each including the infringing structure and functionality identified above and each a component of the patented system of claim 1 of the '936 Patent that constituted a material part of the invention. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the '936 Infringing Devices were especially made or especially adapted for use in an infringement of the '936 Patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

73. In addition, Samsung contributed to infringement of at least claim 1 of the '936 Patent by, among other things, offering and providing one or more of the '936 Infringing Android Updates to users of the '936 Infringing Devices. The '936 Infringing Android Updates included code for providing the infringing functionalities referenced above, which constituted a material part of the invention claimed in the '936 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the '936 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT III: INFRINGEMENT OF THE '937 PATENT

74. Smart Mobile incorporates paragraphs 1 through 73 herein by reference.

75. Samsung indirectly infringed at least claim 1 of the '937 Patent, including by (i) inducing users of Samsung devices to use, within the United States, claimed systems comprising a Samsung server and a Samsung device having the "S Voice" virtual mobile personal assistant application, including at least the Galaxy Note 4, Galaxy Note 5, Galaxy Note Edge, Galaxy S3, Galaxy S4, Galaxy S4 Mini, Galaxy S5, Galaxy S5 Active, Galaxy S5 Sport, Galaxy S6, Galaxy S6 Edge, Galaxy S6 Edge+, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab S 8.4, and Galaxy Tab S 10.5 devices (all such devices referenced in this paragraph, collectively, "the '937 Infringing Devices"), and (ii) contributing to infringement of the '937 Patent.

76. As one non-limiting example of the claims of the '937 Patent infringed by systems comprising the '937 Infringing Devices, claim 1 of the '937 Patent recites:

> 1. A mobile device communication system, comprising:
> a mobile device which supports voice and data communications;
> a server; and
> a memory, wherein to processor is communicatively coupled with the memory,
> wherein the memory stores functional instructions including instructions for use in providing a plurality of functions to the mobile device, at least one of the functional instructions adapted for switching between one or more networks including at least one public network and wherein the memory stores prioritization data related to connecting to a plurality of wireless networks and
> wherein the memory further stores a plurality of communication protocols, that facilitate communication between the server and the mobile device, and wherein the server provides a plurality of functions for control of the mobile device and enables conversion of the mobile device from as first function to a second function to provide a plurality of functions at the mobile device.

77. The '937 Infringing Devices were mobile devices which supported voice and data communications.

78. On information and belief, Samsung owned and/or used, or directed and controlled the use of, a server, including to support S Voice.

79. The '937 Infringing Devices each had a memory and a processor that were communicatively coupled with one another.

80. The memory of the '937 Infringing Devices stored functional instructions including instructions for use in providing a plurality of functions to the devices, at least one of the functional instructions adapted for switching between one or more networks including at least one public network. For example, functional instructions stored within the '937 Infringing Devices enabled the devices to switch between a public cellular network and a Wi-Fi network at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

81. The memory of the '937 Infringing Devices stored prioritization data related to connecting to a plurality of wireless networks. For example, the '937 Infringing Devices were configured to prioritize connecting to Wi-Fi networks over cellular networks, switching to the latter only if the Wi-Fi connection degraded or became unavailable.

82. The memory of the '937 Infringing Devices further stored a plurality of communication protocols that facilitated communication between Samsung's server and the device. For example, the memory of the '937 Infringing Devices stored protocols for LTE and Wi-Fi (at least IEEE 802.11ac), each of which facilitated communication between Samsung's server and the device.

83. On information and belief, Samsung's server was configured to provide a plurality of functions for control of the '937 Infringing Devices. For example, on information and belief, in response to a user's spoken query or command to the S Voice application resident on a '937 Infringing Device, Samsung's server could, among other things, cause the device to make a phone call, send a text message, tell the time, provide weather updates, open applications, navigate to a desired location, add an appointment to a calendar, play music, and update social media accounts.

84. On information and belief, Samsung's server enabled conversion of the '937 Infringing Devices from a first function to a second function to provide a plurality of functions at the '937 Infringing Devices. For example, when the user of a '937 Infringing Device asked S Voice to make a call, the '937 Infringing Device converted from whatever function it was performing to a call function.

85. Samsung induced infringement of the '937 Patent by prompting and encouraging users of '937 Infringing Devices to use the claimed system by using the S Voice application on those devices to communicate with Samsung's server.

86. On information and belief, users of the '937 Infringing Devices directly infringed the '937 Patent at least by using a system comprising a '937 Infringing Device and a Samsung server by using the S Voice functionality on the device to communicate with Samsung's server and receive from the server functions for control of the device.

87. On information and belief, based on at least the facts alleged above, Samsung knew of the '937 Patent since at least in or around October 2015.

88. On information and belief, Samsung intended that users of '937 Infringing Devices use a system comprising a '937 Infringing Device and a Samsung server by using the S Voice functionality found on the devices to communicate with Samsung's server and receive functions from the server. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, users' use of such systems comprising '937 Infringing Devices constituted infringement of the '937 Patent.

89. Samsung contributed to the infringement of the '937 Patent by offering to sell and selling within the United States, and/or importing into the United States, '937 Infringing Devices, each including the infringing structure and functionality identified above and each a component of the patented system of claim 1 of the '937 Patent that constituted a material part of the invention. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the '937 Infringing Devices were especially made or especially adapted for use in an infringement of the '937 Patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT IV: INFRINGEMENT OF THE '739 PATENT

90. Smart Mobile incorporates paragraphs 1 through 89 herein by reference.

91. Samsung indirectly infringed at least claim 1 of the '739 Patent, including by (i) inducing users of Samsung devices to use, within the United States, claimed systems comprising

a Samsung server and a Galaxy J1 (2015), Galaxy J3 Sky, Galaxy J3V, Galaxy Note 4, Galaxy Note5, Galaxy Note Edge, Galaxy S3, Galaxy S4, Galaxy S4 Mini, Galaxy S5, Galaxy S5 Active, Galaxy S5 Mini, Galaxy S5 Sport, Galaxy S6, Galaxy S6 Active, Galaxy S6 Edge, Galaxy S6 Edge+, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A 8.0, Galaxy Tab A 10.1, Galaxy Tab S 8.4, Galaxy Tab S 10.5, Galaxy Tab S2 8, Galaxy Tab S2 9.7, Galaxy Amp 2, Galaxy Amp Prime, Galaxy Core Prime, Galaxy E5, Galaxy Express 3, Galaxy Express Prime, Galaxy Grand Prime, Galaxy On5, or Galaxy Stardust (all such devices referenced in this paragraph, collectively, "the '739 Infringing Devices"), and (ii) contributing to infringement of the '739 Patent.

92. As one non-limiting example of the claims of the '739 Patent infringed by systems comprising the '739 Infringing Devices, claim 1 of the '739 Patent recites:

> **1**. A wireless communication system, comprising:
> a wireless device which supports voice and data communications;
> a server;
> a memory communicatively coupled to the wireless device, wherein a processor is communicatively coupled with the memory,
> wherein the memory stores functional instructions for use in providing a plurality of functions to the wireless device, at least one of the functional instructions provided for switching between one or more networks including at least one public or wireless carrier network, and
> wherein user specific information of the wireless device is stored on the server; and
> wherein the memory further stores a plurality of communication protocols, that facilitate communication between a server and the wireless device, and wherein the server serves as a primary repository or exchange to deliver various functions to the wireless device, and wherein the server enables dynamic conversion of the wireless device from a first function to a second function to provide a plurality of functions at the wireless device.

93. The '739 Infringing Devices were wireless devices which supported voice and data communications.

94. On information and belief, Samsung owned and/or used, or directed and controlled the use of, a server, including to provide Android updates and to store Samsung user accounts.

95. The '739 Infringing Devices each had a memory and a processor that were communicatively coupled with one another.

96. The memory of the '739 Infringing Devices stored functional instructions for use in providing a plurality of functions to the device, at least one of the functional instructions provided for switching between one or more networks including at least one public or wireless carrier network. For example, functional instructions stored within the device enabled the device to switch between a cellular network and a Wi-Fi network at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

97. Upon information and belief, a Samsung server stored user specific information of the '739 Infringing Devices. For example, Samsung's server stored accounts associated with users of '739 Infringing Devices and stored Android updates and software applications that were associated with users of '739 Infringing Devices and with the devices.

98. The memory of the '739 Infringing Devices further stored a plurality of communication protocols that facilitated communication between Samsung's server and the device. For example, the memory of the '739 Infringing Devices stored protocols for LTE and Wi-Fi (at least IEEE 802.11ac), each of which facilitated communication between Samsung's server and the device.

99. Samsung's server served as a primary repository or exchange to deliver various functions to the '739 Infringing Devices. For example, Samsung's server delivered various functions to the devices by updating the operating system software on the devices. On information and belief, such updates included Android 6 (collectively, the "'739 Infringing Android Updates").

100. Samsung's server enabled dynamic conversion of the '739 Infringing Devices from a first function to a second function to provide a plurality of functions at the wireless device. For example, upon information and belief, Samsung's server provided '739 Infringing Android Updates to the '739 Infringing Devices thereby enabling the devices to dynamically convert from communicating via LTE to communicating via Wi-Fi, and vice-versa, to enable a plurality of functions at the wireless device, at least in connection with use of Wi-Fi Calling and Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

101. Samsung induced infringement of the '739 Patent by prompting and encouraging users of the '739 Infringing Devices to use the claimed system to create a Samsung account for use with the device, or to sign into the user's existing Samsung account using the device, which configured Samsung's server to store user specific information of the devices and to deliver various functions to the devices, at least in the form of Android updates provided to the devices thereby enabling dynamic conversion of the devices from a first function to a second function.

102. In addition, Samsung induced infringement of the '739 Patent by prompting and encouraging users of '739 Infringing Devices to use the system to download from Samsung's server and install '739 Infringing Android Updates to the device.

103. On information and belief, users of the '739 Infringing Devices directly infringed the '739 Patent at least by using the claim system as described above.

104. On information and belief, based on at least the facts alleged above, Samsung knew of the '739 Patent since at least in or around October 2015.

105. On information and belief, Samsung intended that users of '739 Infringing Devices use the claimed system as described above. On information and belief, Samsung knew that, or

acted with willful blindness to the likelihood that, users' using such systems comprising '739 Infringing Devices constituted infringement of the '739 Patent.

106. Samsung contributed to the infringement of the '739 Patent by offering to sell and selling within the United States, and/or importing into the United States, '739 Infringing Devices, each including the infringing structure and functionality identified above and each a component of the patented system of claim 1 of the '739 Patent that constituted a material part of the invention. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the '739 Infringing Devices were especially made or especially adapted for use in an infringement of the '739 Patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

107. In addition, Samsung contributed to infringement of at least claim 1 of the '739 Patent by, among other things, offering and providing one or more of the '739 Infringing Android Updates to users of the '739 Infringing Devices. The '739 Infringing Android Updates included code for providing the infringing functionalities referenced above, which constituted a material part of the invention claimed in the '739 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the '739 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT V: INFRINGEMENT OF THE ‘434 PATENT

108. Smart Mobile incorporates paragraphs 1 through 107 herein by reference.

109. **Direct Infringement:** Samsung directly infringed the ‘434 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung smartphones, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S3, S4, S4 Mini, S5, S5 Active, S5 Mini, S5 Sport, S6, S6

Active, S6 Edge, S6 Edge+, S7, S7 Active, and S7 Edge devices, Galaxy Note 4, 5 and Edge devices, Galaxy J1, J3, J3 Sky, J3V and J7 devices, and Galaxy Amp 2, Amp Prime, Core Prime, E5, Express 3, Express Prime, Grand Prime, On5, and Stardust devices, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more updates of Android 6 to Samsung smartphones, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, and S7 Edge devices, Galaxy Note 4, 5 and Edge devices, Galaxy J1, J3, J3 Sky, J3V and J7 devices, and Galaxy Amp 2, Amp Prime, Core Prime, E5, Express 3, Express Prime, Grand Prime, On5, and Stardust devices (all such devices referenced in this paragraph, collectively, "the '434 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

110. As one non-limiting example of the claims of the ‘434 Patent infringed by the ‘434 Infringing Devices, claim 1 of the ‘434 Patent recites:

> **1**. A portable handheld wireless device, comprising:
> a processor;
> a communication component including a processor, a transmitter, and a receiver for wireless communication of a plurality of wireless protocols;
> a first antenna;
> a second antenna;
> wherein the portable handheld wireless device is configured to dynamically switch between use of the first or second antenna; and
> wherein the first antenna is coupled to the transmitter and receiver, and wherein first radio frequency signals are transmitted using the first antenna;
> and wherein second radio frequency signals are transmitted using the second antenna, and wherein the first radio frequency signals and the second radio frequency signals are transmitted at different frequencies, and wherein the first radio frequency signals and the second radio frequency signals are communicated based on at least two different wireless protocols.

111. The ‘434 Infringing Devices were portable handheld wireless devices, and include a processor.

112. The ‘434 Infringing Devices included a communication component that includes a processor, a transmitter and a receiver for wireless communication using a plurality of wireless protocols. For example, each of the ‘434 Infringing Devices included (i) a cellular modem, for wireless communication using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, for wireless communication using at least the IEEE 802.11 protocol.

113. The ‘434 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

114. The ‘434 Infringing Devices were configured to dynamically switch between use of cellular and Wi-Fi antennas when and as needed in connection with at least one or more of the Wi-Fi Calling, Smart Network Switching, and video calling functionalities.

115. The cellular antenna(s) of the ‘434 Infringing Devices were coupled to the cellular modem, and are for transmitting radio frequency signals at cellular frequencies. Radio frequency signals transmitted by the cellular antenna(s) were communicated based on at least the LTE protocol.

116. The Wi-Fi/Bluetooth antenna(s) of the ‘434 Infringing Devices were coupled to the Wi-Fi/Bluetooth module, and were for transmitting radio frequency signals at Wi-Fi and Bluetooth frequencies, which are different from cellular frequencies. Radio frequency signals transmitted by the Wi-Fi/Bluetooth antenna(s) are communicated based on at least the IEEE 802.11 set of LAN protocols.

117. **Indirect Infringement:** Samsung indirectly infringed at least claim 1 of the ‘434 Patent, including by (i) inducing users of Samsung devices to make and use devices that infringe the ‘434 Patent, and (ii) contributing to infringement of the ‘434 Patent.

118. Samsung induced infringement of the ‘434 Patent by, among other things, (i) prompting and encouraging users of the ‘434 Infringing Devices to initiate one or more updates to or of Android 6 (collectively, "the ‘434 Infringing Android Updates") to ‘434 Infringing Devices; (ii) downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more of the ‘434 Infringing Android Updates to the ‘434 Infringing Devices, and (iii) prompting, encouraging and/or providing instructions to users of the '434 Infringing Devices to use Wi-Fi Calling and Smart Network Switching.

119. On information and belief, users of the ‘434 Infringing Devices committed acts of direct infringement at least by (i) causing their devices to be upgraded to one or more of the ‘434 Infringing Android Updates, and (ii) using the ‘434 Infringing Devices to perform the infringing functionalities referenced above.

120. On information and belief, based on at least the facts alleged above, Samsung knew of the ‘434 Patent since at least in or around October 2015.

121. On information and belief, Samsung intended that users of ‘434 Infringing Devices update their devices to one or more of the ‘434 Infringing Android Updates, and use the devices such that the ‘434 Infringing Devices execute the Wi-Fi Calling, Smart Network Switching, and video calling functionalities. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the acts of users of ‘434 Infringing Devices in updating those devices to one or more of the ‘434 Infringing Android Updates, and using the devices such that

the '434 Infringing Devices execute the Wi-Fi Calling, Smart Network Switching, and video calling functionalities, constituted infringement of the '434 Patent.

122. Samsung further contributed to and continues to contribute to infringement of the '434 Patent by, among other things, offering and providing one or more of the '434 Infringing Android Updates to users of the '434 Infringing Devices. The '434 Infringing Android Updates included code for providing the infringing functionalities referenced above, which constituted a material part of the invention claimed in the '434 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing Wi-Fi Calling and Smart Network Switching was especially made or adapted for use in an infringement of the '434 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT VI: INFRINGEMENT OF THE '653 PATENT

123. Smart Mobile incorporates paragraphs 1 through 122 herein by reference.

124. **Direct Infringement:** Samsung directly infringed the '653 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung devices, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S3, S4, S4 Mini, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, Galaxy Tab S2, S3, S4, and S5e, Tab Pro,

and Tab A devices configured for both Wi-Fi and cellular connectivity, and Gear S, S2 and S3 and Galaxy Watch, Watch Active 2 and Watch 3 devices configured for both Wi-Fi and cellular connectivity, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more updates of Android 6, 7, 8 and 9 to Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, and Galaxy Tab S, S2, S3, S4, and S5e, Tab Pro, and Tab A devices configured for both Wi-Fi and cellular connectivity, and of one or more updates of Tizen OS to Gear S, S2 and S3 and Galaxy Watch, Watch Active 2 and Watch 3 devices configured for both Wi-Fi and cellular connectivity (all such devices referenced in this paragraph, collectively, "the '653 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

125. As one non-limiting example of the claims of the ‘653 Patent infringed by certain of the ‘653 Infringing Devices, claim 1 of the ‘653 Patent recites:

1. An Internet-enabled mobile communication device comprising:

a memory;

display electronics;

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols;

wherein the device is configured for multi-band wireless communication;

wherein the device is enabled for communication using Internet Protocol (IP);

wherein the device is enabled for wireless communication on a wireless local area network;

wherein the first wireless transmit and receive component is configured to communicate using a plurality of antennas; and

wherein a transmission interface is created and wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device which utilize the plurality of wireless transmit and receive components on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components.

126. The '653 Infringing Devices were Internet enabled mobile communication devices, and included a memory, display electronics, and at least one processor.

127. The '653 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

128. The '653 Infringing Devices included at least two wireless transmit and receive components. For example, each of the '653 Infringing Devices included (i) a cellular modem, configured to communicate using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11ac protocol.

129. The '653 Infringing Devices were configured for communication using multiple cellular frequency bands, and were enabled for wireless communication on a wireless LAN using Internet Protocol via, for example, Wi-Fi.

130. Certain Samsung smartphones and tablets, including at least the Galaxy S4 Mini, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, Galaxy Amp Prime 2 and Sol 2 devices, and Galaxy Tab S2, S3, S4, and S5e, Tab Pro, and Tab A devices configured for both Wi-Fi and cellular connectivity, were configured to communicate via at least Wi-Fi using MIMO functionality. MIMO functionality involves the use by a single wireless transmit and receive component of multiple antennas.

131. Certain Samsung smartphones and tablets, including at least the Galaxy S4 Mini, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, Galaxy Amp Prime 2 and Sol 2 devices, and Galaxy Tab S2, S3, S4, and S5e, Tab Pro, and Tab A devices configured for both Wi-Fi and cellular connectivity, were configured to create a transmission interface that uses a plurality of IP enabled interfaces which utilize the wireless transmit and receive components of the devices to enable a single interface comprised of multiplexed signals from the wireless transmit and receive components, at least in connection with one or more of the use of MPTCP to support the Download Booster functionality as well as with the use of Wi-Fi Calling and Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi.

132. As another non-limiting example of the claims of the ‘653 Patent infringed by the ‘653 Infringing Devices, claim 14 of the ‘653 Patent recites:

14. An Internet-enabled mobile communication device comprising:

a memory;

a display;

at least two or more antennas;

at least one or more processors; and

a plurality of wireless transmit and receive components including a first wireless transmit and receive component and a second wireless transmit and receive component, wherein each wireless transmit receive component is configured to communicate using one or more protocols;

wherein the device is enabled for communication using Internet Protocol (IP);

wherein the device is enabled for wireless communication on a wireless local area network;

wherein the first wireless transmit and receive component is enabled to communicate using one or more antennas simultaneously; and

wherein the mobile device maintains multiple IP addresses, wherein the first wireless component is accessible on a first IP address and the second wireless transmit and receive component is accessible on a second IP address and wherein the mobile device operates using a plurality of ports.

133. The '653 Infringing Devices were Internet enabled mobile communication devices, and included a memory, a display, and at least one processor.

134. The '653 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

135. The '653 Infringing Devices included at least two wireless transmit and receive components. For example, each of the '653 Infringing Devices included (i) a cellular modem, configured to communicate using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11ac protocol.

136. The '653 Infringing Devices were enabled for wireless communication on a wireless LAN using Internet Protocol via, for example, Wi-Fi.

137. The '653 Infringing Devices were configured to communicate using at least one antenna.

138. The '653 Infringing Devices maintained multiple IP addresses, for example when connected to the Internet via the cellular network and a Wi-Fi network. The '653 Infringing Devices operated using a plurality of TCP and UDP ports.

139. As another non-limiting example of the claims of the '653 Patent infringed by the '653 Infringing Devices, claim 27 of the '653 Patent recites:

> **27**. An IP-enabled communication device comprising:
> a memory;
> one or more processors;
> display electronics;
> a plurality of wireless communication units, wherein the wireless device supports a plurality of transmit and receive frequencies and a plurality of wireless protocols;
> wherein a first wireless communication unit is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication unit is coupled to a second set of antennas and configured to transmit and receive on a second network;
> wherein the at least one wireless communication unit is configured for radio frequency communication;
> wherein the first wireless communication unit is configured to operate at a lower frequency than the second wireless communication unit such that the first wireless communication unit and second wireless communication unit operate as complementary systems;
> wherein the device is capable of voice, data, and Internet connectivity; and
> wherein the first wireless transmit and receive unit operates on a first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on a second network path at the same time and wherein a plurality of signal are multiplexed to increase throughput and enable simultaneous multi path communication.

140. The '653 Infringing Devices were IP-enabled communication devices, and include a memory, display electronics, and at least one processor.

141. The '653 Infringing Devices included at least two wireless communication units. For example, each of the '653 Infringing Devices includes (i) a cellular modem, configured to

communicate using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11ac protocol.

142. The '653 Infringing Devices were configured for communication using multiple cellular and Wi-Fi radio frequencies. The cellular transmission frequencies of the '653 Infringing Devices were typically lower than Wi-Fi transmission frequencies of the '653 Infringing Devices. The cellular and Wi-Fi communication units operated as complementary systems, and by operating in different frequency bands reduced interference with one another.

143. The '653 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

144. The '653 Infringing Devices were capable of voice, data and Internet connectivity via at least the LTE and Wi-Fi communication components referenced above.

145. At least in connection with the use of MPTCP to support the Download Booster functionality, certain Samsung smartphones and tablets, including at least Galaxy S5, S6, S6 Edge, S6 Edge+, S7, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A50 devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, and Galaxy Tab S2, S3, and S4 devices configured for both Wi-Fi and cellular connectivity, were configured to cause (i) the LTE and Wi-Fi transmit and receive units of the devices to open subflows to at least a server serving the Galaxy App Store, and (ii) the LTE and Wi-Fi transmit and receive units to operate and/or communicate to at least a server serving the Galaxy App Store at the same time, and (iii) multiple signals received from at least a server serving the Galaxy App Store to be multiplexed to increase throughput and enable simultaneous multipath communication.

146. **Indirect Infringement:** Samsung indirectly infringed at least claims 1, 14 and 27 of the ‘653 Patent, including by (i) inducing users of Samsung devices to make and use devices that infringe the ‘653 Patent, and (ii) contributing to infringement of the ‘653 Patent.

147. Samsung induced infringement of the ‘653 Patent by, among other things, (i) prompting and encouraging users of the ‘653 Infringing Devices to initiate one or more updates to or of Android 6, 7, 8 or 9 (collectively, "the ‘653 Infringing Android Updates") to ‘653 Infringing Devices; (ii) downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more of the ‘653 Infringing Android Updates to the ‘653 Infringing Devices, and (iii) prompting, encouraging and/or providing instructions to users of the '653 Infringing Devices to use the Download Booster functionality, as well as to use Wi-Fi Calling and Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi.

148. On information and belief, users of the ‘653 Infringing Devices have committed acts of direct infringement at least by (i) causing their devices to be updated to one or more of the ‘653 Infringing Android Updates, and (ii) using the ‘653 Infringing Devices to perform the infringing functionalities referenced above.

149. On information and belief, based on at least the facts alleged above, Samsung has known of the ‘653 Patent since at least in or around October 2015.

150. On information and belief, Samsung intended that users of ‘653 Infringing Devices update their devices to one or more of the ‘653 Infringing Android Updates, and use the devices to perform the infringing functionalities referenced above. On information and belief, Samsung has known that, or has acted with willful blindness to the likelihood that, the acts of users of ‘653 Infringing Devices in upgrading those devices to one or more of the ‘653 Infringing Android

Updates, and using the devices to perform the infringing functionalities referenced above, constitute infringement of the '653 Patent.

151. Samsung further contributed to infringement of the '653 Patent by, among other things, offering and providing one or more of the '653 Infringing Android Updates to users of the '653 Infringing Devices. The '653 Infringing Android Updates included code for providing the infringing functionalities referenced above, which constitute a material part of the invention claimed in the '653 Patent. On information and belief, Samsung has known that, or has acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the '653 Patent and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT VII: INFRINGEMENT OF THE '946 PATENT

152. Smart Mobile incorporates paragraphs 1 through 151 herein by reference.

153. **Direct Infringement:** Samsung has directly infringed the '946 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S4, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3v (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V and J7V (2nd) devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices and Galaxy Tab S2, S3, S4 and S5e devices running Android 6 or later versions of Android and configured for both Wi-Fi and cellular

connectivity, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more updates of, Android 6, 7, 8 and 9 to Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S4, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V, and J7V (2nd) devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, and Galaxy Tab S2, S3, S4, and S5e devices configured for both Wi-Fi and cellular connectivity (all such devices referenced in this paragraph, collectively, "the '946 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

154. As one non-limiting example of the claims of the ‘946 Patent infringed by certain of the ‘946 Infringing Devices, claim 1 of the ‘946 Patent recites:

1. An Internet-enabled mobile communication device comprising:
a memory;
at least two or more antennas;
at least one or more processors; and
a plurality of wireless transmit and receive units including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols;
wherein the device is configured for multi-band wireless communication;
wherein the device is enabled for communication using Internet Protocol (IP);
wherein the device is enabled for wireless communication on a local area network;
wherein the first wireless transmit and receive unit is configured to communicate using a plurality of antennas; and
wherein a first interface for transmission is created and wherein said first interface for transmission uses a plurality of interfaces for Internet Protocol communication on the mobile device which utilize the plurality of wireless transmit and receive units on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive units; and
and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple communication paths including at least one connection to a networked server; and wherein at least one communication path is used for wireless signals representing voice data and at least one communication path is used for wireless signals representing non-voice data.

155. The ‘946 Infringing Devices were Internet enabled mobile communication devices, and include a memory and at least one processor.

156. The ‘946 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

157. The ‘946 Infringing Devices included at least two wireless transmit and receive units. For example, each of the ‘946 Infringing Devices included (i) a cellular modem, configured to communicate using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11ac protocol.

158. The '946 Infringing Devices were configured for communication using multiple cellular frequency bands, and were enabled for wireless communication on a wireless LAN using Internet Protocol via, for example, Wi-Fi.

159. Certain Samsung smartphones and tablets, including at least the Galaxy S4 Mini, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, Galaxy Amp Prime 2 and Sol 2 devices, and Galaxy Tab S2, S3, S4, and S5e, Tab Pro, and Tab A devices configured for both Wi-Fi and cellular connectivity, were configured to communicate via at least Wi-Fi using MIMO functionality. MIMO involves the use by a single wireless transmit and receive unit of multiple antennas.

160. The '946 Infringing Devices were configured to create a transmission interface that uses a plurality of interfaces for IP communication which utilize the wireless transmit and receive units of the devices to enable a single interface comprised of multiplexed signals from the wireless transmit and receive units, at least in connection with one or more of the use of MPTCP to support the Download Booster functionality, and the use of Wi-Fi Calling, Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi and video calling functionalities.

161. At least in connection with the use of MPTCP to support the Download Booster functionality, certain Samsung smartphones and tablets, including at least Galaxy S5, S6, S6 Edge, S6 Edge+, S7, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A50 devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, and Galaxy Tab S2, S3, and S4 devices configured for both Wi-Fi and cellular connectivity, were configured

to simultaneously use multiple communication paths, including at least one connection to a networked server, at least in connection with the use of MPTCP to support the Download Booster functionality.

162. The '946 Infringing Devices were configured to use either the cellular or Wi-Fi communication path for wireless signals representing voice data, and were configured to use either the cellular or Wi-Fi communication path for wireless signals representing non-voice data.

163. As another non-limiting example of the claims of the '946 Patent infringed by the '946 Infringing Devices, claim 27 of the '946 Patent recites:

> **27**. An IP-enabled communication device comprising:
> a memory;
> one or more processors;
> a plurality of wireless communication units, wherein the device supports a plurality of transmit and receive frequencies and a plurality of wireless protocols;
> wherein a first wireless communication unit is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication unit is coupled to a second set of antennas and configured to transmit and receive on a second network;
> wherein the at least one wireless communication unit is configured for radio frequency communication;
> wherein the first wireless communication unit is configured to operate at a lower frequency than the second wireless communication unit such that the first and second wireless communication units operate as complementary systems and reduce interference with each other; and
> wherein the device is configured for voice and/or data connectivity and Internet connectivity; and
> wherein the first wireless transmit and receive unit operates on the first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on the second network path in response to a change in the signal strength and/or connectivity of the first wireless communication unit or second wireless communication unit; and wherein video or audio can be accessed simultaneously with performance optimized for each through dedicated or multiplexed paths.

164. The '946 Infringing Devices were IP-enabled communication devices, and included a memory and at least one processor.

165. The '946 Infringing Devices included at least two wireless communication units. For example, each of the '946 Infringing Devices included (i) a cellular modem, configured to communicate using at least the LTE protocol, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11ac protocol.

166. The '946 Infringing Devices were configured for communication using multiple cellular and Wi-Fi radio frequencies. The cellular transmission frequencies of the '946 Infringing Devices were typically lower than Wi-Fi transmission frequencies of the '946 Infringing Devices. The cellular and Wi-Fi communication units operated as complementary systems, and by operating in different frequency bands reduced interference with one another.

167. The '946 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi and Bluetooth signals.

168. The '946 Infringing Devices were capable of voice, data and Internet connectivity via at least the LTE and Wi-Fi communication units referenced above.

169. Certain Samsung smartphones and tablets, including at least the Galaxy S4, S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V, and J7V (2nd) devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, and Galaxy Tab S2, S3, S4, and S5e devices configured for both Wi-Fi and cellular

connectivity, were configured to operate on a first network path (such as Wi-Fi) to a remote server and to communicate to that remote server on a second network path (such as cellular) in response to a change in signal strength and/or connectivity of the Wi-Fi or cellular communication units at least in connection with the use of Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi.

170. The ‘946 Infringing Devices were configured to simultaneously access audio and video, with performance optimized for each, at least in connection with the use of a video calling functionality.

171. **Indirect Infringement:** Samsung indirectly infringed at least claims 1 and 27 of the ‘946 Patent, including by (i) inducing users of Samsung devices to make and use devices that infringe the ‘946 Patent, and (ii) contributing to infringement of the ‘946 Patent.

172. Samsung induced infringement of the ‘946 Patent by, among other things, (i) prompting and encouraging users of the ‘946 Infringing Devices to initiate one or more updates of Android 6, 7, 8 and 9 (collectively, "the ‘946 Infringing Android Updates") to ‘946 Infringing Devices; (ii) downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more of the ‘946 Infringing Android Updates to the ‘946 Infringing Devices, and (iii) prompting, encouraging and/or providing instructions to users of the '946 Infringing Devices to use the Download Booster functionality, as well as to use Wi-Fi Calling, Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi, and video calling functionalities.

173. On information and belief, users of the ‘946 Infringing Devices committed acts of direct infringement at least by (i) causing their devices to be upgraded to one or more of the ‘946 Infringing Android Updates, and (ii) using the ‘946 Infringing Devices to perform the infringing functionalities referenced above.

174. On information and belief, based on at least the facts alleged above, Samsung has known of the ‘946 Patent since at least in or around October 2015.

175. On information and belief, Samsung intended that users of ‘946 Infringing Devices upgrade their devices to one or more of the ‘946 Infringing Android Updates, and use the devices to perform the infringing functionalities referenced above. On information and belief, Samsung has known that, or has acted with willful blindness to the likelihood that, the acts of users of ‘946 Infringing Devices in upgrading those devices to one or more of the ‘946 Infringing Android Updates, and using the devices to perform the infringing functionalities referenced above, constitute infringement of the ‘946 Patent.

176. Samsung further contributed to infringement of the ‘946 Patent by, among other things, offering and providing one or more of the ‘946 Infringing Android Updates to users of the ‘946 Infringing Devices. The ‘946 Infringing Android Updates include code for providing the infringing functionalities referenced above, which constitute a material part of the invention claimed in the ‘946 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the ‘946 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT VIII: INFRINGEMENT OF THE '119 PATENT

177. Smart Mobile incorporates paragraphs 1 through 176 herein by reference.

178. **Direct Infringement:** Samsung directly infringed at least claim 20 of the '119 Patent by (a) selling and offering to sell within the United States, and importing into the United States, systems comprising Galaxy J1 (2015), Galaxy J3 Sky, Galaxy J3V, Galaxy Note 4, Galaxy Note 5, Galaxy Note Edge, Galaxy S3, Galaxy S4, Galaxy S4 Mini, Galaxy S5, Galaxy S5 Active, Galaxy S5 Mini, Galaxy S5 Sport, Galaxy S6, Galaxy S6 Active, Galaxy S6 Edge, Galaxy S6

Edge+, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy Tab A 8.0, Galaxy Tab A 10.1, Galaxy Tab S 8.4, Galaxy Tab S 10.5, Galaxy Tab S2 8, Galaxy Tab S2 9.7, Galaxy Amp 2, Galaxy Amp Prime, Galaxy Core Prime, Galaxy E5, Galaxy Express 3, Galaxy Express Prime, Galaxy Grand Prime, Galaxy On5, or Galaxy Stardust devices; and (b) making, within the United States, infringing systems by downloading and installing, causing the download and installation of, or enabling or facilitating the download and installation of, one or more updates of Android operating system, including Android 6, to the foregoing devices located within the United States from a server owned and/or operated by or at the direction of Samsung (all such devices referenced in this paragraph, collectively, "the '119 Infringing Devices").

179. As one non-limiting example of the claims of the '119 Patent infringed by systems comprising the '119 Infringing Devices, claim 20 of the '119 Patent recites:

> **20**. A mobile device communication system, comprising:
> a mobile device which supports voice and data communications, wherein the mobile device is configured for voice calls using a first wireless network; and
> at least one memory, wherein a processor is communicatively coupled with the at least one memory,
> wherein the at least one memory stores functional instructions including instructions for use in providing a plurality of functions to the mobile device, wherein the mobile device is configured for switching between one or more networks including at least the first wireless network, the first wireless network operating using a FCC approved public or carrier frequency, and wherein the mobile device is configured to transmit and receive voice on the first wireless network, wherein the first wireless network is an Internet Protocol (IP) data network, and
> wherein the at least one memory further stores a plurality of communication protocols, that facilitate communication between a server and the mobile device, wherein the server is configured to connect to an Internet network or a carrier network, and wherein the server enables conversion of the mobile device from a first function to a second function by providing a plurality of functions to the mobile device and wherein the mobile device is configured to communicate using Internet protocol.

180. The '119 Infringing Devices were mobile devices which supported voice and data communications.

181. The '119 Infringing Devices were configured for voice calls using a first wireless network, such as, for example, an LTE network. For example, a user could use a '119 Infringing Device to make a voice call over the LTE network.

182. The '119 Infringing Devices each had a memory and a processor that were communicatively coupled with one another.

183. The memory of the '119 Infringing Devices stored functional instructions including instructions for use in providing a plurality of functions to the device. For example, the memory of the '119 Infringing Devices stored a plurality of applications, each providing one or more functions to the device.

184. The '119 Infringing Devices were configured for switching between one or more networks including at least the LTE network, which was an Internet Protocol (IP) data network that operated using one or more FCC-approved frequencies. For example, the '119 Infringing Devices could switch between the LTE network and a Wi-Fi network at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

185. The '119 Infringing Devices were configured to transmit and receive voice on the LTE network. For example, a user could use a '119 Infringing Device to make a voice call over the LTE network, thereby transmitting and receiving voice on the LTE network.

186. The memory of the '119 Infringing Devices further stored a plurality of communication protocols that facilitated communication between a Samsung server and the device. For example, the memory of the '119 Infringing Devices stored protocols for LTE and Wi-Fi (at least IEEE 802.11ac), each of which facilitated communication between Samsung's

server and the device. On information and belief, the '119 Infringing Devices came with a "Galaxy Store" application, with an associated icon, preloaded. Upon a user's selection of the Galaxy Store icon, the '119 Infringing Devices communicated with Samsung's server.

187. Upon information and belief, Samsung's server was configured to connect to an Internet network or a carrier network. For example, users of '119 Infringing Devices could connect to Samsung's Galaxy Store over the Internet using the Galaxy Store application on the devices.

188. Samsung's server enabled conversion of the '119 Infringing Devices from a first function to a second function by providing a plurality of functions to the devices. For example, numerous applications were available on Samsung's Galaxy Store for download to '119 Infringing Devices. Each application downloaded to a '119 Infringing Device provided a function to the device, and the device could switch from one application to a second application.

189. The '119 Infringing Devices were configured to communicate using Internet protocol. For example, the '119 Infringing Devices came with a Samsung Internet and/or another internet browser, which enabled the device to send and receive data over the Internet using Internet protocol.

190. **Indirect Infringement:** Samsung indirectly infringed at least claim 20 of the '119 Patent, including by (i) inducing users of Samsung devices to use systems that infringe the '119 Patent, and (ii) contributing to infringement of the '119 Patent.

191. Samsung induces infringement of the '119 Patent by, among other things, (i) prompting and encouraging users of the '119 Infringing Devices upgrade the operating system of the devices to Android 6 (collectively, "the '119 Infringing Android Updates"); (ii) enabling or facilitating the download and installation of the '119 Infringing Android Updates to the '119

Infringing Devices, and (iii) encouraging users of the '119 Infringing Devices to use the claimed system by, among other things, providing the "Galaxy Store" application preloaded on the devices.

192. On information and belief, users of the '119 Infringing Devices committed acts of direct infringement at least by (i) causing their devices to be upgraded to the '119 Infringing Android Updates, thereby making '119 Infringing Devices, and (ii) using the '119 Infringing Devices at least to connect to Samsung's server to download software applications available on the "Galaxy Store" to the device.

193. On information and belief, based on at least the facts alleged above, Samsung knew of the '119 Patent since at least in or around October 2015.

194. On information and belief, Samsung intended that users of '119 Infringing Devices use systems comprising a '119 Infringing Device by using the devices to communicate with Samsung's server to download applications to their devices. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, users' use of such systems comprising '119 Infringing Devices constituted infringement of the '119 Patent.

195. Samsung contributed to the infringement of the '119 Patent by offering to sell and selling within the United States, and/or importing into the United States, '119 Infringing Devices, each including the infringing structure and functionality identified above and each a component of the patented system of claim 20 of the '119 Patent that constituted a material part of the invention. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, the '119 Infringing Devices were especially made or especially adapted for use in an infringement of the '119 Patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT IX: INFRINGEMENT OF THE ‘291 PATENT

196. Smart Mobile incorporates paragraphs 1 through 195 herein by reference.

197. **Direct Infringement:** Samsung has directly infringed the '291 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S4 Mini, S5, S5 Active, S5 Sport, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp Prime 2, Amp Prime 3, Core Prime, E5, Express Prime 2, Grand Prime, Sol 2, and Sol 3 devices, and Galaxy Tab S2, S3, S4, and S5e, and Tab A devices configured for both Wi-Fi and cellular connectivity, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more updates of, Android 6, 7, 8 and 9 to Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S4 Mini, S5, S5 Active, S5 Sport, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 8, 9 and Edge devices, Galaxy A6 and A50 devices, Galaxy J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp Prime 2, Amp Prime 3, Core Prime, E5, Express Prime 2, Grand Prime, Sol 2, and Sol 3 devices, and Galaxy Tab S2, S3, S4, and S5e, and Tab A devices configured for both Wi-Fi and cellular connectivity (all such devices referenced in this

paragraph, collectively, "the '291 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

198. As one non-limiting example of the claims of the '291 Patent infringed by certain of the '291 Infringing Devices, claim 5 of the '291 Patent recites:

> **5**. A communication system including one or more communication modules and processors for use in a portable handheld mobile device with a plurality of antennas, said communication system implemented as a system on a chip, said system comprising:
>
> at least one processor;
>
> a memory;
>
> a radio frequency (RF) transmit and receive unit, wherein the radio frequency unit is configured for radio frequency transmit and receive of a plurality of signal streams including a first signal stream and a second signal stream;
>
> wherein the system supports communication and processing of signals using a plurality of frequency bands and wherein the plurality of signal streams is processed for a specific frequency band;
>
> the system configured to transmit the first signal stream by simultaneously transmitting the first signal stream using, the plurality of antennas, the first signal stream collectively generated from a first data stream;
>
> the system configured to generate a second data stream by receiving the second signal stream simultaneously using the plurality of antennas and generating the second data stream from the second signal stream; and
>
> a second communication component which is configured to operate on a plurality of frequencies and protocols, and wherein the system supports video processing, wireless wide area network communication and local area network communication, and USB communication.

199. The '291 Infringing Devices were communication systems, and included a memory and at least one processor for use in a portable handheld mobile device with at least two antennas.

200. The '291 Infringing Devices included a System on a Chip (SoC) that included at least a multi-core main processor, a graphics processing unit, a cellular modem, a Wi-Fi/Bluetooth module and associated components.

201. The SoCs of the '291 Infringing Devices included at least two transmit and receive units, each of which included a wireless transmitter and receiver. For example, the SoCs of each of the '291 Infringing Devices included (i) a cellular modem, configured to communicate using at

least the LTE and other cellular protocols, and (ii) a Wi-Fi/Bluetooth module, configured to communicate using at least the IEEE 802.11 and Bluetooth protocols.

202. The LTE and/or Wi-Fi transmit and receive units of the '291 Infringing Devices were configured to generate signal streams from data streams and transmit them simultaneously using the plurality of antennas using MIMO functionality, and to receive signal streams simultaneously using the plurality of antennas using MIMO functionality and to generate data streams from such signal streams.

203. The cellular and Wi-Fi/Bluetooth components of the SoCs of the '291 Infringing Devices were configured for communication using multiple frequency bands, and were configured to process multiple signal streams for a specific frequency band.

204. The SoCs of the '291 Infringing Devices supported video processing, cellular communication, Wi-Fi and Bluetooth communication, and USB communication.

205. **Indirect Infringement:** Samsung indirectly infringed at least claim 5 of the '291 Patent, including by (i) inducing users of Samsung devices to make and use devices that infringe the '291 Patent, and (ii) contributing to infringement of the '291 Patent.

206. Samsung induced infringement of the '291 Patent by, among other things, (i) prompting and encouraging users of the '291 Infringing Devices to initiate one or more updates of Android 6, 7, 8 and 9 (collectively, "the '291 Infringing Android Updates") to '291 Infringing Devices; (ii) downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more of the '291 Infringing Android Updates to the '291 Infringing Devices, and (iii) prompting, encouraging and/or providing instructions to users of the '291 Infringing Devices to use the devices to make and receive cellular communications and to make and receive communications via Wi-Fi and Bluetooth.

207. On information and belief, users of the '291 Infringing Devices committed acts of direct infringement at least by (i) causing their devices to be upgraded to one or more of the '291 Infringing Android Updates, and (ii) using the '291 Infringing Devices to perform the infringing functionalities referenced above.

208. On information and belief, based on at least the facts alleged above, Samsung has known of the '291 Patent since at least in or around October 2015.

209. On information and belief, Samsung intended that users of '291 Infringing Devices upgrade their devices to one or more of the '291 Infringing Android Updates, and use the devices to perform the infringing functionalities referenced above. On information and belief, Samsung has known that, or has acted with willful blindness to the likelihood that, the acts of users of '291 Infringing Devices in upgrading those devices to one or more of the '291 Infringing Android Updates, and using the devices to perform the infringing functionalities referenced above, constitute infringement of the '291 Patent.

210. Samsung further contributed to infringement of the '291 Patent by, among other things, offering and providing one or more of the '291 Infringing Android Updates to users of the '291 Infringing Devices. The '291 Infringing Android Updates include code for providing the infringing functionalities referenced above, which constitute a material part of the invention claimed in the '291 Patent. On information and belief, Samsung knew that, or acted with willful blindness to the likelihood that, code for providing the infringing functionalities referenced above was especially made or adapted for use in an infringement of the '291 Patent and was not a staple article or commodity of commerce suitable for substantial noninfringing use.

COUNT X: INFRINGEMENT OF THE '083 PATENT

211. Smart Mobile incorporates paragraphs 1 through 210 herein by reference.

212. **Direct Infringement:** Samsung directly infringed the '083 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+, S10e, S20, S20+, and S20 Ultra devices, Galaxy Note 4, 5, 7, 8, 9, 10, 10+, 10 Lite, and Edge devices, Galaxy A6, A10, A20, A50, A01, A11, A21, A50, A51, A51 5G, A71, A71 5G devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, Galaxy Fold and Z Flip devices, Galaxy Amp Prime 2 and Sol devices, and Galaxy Tab S2, S3, S4, S5e, S6, S6 Lite, and Tab A devices configured for both Wi-Fi and cellular connectivity, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or more updates of, Android 6, 7, 8 9, and 10 to Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including at least Galaxy S5, S5 Active, S5 Mini, S5 Sport, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+, S10e, S20, S20+, and S20 Ultra devices, Galaxy Note 4, 5, 7, 8, 9, 10, 10+, 10 Lite, and Edge devices, Galaxy A6, A10, A20, A50, A01, A11, A21, A50, A51, A51 5G, A71, A71 5G devices, Galaxy J2, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Prime, J7, J7 Halo, J7 Perx, J7 Prime, and J7V (2nd) devices, Galaxy Fold and Z Flip devices, Galaxy Amp Prime 2 and Sol devices, and Galaxy Tab S2, S3, S4, S5e, S6, S6 Lite, and Tab A devices configured for both Wi-Fi and cellular connectivity (all such devices referenced in this paragraph, collectively, "the '083 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

213. As one non-limiting example of the claims of the ‘083 Patent infringed by the ‘083 Infringing Devices, claim 12 of the ‘083 Patent recites:

> **12**. A portable wireless device communication system including at least one processor in communication with a radio frequency (RF) module and a plurality of antennas, the communication system comprising:
>
> a communication unit coupled to the plurality of antennas, a transmitter, and a receiver, the communication unit configured to transmit a first data stream by simultaneously transmitting a first signal stream using the plurality of antennas, the communication unit configured to receive a second stream simultaneously using the plurality of antennas;
>
> wherein each signal is processed for a specific frequency band of the signal;
>
> wherein the system is enabled to process at least two signal streams separately;
>
> wherein the system is enabled for multiband communication;
>
> wherein the system is configured to process the plurality of signal streams and/or a plurality of data streams in parallel via multiple channels and wherein the system is enabled to process a plurality of streams parallel; and
>
> wherein the system is enabled for multiplex communication of wireless signals using one or more channels and the plurality of antennas.

214. The ‘083 Infringing Devices were portable wireless communication systems.

215. The ‘083 Infringing Devices included at least one processor in communication with an RF module and a plurality of antennas, such as at least one antenna for transmission and reception of cellular signals and at least two antennas for transmission and reception of Wi-Fi signals.

216. The ‘083 Infringing Devices included at least a Wi-Fi module that was configured to transmit and receive signal streams using MIMO functionality. MIMO involves the simultaneous use by a single communication unit of multiple antennas.

217. The ‘083 Infringing Devices were enabled for multiband communication, and each signal transmitted or received by the ‘083 Infringing Devices was processed for a specific frequency band, and were enabled to process at least the cellular and Wi-Fi signal streams separately.

218. The '083 Infringing Devices were configured to process multiple signal streams and/or data streams in parallel via multiple channels.

219. The '083 Infringing Devices were enabled for multiplex wireless communication using one or more channels. For example, the '083 Infringing Devices were enabled to multiplex signals at least in connection with one or more of the use of MPTCP to support the Download Booster functionality, as well as with the use of Wi-Fi Calling and Smart Network Switching/Adaptive Wi-Fi/Intelligent Wi-Fi.

COUNT XI: INFRINGEMENT OF THE '943 PATENT

220. Smart Mobile incorporates paragraphs 1 through 219 herein by reference.

221. **Direct Infringement:** Samsung directly infringed the '943 Patent by (i) using, selling, or offering for sale within the United States, and/or importing into the United States, Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including Galaxy S3, S4, S5, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9, and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, and Galaxy Tab S2, S3, S4, and S5e, and Tab A devices configured for both Wi-Fi and cellular connectivity, and Gear S, S2 and S3 and Galaxy Watch, Watch Active 2 and Watch 3 devices configured for both Wi-Fi and cellular connectivity, and (ii) making, within the United States, infringing Samsung devices by downloading and installing, causing the download and installation of or enabling or facilitating the download and installation of one or

more updates of, Android 7, 8 and 9 to Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including Galaxy S3, S4, S5, S6, S6 Active, S6 Edge, S6 Edge+, S7, S7 Active, S7 Edge, S8, S8 Active, S8+, S9, S9+, S10, S10 5G, S10+ and S10e devices, Galaxy Note 4, 5, 7, 8, 9, and Edge devices, Galaxy A6 and A50 devices, Galaxy J1, J2, J2 Dash, J2 Pure, J3, J3 Achieve, J3 Aura, J3 Eclipse, J3 Emerge, J3 Luna Pro, J3 Mission, J3 Orbit, J3 Prime, J3 Sky, J3 Star, J3 Top, J3V, J3V (3rd), J7, J7 Aura, J7 Crown, J7 Halo, J7 Perx, J7 Prime, J7 Refine, J7 Star, J7V (2nd), and J7V devices, Galaxy Amp 2, Amp Prime, Amp Prime 2, Amp Prime 3, Core Prime, E5, Express 3, Express Prime, Express Prime 2, Express Prime 3, Grand Prime, On5, Sol 2, Sol 3, and Stardust devices, and Galaxy Tab S2, S3, S4, and S5e, and Tab A devices configured for both Wi-Fi and cellular connectivity, and of one or more updates of Tizen OS to Gear S, S2 and S3 and Galaxy Watch, Watch Active 2 and Watch 3 devices configured for both Wi-Fi and cellular connectivity (all such devices referenced in this paragraph, collectively, "the '943 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

222. As one non-limiting example of the claims of the ‘943 Patent infringed by the ‘943 Infringing Devices, claim 1 of the ‘943 Patent recites:

> 1. A wireless communication device comprising:
> a plurality of antennas; and
> a communication component coupled to the plurality of antennas, the communication component including a processor, a transmitter, and a receiver,
> wherein the communication component is configured to communicate via a first frequency band using a wireless communication protocol; and
> wherein one or more subtasks are assigned to one or more channels, and the one or more channels are sampled and clocked individually; and
> wherein the processor comprises multiple ones of the one or more channels and is further configured to process a first data stream and a second data stream in parallel.

223. The ‘943 Infringing Devices were wireless communication devices.

224. The ‘943 Infringing Devices included at least one antenna for transmission and reception of cellular signals, and at least one separate antenna for transmission and reception of Wi-Fi signals.

225. The ‘943 Infringing Devices included at least one communication component. For example, each of the ‘943 Infringing Devices included (i) a cellular modem, configured to communicate using at least the LTE protocol and cellular frequency bands, and (ii) a Wi-Fi module, configured to communicate using at least the IEEE 802.11ac protocol and Wi-Fi frequency channels.

226. The ‘943 Infringing Devices were configured to assign subtasks (for example, the processing of a signal stream to generate a data stream, or of a data stream to generate a signal stream) to one or more channels (for example, channels for processing of cellular and Wi-Fi streams). On information and belief, the channels for processing of cellular and Wi-Fi streams were sampled and clocked independent of one another.

227. The ‘943 Infringing Devices included multiple processors, including a multi-core main processor, which was, on information and belief, configured to process first and second data streams in parallel.

COUNT XII: INFRINGEMENT OF THE '168 PATENT

228. Smart Mobile incorporates paragraphs 1 through 227 herein by reference.

229. **Direct Infringement:** Samsung has directly infringed and continues to directly infringe at least claim 4 of the '168 Patent by (i) selling and offering for sale within the United States, and importing into the United States, Samsung smartphones and tablets, including Galaxy devices, incorporating the features and functionality set forth below, including Galaxy A01, Galaxy A02s, Galaxy A6, Galaxy A10e, Galaxy A11, Galaxy A12, Galaxy A20, Galaxy A21,

Galaxy A32 5G, Galaxy A42 5G, Galaxy A50, Galaxy A51, Galaxy A51 5G, Galaxy A51 5G UW, Galaxy A52 5G, Galaxy A71 5G, Galaxy A71 5G UW, Galaxy J1 (2015), Galaxy J2 Dash, Galaxy J2 Pure, Galaxy J3, Galaxy J3 Achieve, Galaxy J3 Aura, Galaxy J3 Eclipse, Galaxy J3 Emerge, Galaxy J3 Luna Pro, Galaxy J3 Mission, Galaxy J3 Orbit, Galaxy J3 Prime, Galaxy J3 Sky, Galaxy J3 Star, Galaxy J3 Top, Galaxy J3V, Galaxy J3V 3rd, Galaxy J7, Galaxy J7 Aura, Galaxy J7 Crown, Galaxy J7 Halo, Galaxy J7 Perx, Galaxy J7 Prime, Galaxy J7 Refine, Galaxy J7 Star, Galaxy J7 V 2nd, Galaxy J7V, Galaxy Note 5, Galaxy Note 7, Galaxy Note 8, Galaxy Note9, Galaxy Note10, Galaxy Note10+, Galaxy Note10+ 5G, Galaxy Note20 5G, Galaxy Note20 Ultra 5G, Galaxy S5, Galaxy S6, Galaxy S6 Active, Galaxy S6 Edge, Galaxy S7, Galaxy S7 Active, Galaxy S7 Edge, Galaxy S8, Galaxy S8 Active, Galaxy S8+, Galaxy S9, Galaxy S9+, Galaxy S10, Galaxy S10+, Galaxy S10 Lite, Galaxy S10 5G, Galaxy S10e, Galaxy S20, Galaxy S20+, Galaxy S20 5G, Galaxy S20+ 5G, Galaxy S20 5G UW, Galaxy S20 Ultra 5G, Galaxy S20 FE 5G, Galaxy S21 5G, Galaxy S21+ 5G, Galaxy S21 Ultra 5G, Galaxy Tab A 8.0, Galaxy Tab A 8.4, Galaxy Tab A 10.1, Galaxy Tab A7, Galaxy Tab S3, Galaxy Tab S4, Galaxy Tab S5e, Galaxy Tab S6, Galaxy Tab S6 Lite, Galaxy Tab S7, Galaxy Tab S7+, Galaxy Fold, Galaxy Fold2 5G, Galaxy Z Flip, Galaxy Z Flip 5G, Galaxy Amp 2, Galaxy Amp Prime, Galaxy Amp Prime 2, Galaxy Amp Prime 3, Galaxy Core Prime, Galaxy Express 3, Galaxy Express Prime, Galaxy Express Prime 2, Galaxy Express Prime 3, Galaxy Grand Prime, Galaxy On5, Galaxy Sol 2, and Galaxy Sol 3 devices, and (ii) making, within the United States, infringing devices by downloading and installing, causing the download and installation of, or enabling or facilitating the download and installation of, one or more updates of Android operating system, including Android 8, 9, 10, and 11, and subsequent versions of Android, to Galaxy A6, Galaxy A10e, Galaxy A11, Galaxy A12, Galaxy A20, Galaxy A21, Galaxy A32 5G, Galaxy A42 5G, Galaxy A50, Galaxy A51, Galaxy

A51 5G, Galaxy A51 5G UW, Galaxy A52 5G, Galaxy A71 5G, Galaxy A71 5G UW, Galaxy J2 Dash, Galaxy J2 Pure, Galaxy J3 (2018), Galaxy J3 Achieve, Galaxy J3 Aura, Galaxy J3 Orbit, Galaxy J3 Star, Galaxy J3 Top, Galaxy J3V, Galaxy J3V 3rd, Galaxy J7 (2018), Galaxy J7 Crown, Galaxy J7 Halo, Galaxy J7 Perx, Galaxy J7 Prime, Galaxy J7 Refine, Galaxy J7 Star, Galaxy J7 V 2nd, Galaxy J7V, Galaxy Note 8, Galaxy Note 9, Galaxy Note 10, Galaxy Note 10+, Galaxy Note 10+ 5G, Galaxy Note 20 5G, Galaxy Note 20 Ultra 5G, Galaxy S6, Galaxy S7, Galaxy S7 Edge, Galaxy S8, Galaxy S8 Active, Galaxy S8+, Galaxy S9, Galaxy S9+, Galaxy S10, Galaxy S10+, Galaxy S10 Lite, Galaxy S10 5G, Galaxy S10e, Galaxy S20, Galaxy S20+, Galaxy S20 5G, Galaxy S20+ 5G, Galaxy S20 5G UW, Galaxy S20 Ultra 5G, Galaxy S20 FE 5G, Galaxy S21 5G, Galaxy S21+ 5G, Galaxy S21 Ultra 5G, Galaxy Tab A 8.0, Galaxy Tab A 8.4, Galaxy Tab A 10.1, Galaxy Tab A7, Galaxy Tab S3, Galaxy Tab S4, Galaxy Tab S5e, Galaxy Tab S6, Galaxy Tab S6 Lite, Galaxy Tab S7, Galaxy Tab S7+, Galaxy Fold, Galaxy Fold2 5G, Galaxy Z Flip, Galaxy Z Flip 5G, Galaxy Amp Prime 3, Galaxy Express Prime 2, Galaxy Express Prime 3, and Galaxy Sol 3 devices (all such devices referenced in this paragraph, collectively, "the '168 Infringing Devices"), from a server owned and/or operated by or at the direction of Samsung.

230. As one non-limiting example of the claims of the '168 Patent infringed by the '168 Infringing Devices, claim 4 of the '168 Patent recites:

> **4**. A wireless electronic device or mobile device, the device comprising:
> a processor;
> a memory;
> a unit for wireless communication;
> wherein the device is capable of voice and data communication,
> wherein the device connects to a server,
> wherein the device includes one or more functions of a cellular telephone, PDA, handheld computer, or multifunction communication device, or combinations thereof,
> wherein the software is associated with a user and the device stored in a profile,
> wherein the server is configured to store software for a plurality of wireless devices and for a plurality of applications for the plurality of wireless devices,
> and wherein the device is enabled to communicate on a plurality of frequencies;
> wherein the device is enabled for voice and data communication;
> and wherein the device is enabled for voice communication using cellular and wherein the device is enabled for wireless voice communication using a local area network;
> wherein the device dynamically software reconfigurable for the various environments;
> wherein the device is enabled to be tuned to transmit and/or receive frequencies including one or more primary values and subsidiary values;
> wherein the device dynamically changes its frequency for communication;
> wherein the device uses a power level for an operating environment;
> and wherein both power output and channel bandwidth as are dynamically changed in real time.

231. The '168 Infringing Devices were and are wireless electronic devices or mobile devices, each with a processor, a memory, and a unit for wireless communication.

232. The '168 Infringing Devices were and are capable of voice and data communication, including over cellular and Wi-Fi.

233. The '168 Infringing Devices could and can connect to a server, including, for example, a Samsung server in order to obtain applications and operating system updates.

234. The '168 Infringing Devices came and come with various applications that enabled and enable the devices to function as a cellular telephone, a PDA, a handheld computer, multifunction communication device, or combinations thereof.

235. Samsung's server was and is configured to store software for a plurality of '168 Infringing Devices and for a plurality of applications for the plurality of '168 Infringing Devices. At least some of that software was and is associated with a user and the user's '168 Infringing Device stored in a profile. For example, Samsung's server stored and stores a "Samsung account" associated with users of '168 Infringing Devices and stored and stores Android updates and software applications that were and are associated with users of '168 Infringing Devices and with the devices.

236. The '168 Infringing Devices were and are enabled to communicate on a plurality of frequencies, including cellular frequencies and Wi-Fi frequencies.

237. The '168 Infringing Devices were and are enabled for voice and data communication, including for voice communication using cellular and wireless voice communication using Wi-Fi. For example, the '168 Infringing Devices could and can initiate or receive phone calls using Wi-Fi Calling using cellular and Wi-Fi.

238. The '168 Infringing Devices were and are dynamically software reconfigurable for various environments in which the devices operate. For example, the '168 Infringing Devices could switch between the LTE network and a Wi-Fi network at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

239. The '168 Infringing Devices were and are enabled to be tuned to transmit and/or receive frequencies including one or more primary values and subsidiary values. For example, the '168 Infringing Devices are enabled to be tuned to transmit and receive multiple frequency ranges and bands for each of LTE and Wi-Fi. The frequencies that the '168 Infringing Devices are enabled to be tuned to transmit and receive include one or more primary values (for example, one or more frequencies in the Wi-Fi range) and subsidiary or secondary values (for example, one or more frequencies in the LTE range) at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

240. The '168 Infringing Devices were and are capable of dynamically changing their frequency for communication. Given that Wi-Fi and cellular operate on different frequencies, the '168 Infringing Devices dynamically change their frequency for communication when they switch between Wi-Fi and cellular at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi.

241. The '168 Infringing Devices used and use a power level for an operating environment. For example, the '168 Infringing Devices – which may communicate voice and/or data over various networks (including but not limited to cellular and Wi-Fi) using various wireless protocols (including LTE and Wi-Fi (802.11 a/b/g/n/ac or ax)) – use a power level for cellular when operating on a cellular network and a power level for Wi-Fi when operating on a Wi-Fi network.

242. The '168 Infringing Devices could and can dynamically change in real time both power output and channel bandwidth. For example, when the '168 Infringing Devices are communicating over LTE, power output varies dynamically depending upon the distance between the device and the base station or cell tower, and channel bandwidth can dynamically change in

real time as the device is handed off from one LTE base station to another. As another example, when the '168 Infringing Devices are communicating over Wi-Fi, both power output and channel bandwidth can change dynamically as provided in, for example, the IEEE 802.11-2016 specification. In addition, as alleged above, the '168 Infringing Devices are configured to dynamically switch the communication pathway between cellular and Wi-Fi at least in connection with use of Wi-Fi Calling and/or Smart Network Switching, Adaptive Wi-Fi, and/or Intelligent Wi-Fi, thereby changing channel bandwidth and power output based on a variety of parameters that are evaluated in real time.

243. **Indirect Infringement:** At least as early as upon notice of Smart Mobile's complaint, Samsung indirectly infringes at least claim 4 of the '168 Patent, including by (i) inducing users to use and make '168 Infringing Devices, and (ii) contributing to infringement of the '168 Patent.

244. Samsung induces infringement of the '168 Patent by, among other things, (i) prompting and encouraging users of the '168 Infringing Devices to upgrade to the latest Android operating system, including Android 8, 9, 10, and 11, and versions of Android subsequent to Android 11 (collectively, "the '168 Infringing Android Updates"); (ii) enabling or facilitating the download and installation of one or more of the '168 Infringing Android Updates to the '168 Infringing Devices, and (iii) encouraging users of the '168 Infringing Devices to use the device.

245. On information and belief, users of the '168 Infringing Devices committed and continue to commit acts of direct infringement at least by (i) causing their devices to be upgraded to one or more of the '168 Infringing Android Updates, thereby making '168 Infringing Devices, and (ii) using the '168 Infringing Devices, for example, to connect to Samsung's server to create a

Samsung account for use with a user's '168 Infringing Device and to download Android updates and software applications to the device.

246. At least as early as upon receiving Smart Mobile's complaint, Samsung has known of the '168 Patent.

247. On information and belief, Samsung intends that users of '168 Infringing Devices (a) make those devices, including at least by causing their devices to be upgraded to one or more of the '168 Infringing Android Updates; and (b) using the '168 Infringing Devices, including, for example, to connect to Samsung's server to create a Samsung account for use with a user's '168 Infringing Device and to download Android updates and software applications to the device. On information and belief, Samsung knows that, or acts with willful blindness to the likelihood that, users' making and using of '168 Infringing Devices constitutes infringement of the '168 Patent.

248. Samsung contributes to infringement of the '168 Patent by, among other things, offering and providing one or more of the '168 Infringing Android Updates to users of the '168 Infringing Devices. The '168 Infringing Android Updates include code for providing functionalities referenced above, which constitute a material part of the invention claimed in the '168 Patent. On information and belief, Samsung knows that, or acts with willful blindness to the likelihood that, the '168 Infringing Android Updates are especially made or adapted for use in an infringement of the '168 Patent and are not a staple article or commodity of commerce suitable for substantial noninfringing use.

249. Samsung has never been, and is not now, licensed under any of the Patents in Suit, and has never been authorized by any owner of the Patents in Suit to engage in the acts alleged herein.

250. The Patents in Suit are not invalid and are enforceable.

251. Neither Smart Mobile nor any predecessor in interest, nor any of their licensees, has made, sold or offered to sell within the United States any article covered by any of the Patents in Suit.

252. Smart Mobile has sustained significant damages as a direct and proximate result of Samsung's infringement of the Patents in Suit.

DEMAND FOR JURY TRIAL

253. Smart Mobile demands a trial by jury of all issues triable of right before a jury.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Smart Mobile respectfully requests that the Court enter judgment as follows:

A. That Samsung has infringed the Patents in Suit, and continues to infringe the '168 Patent;

B. Awarding Smart Mobile damages adequate to compensate it for Samsung's infringement of the Patents in Suit, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the inventions claimed by them;

C. Awarding a preliminary and permanent injunction restraining and enjoining Samsung, and its officers, agents, servants, employees, attorneys, and any persons in active concert or participation with them who receive actual notice of the order by personal service or otherwise, from any further manufacture, use, sales, offers to sell, or importations of any and all of the products and services identified above as infringing the '168 Patent;

D. Enhancement of damages to the maximum extent permitted by law;

E. Finding this case exceptional and awarding Smart Mobile its reasonable attorneys' fees and non-taxable costs incurred in prosecuting its claims;

F. Awarding Smart Mobile pre-judgment and post-judgment interest at the maximum rate permitted by law;

G. Awarding Smart Mobile its taxable costs;

H. Such further and additional relief as the Court determines to be just and proper.

DATED: July 2, 2021

Respectfully submitted,

By */s/ Craig D. Cherry*

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