UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ACQIS LLC, a Texas limited liability company, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., a Korean business entity, and SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation. Defendants.	Civil Action No. 2:20-cv-00295 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff ACQIS LLC ("Plaintiff" or "ACQIS"), by its attorneys, hereby alleges patent infringement against Defendants Samsung Electronics Co., Ltd. ("SEC") and its U.S. subsidiary and related entity, Samsung Electronics America, Inc. ("SEA") (individually or collectively "Defendants" or "Samsung"), as follows:

INTRODUCTION

1. This is an action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.* ACQIS alleges that Samsung has infringed and/or continues to infringe, directly and/or indirectly, five ACQIS patents: U.S. Patent Nos. 9,529,768 ("'768 patent"), 9,703,750 ("'750 patent"), 8,977,797 ("'797 patent"),

RE44,654 ("'654 patent"), and RE45,140 ("'140 patent") (collectively, the "ACQIS Patents"), copies of which are attached hereto as Exhibits 1-5, respectively.

2. The ACQIS Patents cover foundational computing technologies that utilize low voltage differential signaling (LVDS) as a physical transmission medium for PCI Express (PCIe) and/or USB 3.x[1] transactions, to facilitate fast, serial data transfer while reducing power consumption and susceptibility to noise, as compared to prior art systems.

3. Samsung has infringed and/or continues to infringe the ACQIS Patents, directly and indirectly, by: (1) making, using, selling, offering for sale, and/or importing into the United States, consumer electronics products that include infringing PCIe and/or USB 3.x functionality; (2) practicing the claimed methods of the ACQIS Patents in the United States by manufacturing and/or testing Samsung consumer electronics products that include the claimed PCIe and/or USB 3.x functionality; (3) importing into the United States consumer electronics products made abroad using ACQIS's patented processes; and (4) inducing third parties to use, sell, offer for sale, and/or import into the United States, Samsung consumer electronics products that include infringing PCIe and/or USB 3.x functionality, with knowledge of the ACQIS Patents and of the third parties' infringement resulting therefrom.

4. ACQIS seeks damages and other relief for Samsung's infringement of the ACQIS Patents.

[1] As used herein, "USB 3.x" refers to USB 3.0 and subsequent versions, including USB 3.1, USB 3.2, and any other subsequent versions.

THE PARTIES

5. Plaintiff ACQIS LLC, is a limited liability company organized and existing under the laws of the State of Texas, with offices at 411 Interchange Street, McKinney, Texas 75071. A related entity, ACQIS Technology, Inc., is a corporation organized under the laws of the State of Delaware, having its principal place of business at 1503 Grant Road, Suite 100, Mountain View, California 94040. ACQIS LLC is operated from California, where its President, Dr. William Chu, resides. Dr. Chu is also the Chief Executive Officer of ACQIS Technology, Inc.

6. Defendant SEC is a corporation organized and existing under the laws of the Republic of Korea that lists its global headquarters as 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea.

7. Defendant SEA is a corporation organized and existing under the laws of the State of New York, with corporate offices in the Eastern District of Texas at 6625 Excellence Way, Plano, Texas 75023. Defendant SEA may be served with process through its registered agent C T Corporation System, 1999 Bryan St., Suite 900, Dallas, Texas 75201-3136.

8. Defendant SEA is a wholly-owned subsidiary of SEC.

9. Defendants have authorized sellers and sales representatives that offer and sell products pertinent to this Complaint throughout the State of Texas, including in this District and to consumers throughout this District, such as: Best Buy, 422 W TX-281 Loop, Suite 100, Longview, Texas 75605; AT&T Store, 1712 E. Grand Avenue, Marshall, Texas 75670; Verizon authorized retailers, including Russell Cellular, 1111 E.

Grand Avenue, Marshall, Texas 75670, and Victra, 1006 East End Boulevard N, Marshall, Texas 75670; and Amazon.com.

JURISDICTION AND VENUE

10. This is an action for patent infringement under the patent laws of the United States, 35 U.S.C. § 101 *et seq.*

11. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

12. This Court has specific and personal jurisdiction over each of the Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, each Defendant has sufficient minimum contacts with the forum because each Defendant transacts substantial business in the State of Texas and in this District. On information and belief, SEA has more than 1,000 employees at its Plano, Texas facility, working in areas such as engineering, research and development, marketing, sales, and customer support for wireless devices. Further, each Defendant has, directly or through subsidiaries or intermediaries, committed and continues to commit acts of patent infringement in the State of Texas and in this District as alleged in this Complaint, as alleged more particularly below.

13. Venue is proper in this District pursuant to 28 U.S.C. §§ 1400(b) and 1391(b) and (c) because each Defendant is subject to personal jurisdiction in this District and has committed acts of patent infringement in this District. SEA has a regular and established place of business and employees in this District. Each Defendant, through its

own acts and/or through the acts of each other Defendant, makes, uses, sells, and/or offers to sell infringing products within this District, regularly does and solicits business in this District, and has the requisite minimum contacts with the District such that this venue is a fair and reasonable one. Further, the Defendants have admitted or not contested proper venue in this District in other patent infringement actions.

FACTUAL BACKGROUND

I. The ACQIS Patents

14. Plaintiff ACQIS solely owns all rights, titles, and interests in and to the ACQIS Patents, including the exclusive rights to bring suit with respect to any past, present, and future infringement thereof.

15. The ’768 patent, entitled “Computer System Including CPU or Peripheral Bridge Directly Connected to a Low Voltage Differential Signal Channel that Communicates Serial Bits of a Peripheral Component Interconnect Bus Transaction in Opposite Directions,” was duly and legally issued on December 27, 2016, from a patent application filed March 13, 2014, with William W.Y. Chu as the sole named inventor. The ’768 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

16. The ’750 patent, entitled “Computer System Including CPU or Peripheral Bridge Directly Connected to a Low Voltage Differential Signal Channel that Communicates Serial Bits of a Peripheral Component Interconnect Bus Transaction in Opposite Directions,” was duly and legally issued on July 11, 2017, from a patent application filed October 9, 2014, with William W.Y. Chu as the sole named inventor.

The ’750 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

17. The ’797 patent, entitled “Method of Improving Peripheral Component Interface Communications Utilizing a Low Voltage Differential Signal Channel,” was duly and legally issued on March 10, 2015, from a patent application filed October 10, 2012, with William W.Y. Chu as the sole named inventor. The ’797 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

18. The ’654 patent, entitled “Data Security Method and Device for Computer Modules,” was duly and legally issued on December 17, 2013, from a reissue application filed October 10, 2012, with William W.Y. Chu as the sole named inventor. The ’654 patent is a reissue of U.S. Patent No. 6,643,777, which issued on November 4, 2003, from a patent application filed May 14, 1999. The ’654 patent claims priority to U.S. Patent Application No. 09/312,199, filed on May 14, 1999.

19. The ’140 patent, entitled “Data Security Method and Device for Computer Modules,” was duly and legally issued on September 16, 2014, from a reissue application filed December 17, 2013, with William W.Y. Chu as the sole named inventor. The ’140 patent is a reissue of U.S. Patent No. 6,643,777, which issued on November 4, 2003, from a patent application filed May 14, 1999. The ’140 patent claims priority to U.S. Patent Application No. 09/312,199, filed on May 14, 1999.

20. Each of the ACQIS Patents is valid and enforceable.

21. Defendants are not authorized to practice the ACQIS Patents.

22. The inventions recited in the ACQIS Patents enable Samsung to offer

superior consumer electronics products, including faster, more efficient, and more reliable devices.

II. The Inventor

23. William W.Y. Chu is the sole inventor on the ACQIS Patents.

24. Dr. Chu is a named inventor of approximately 41 U.S. Patents spanning multiple decades.

25. Dr. Chu has been an innovator in the computing industry since the 1970s. After receiving his Ph.D. in electrical engineering in 1976 from the University of California, Berkeley, Dr. Chu worked in semiconductor design, first for American Microsystems, Inc. (1976-1977), then for Zilog, Inc. (1977-1982).

26. In 1982, Dr. Chu founded his first company, Verticom, Inc. Verticom's business was focused on innovation relating to the transmission of video over telephone lines. Verticom's business also included development of graphics products for the PC computer-aided design (CAD) market. Verticom's success led to an initial public offering in 1987, with Verticom's stock listed on the NASDAQ exchange. Verticom was acquired by Western Digital in 1988.

27. Dr. Chu then worked for Western Digital Imaging, Inc. from 1988 to 1991 as Vice President of Engineering, leading a large team in the desktop and portable graphics chip division. In the course of his work at Western Digital, Dr. Chu in 1988 started the company's portable graphics chip business, which became #1 in the portable graphics chip market by 1991. Dr. Chu also led Western Digital to achieve the #1 market share in the PC graphics market in 1990.

28. Dr. Chu then worked for Acumos, Inc. from 1991-1992 as a Vice President managing engineering for computer graphics chip development. Acumos was acquired by Cirrus Logic, Inc. in 1992.

29. Dr. Chu then worked for Cirrus Logic from 1992 to 1997, first as a General Manager in the Desktop Graphics Division and later as Co-President of the Graphics Chip Business Unit. During Dr. Chu's time at Cirrus Logic, the company achieved #1 market share in the PC graphics chip market.

30. Dr. Chu founded his second company, ACQIS Technology, Inc. in 1998. His goal was to build a small, lightweight portable computer module that could be interchangeably plugged into different peripheral consoles for different use scenarios. In the course of working to develop such products, Dr. Chu worked extensively to solve interconnection problems between computer modules and peripheral consoles. He recognized that such interconnections needed to be sufficiently versatile to connect the core computing and graphics system to different types of peripheral devices, and also needed to be low-power, high-performance, and extendable to even higher performance to accommodate future computing advancements. He also recognized the necessity of mating connectors with low pin counts. The ACQIS Patents and their underlying innovations stem from Dr. Chu's foundational product development work at ACQIS.

III. Samsung

31. Samsung is a global leader in the consumer electronics market, which includes smartphones, tablets, notebook computers, and smart televisions. On information and belief, Samsung designs, manufactures, uses, offers for sale, sells, and/or

imports into the United States—including into the Eastern District of Texas—billions of dollars of consumer electronics every year.

32. Samsung had global revenue of approximately $198 billion across all product lines in 2019, a significant portion of which is attributable to SEA. In 2019, SEA had revenue of approximately $28 billion. On information and belief, in 2019, Samsung had approximately $17.9 billion in revenue from smartphone sales in the United States.

IV. Samsung's Direct Infringement and the Accused Instrumentalities

33. Defendants have directly infringed, and/or continue to infringe, pursuant to 35 U.S.C. §§ 271(a) and (g), as applicable, one or more claims of each of the ACQIS Patents (as further specified below as to each of the ACQIS Patents, in Counts I-V) by: (1) making, using, offering to sell, selling within the United States, and/or importing into the United States, consumer electronics products that include infringing PCIe and/or USB 3.x functionality, including but not limited to Samsung smartphones, tablets, notebook computers, and smart televisions; (2) practicing the claimed methods of the ACQIS Patents in the United States by manufacturing and/or testing Samsung smartphones, tablets, notebook computers, and smart televisions that include the claimed PCIe and/or USB 3.x functionality; and (3) importing into the United States products made abroad using ACQIS's patented processes. The products that ACQIS accuses of infringing the ACQIS Patents are collectively referred to herein as the "Accused Instrumentalities."

34. On information and belief, SEC manufactures and tests Accused Instrumentalities abroad and sells and/or imports Accused Instrumentalities into the United States. On information and belief, SEC imports into the United States products

made abroad using ACQIS's patented processes. On information and belief, SEA uses and/or sells Accused Instrumentalities in the United States and/or imports Accused Instrumentalities into the United States. On information and belief, SEA imports into the United States products made abroad by SEC or its subsidiaries using ACQIS's patented processes.

35. The Accused Instrumentalities include devices that incorporate the claimed inventions, including infringing implementations of PCIe and/or USB 3.x, including but not limited to:

- Samsung smartphones ("Accused Smartphones") and tablets ("Accused Tablets") (collectively, "Accused Mobile Devices"), including but not limited to Galaxy Note, Galaxy S, Galaxy Z, Galaxy A, and Galaxy XCover smartphones, and Galaxy Tab tablets, including the exemplary Samsung Galaxy S20 Ultra 5G smartphone;
- Samsung Galaxy Book computers, Galaxy Chromebooks, and Notebook computers ("Accused Notebook Computers");
- Samsung smart televisions ("Accused Smart TVs"); and
- Additional Samsung devices that incorporate the PCIe and/or USB 3.x functionality described herein.

36. The Accused Instrumentalities include products made, used, offered for sale, sold within the United States, and/or imported into the United States at least since ACQIS provided actual notice of infringement on or around May 15, 2018, as discussed herein. The Accused Instrumentalities also include products used to perform the claimed

methods of the ACQIS Patents within the last six years from the date of this Complaint.

37. The claims of the ACQIS Patents relate generally to, *inter alia*, the use of one or more LVDS channels for serial data transfer in PCIe and/or USB 3.x bus transactions. The inventions of the ACQIS Patents "advantageously use[] an LVDS channel for the hereto unused purpose of interfacing PCI or PCI-like buses." '768 at 6:1-3.

38. The presence of PCIe and/or USB 3.x functionality in the Accused Instrumentalities is established below with respect to the exemplary Samsung Galaxy S20 Ultra 5G smartphone. On information and belief, all Accused Instrumentalities, including, e.g., the Samsung Galaxy S10 smartphone (which contains the Qualcomm Snapdragon 855 SoC, the block diagram for which is used for illustrative purposes below), operate in substantially the same way as the exemplary Samsung Galaxy S20 Ultra 5G smartphone with respect to the functionality described below.

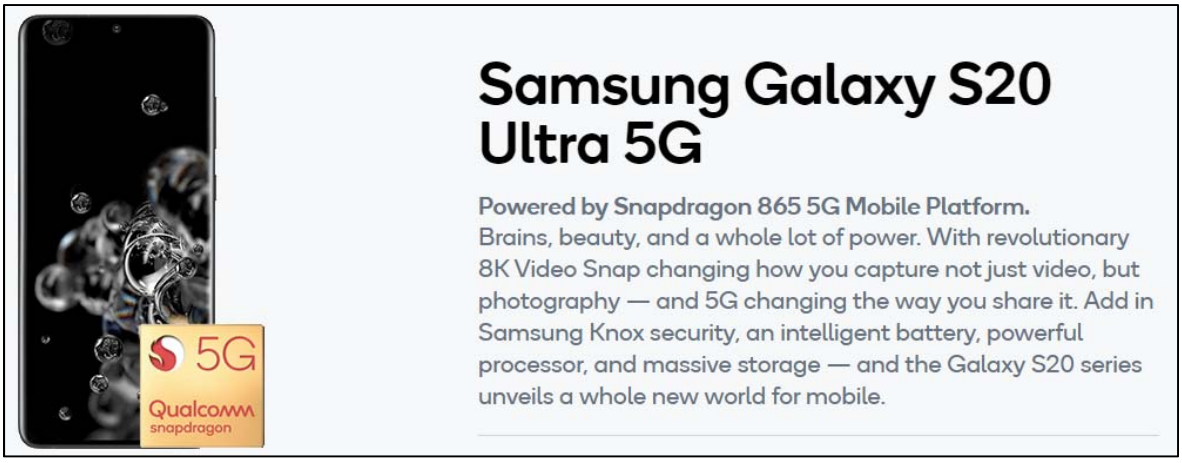
A. Samsung Galaxy S20 Ultra 5G Smartphone and Qualcomm Snapdragon 865 SoC

39. The Samsung Galaxy S20 Ultra 5G smartphone is a computer that runs the Android 10 operating system.

https://www.samsung.com/us/mobile/galaxy-s20-5g/models/#see-in-360 (last accessed Sept. 3, 2020).

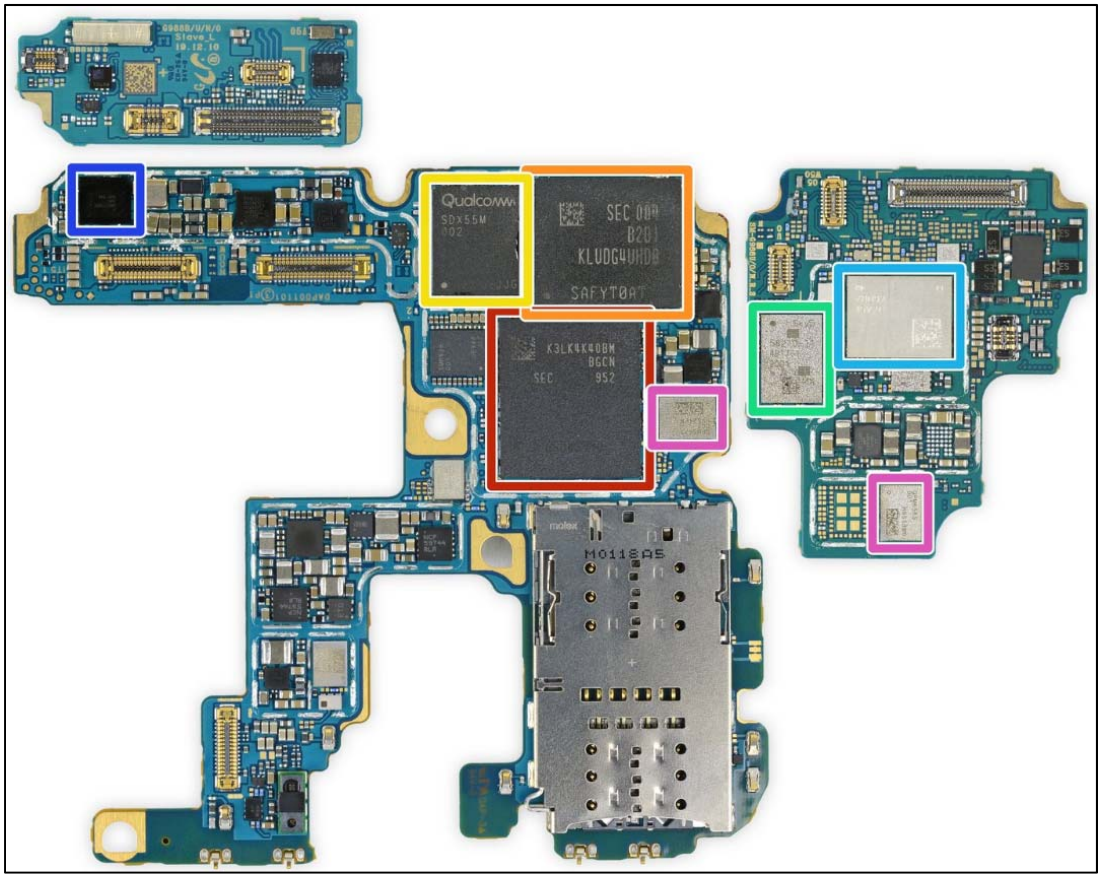
https://www.samsung.com/us/mobile/galaxy-s20-5g/specs/ (last accessed Sept. 3, 2020).

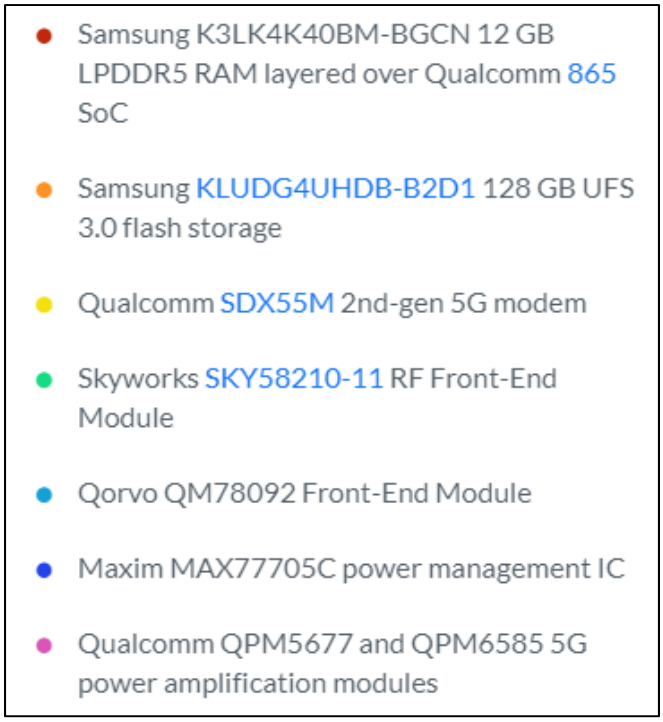
40. The versions of the Samsung Galaxy S20 Ultra 5G smartphone sold in the United States contain the Qualcomm Snapdragon 865 (SM8250) system-on-a-chip (SoC).



https://www.qualcomm.com/snapdragon/samsung-galaxy-s20-ultra-5g (last accessed Sept. 3, 2020).

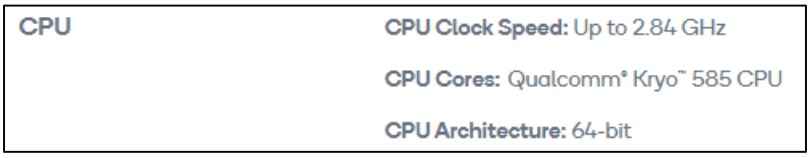
41. The presence of the Qualcomm Snapdragon 865 SoC is confirmed by third-party teardown analysis:



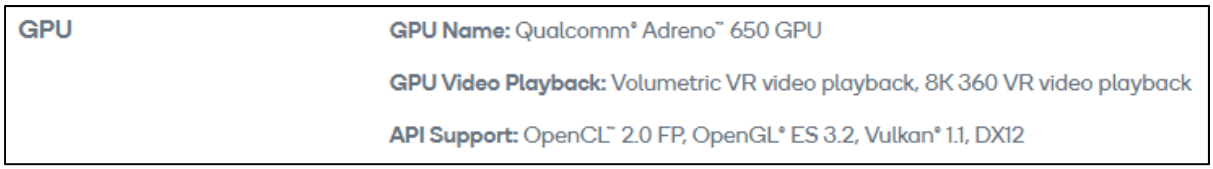


https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last accessed Sept. 3, 2020).

42. The Qualcomm Snapdragon 865 SoC contains an integrated central processing unit and graphics subsystem in a single chip, i.e., a Kryo 585 CPU and an Adreno 650 GPU.



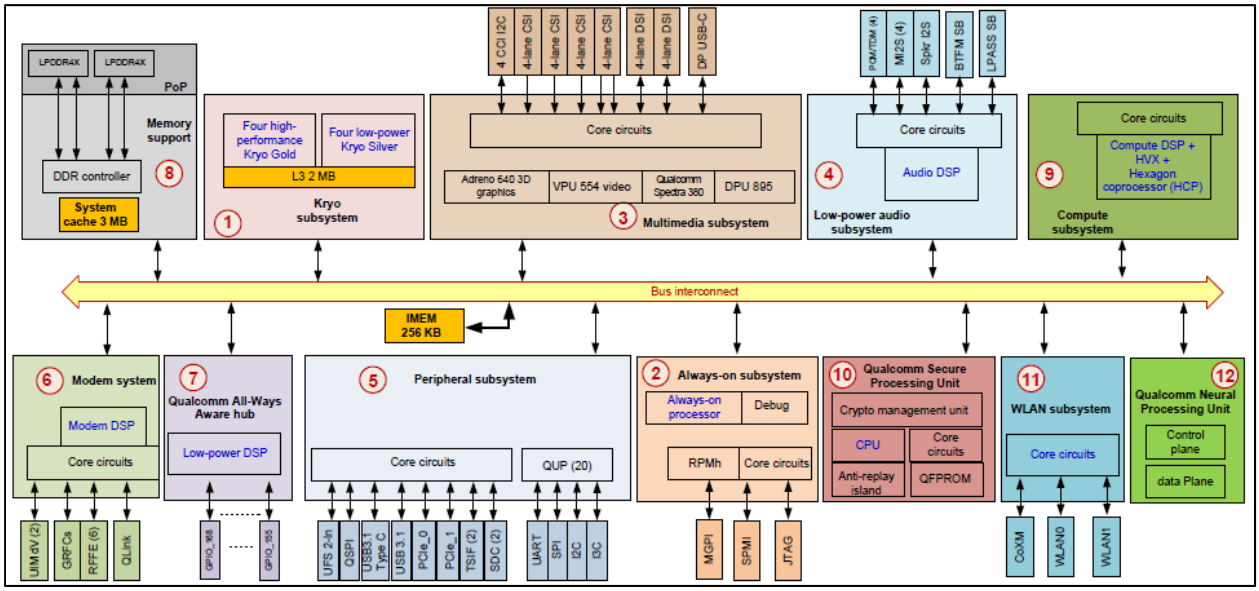
https://www.qualcomm.com/products/snapdragon-865-5g-mobile-platform (last accessed Sept. 3, 2020).



https://www.qualcomm.com/products/snapdragon-865-5g-mobile-platform (last accessed Sept. 3, 2020).

43. The Qualcomm Snapdragon 865 SoC also contains an interface controller in the same chip as the Kryo 585 CPU and Adreno 650 GPU. Because the Snapdragon 865 SoC supports PCIe and USB 3.x, as discussed below, it necessarily contains one or more logic blocks to implement the PCIe interface functionality, i.e., a PCIe controller, and to implement the USB 3.x interface functionality, i.e., a USB controller. On information and belief, these logic blocks are located in the "peripheral subsystem" of the Snapdragon 865 SoC.

44. Qualcomm Snapdragon SoCs, including the Snapdragon 855 SoC (SM8150) depicted below (which is found in several of the Accused Mobile Devices, including the Samsung Galaxy S10 smartphone), include a "peripheral subsystem" on the SoC, which, on information and belief, contains at least one interface controller. On information and belief, the Snapdragon 865 SoC is structured similarly to the Snapdragon 855 SoC depicted below and contains a similar peripheral subsystem.



Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf).

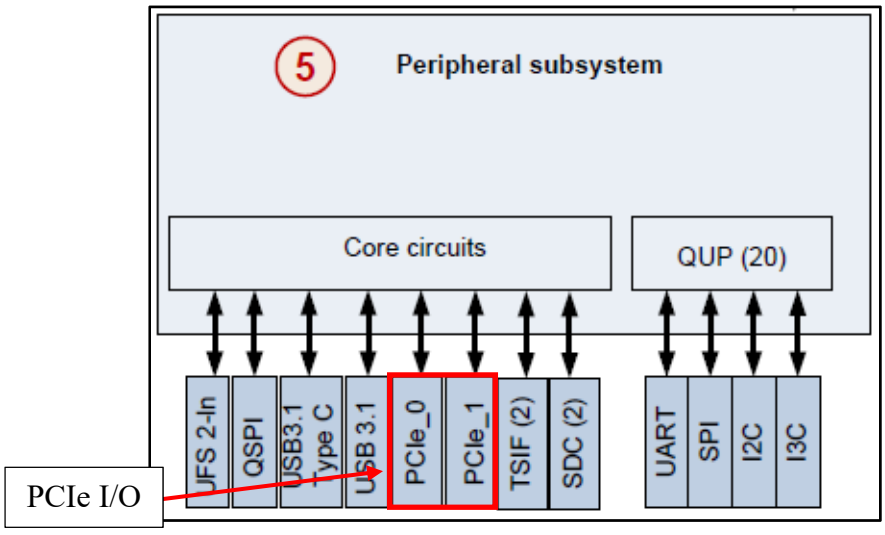
B. PCIe Functionality in the Samsung Galaxy S20 Ultra 5G Smartphone

45. The Qualcomm Snapdragon 865 SoC found in the Samsung Galaxy S20 Ultra 5G smartphone supports PCIe and contains at least one, and likely up to three, PCIe I/O interfaces, as discussed below.

I/O Interfaces	1x PCIe, HDMI 2.0, 1x USB 3.1 Type C, 2x USB 3.0 Type A, 1x USB 2.0 micro-B for UART, 6x MIPI-CSI, 2x MIPI dual 4-lane DSI Expansion headers for additional features

Qualcomm Snapdragon 865 Mobile Hardware Development Kit at 2 (https://developer.qualcomm.com/downloads/snapdragon-mobile-865-hdk-product-brief).

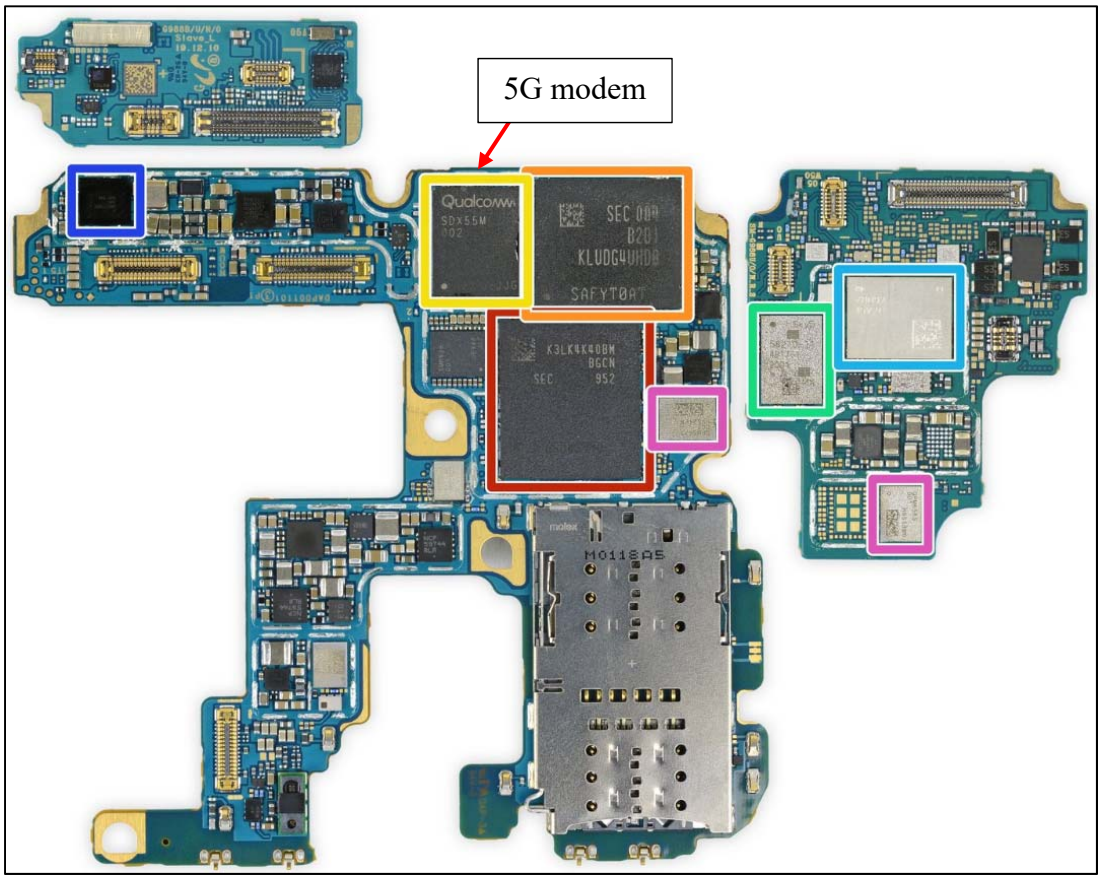
46. On information and belief, the PCIe interfaces in the Qualcomm Snapdragon 865 SoC are located in the "Peripheral subsystem," similar to those of the Snapdragon 855 SoC, depicted below. The block diagram below also confirms that the Qualcomm Snapdragon 855 SoC in the Samsung Galaxy S10 smartphone includes PCIe interfaces.

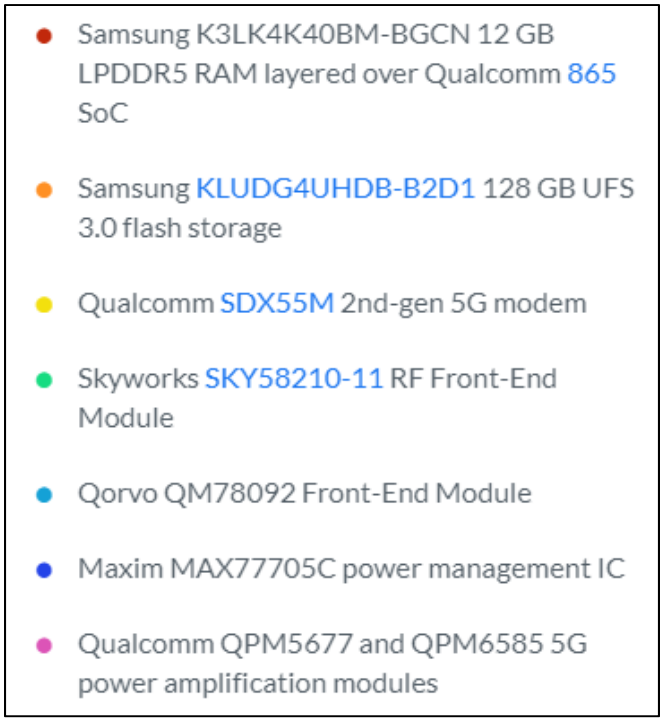


Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf) (annotations added).

47. The Samsung Galaxy S20 Ultra 5G smartphone utilizes at least two of the Qualcomm Snapdragon 865 SoC's PCIe interfaces, i.e., PCIE_0 and PCIE_2. On information and belief, in the Samsung Galaxy S20 Ultra 5G smartphone, PCIE_2 is used to connect the Snapdragon 865 SoC to the Qualcomm SDX55M 5G modem, and PCIE_0 is used to connect the Snapdragon 865 SoC to the Murata KM9D19075 Wi-Fi/Bluetooth module, as discussed below.

48. The Samsung Galaxy S20 Ultra 5G smartphone contains a Qualcomm SDX55M 5G modem.





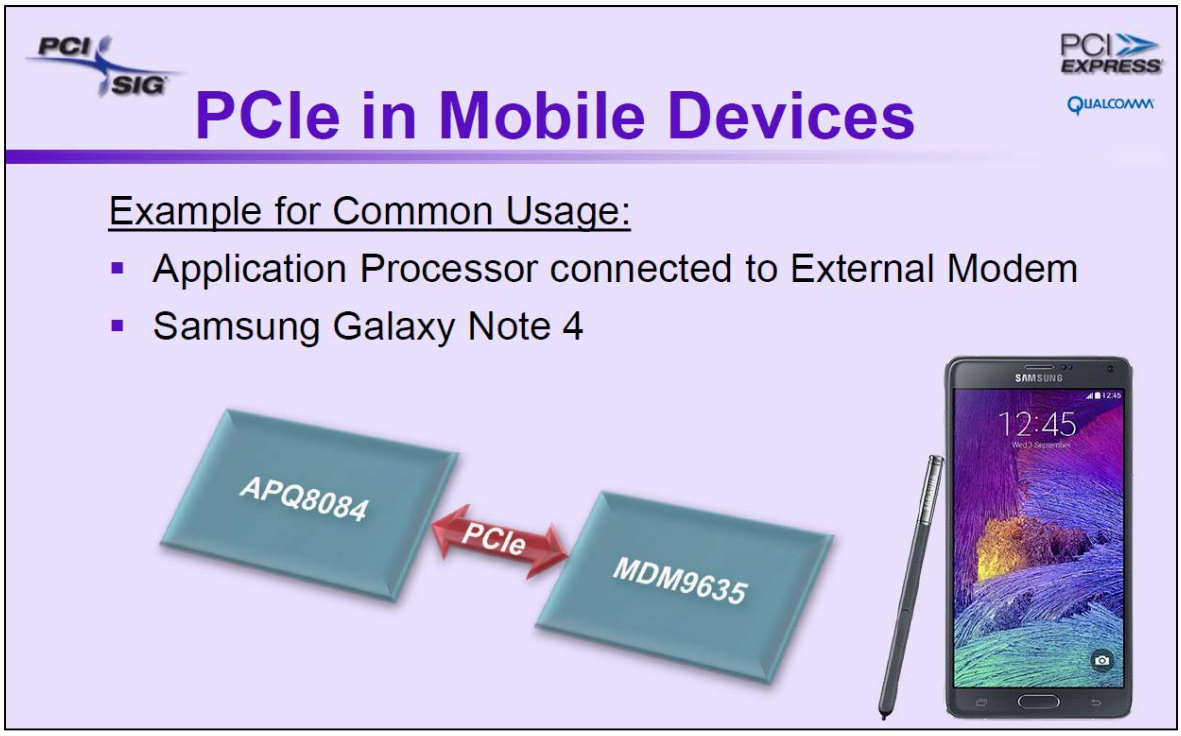
https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last accessed Sept. 3, 2020) (annotations added).

49. The Qualcomm SDX55M 5G modem in the Samsung Galaxy S20 Ultra 5G smartphone is connected to the Qualcomm Snapdragon 865 SoC via PCIe. The PCIe interface designated "PCIE_2" in the Samsung Galaxy S20 Ultra 5G smartphone is used to connect the Qualcomm Snapdragon 865 SoC to the SDX55M 5G modem.

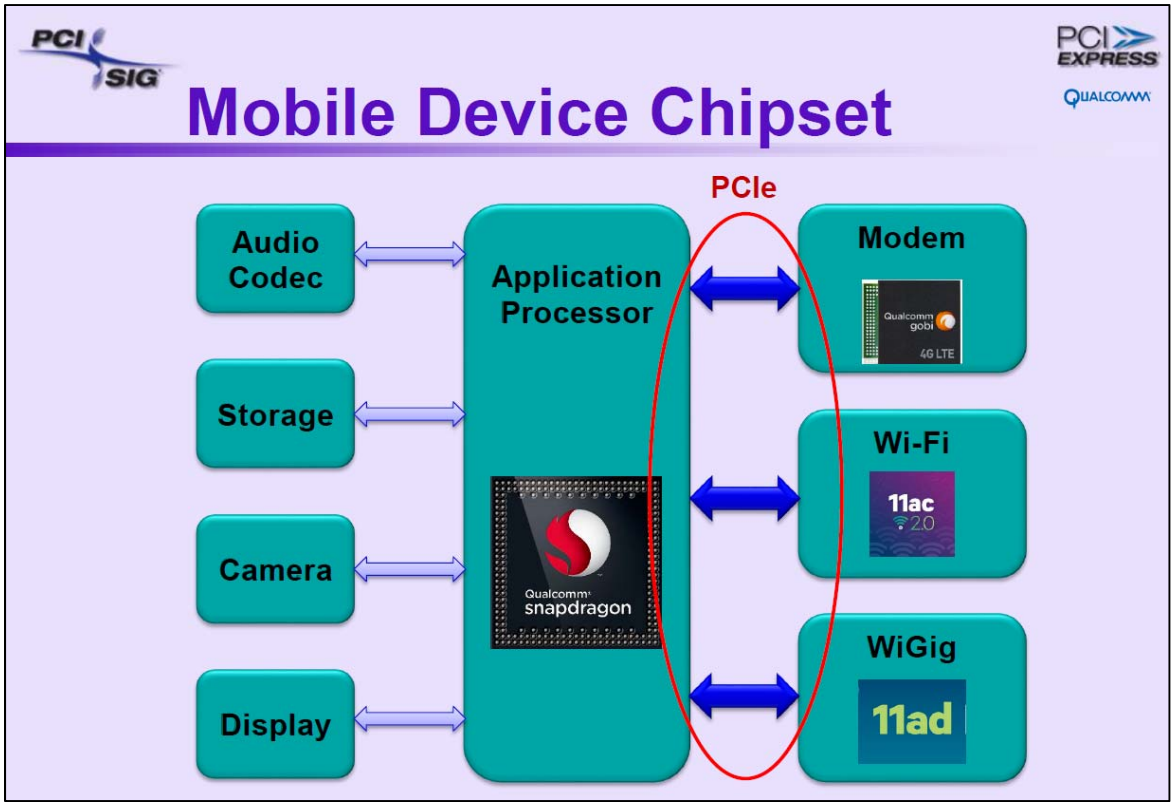
```
566             mas_xm_pcie3_modem: mas-xm-pcie3-modem {
567                 cell-id = <MSM_BUS_MASTER_PCIE_2>;
568                 label = "mas-xm-pcie3-modem";
569                 qcom,buswidth = <8>;
570                 qcom,agg-ports = <1>;
571                 qcom,qport = <4>;
572                 qcom,connections = <&slv_qns_pcie_modem_mem_noc>;
573                 qcom,bus-dev = <&fab_aggre1_noc>;
574                 qcom,blacklist = <&slv_qns_cnoc>;
575                 qcom,ap-owned;
576                 qcom,prio = <2>;
577             };
```

SM-G988U_NA_QQ_Opensource\Kernel\arch\arm64\boot\dts\vendor\qcom\kona-bus.dtsi, lines 566-577.

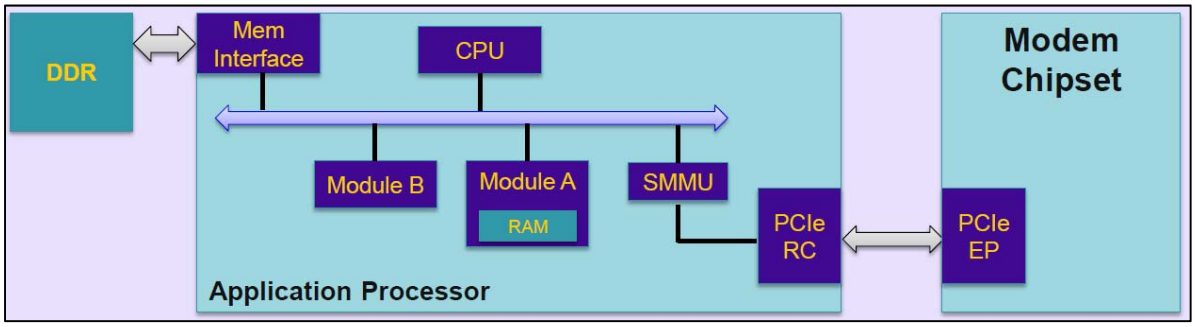
50. Samsung mobile devices using Qualcomm Snapdragon SoCs and discrete modems, like the Samsung Galaxy S20 Ultra 5G smartphone, historically have connected those two components using PCIe, as shown, for example, in the below excerpts from a 2015 Qualcomm/PCI-SIG presentation.



"Using PCIe in Mobile Devices," Panian, J., Director, Technical Standards, Qualcomm Technologies, Inc. (2015) (slide 9).



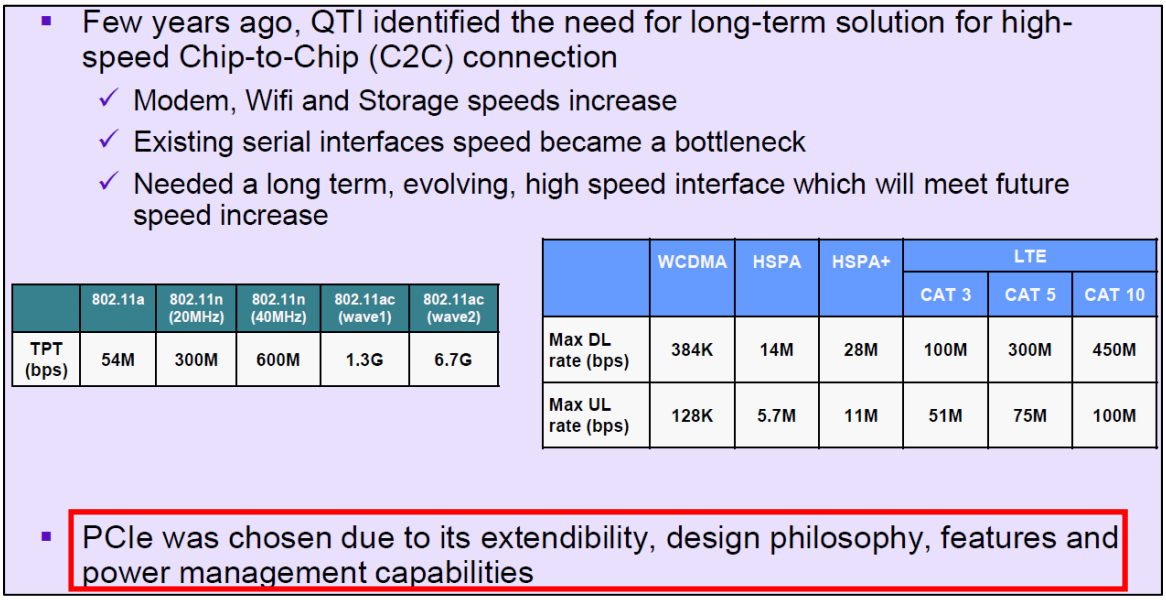
Id. at slide 7 (emphasis in original).



Id. at slide 11.

- QTI ships around a Billion Application Processors (AP) each year
  - ✓ APs have one or more PCIe Root Complexes
  - ✓ Key interface for communicating with Modem/Wi-Fi devices
- QTI ships XX Modem devices each year
  - ✓ Connect as PCIe end-points
  - ✓ Key interface for connecting the device to QTI or 3rd Party Application Processors

Id. at slide 4 (emphases added).



- Few years ago, QTI identified the need for long-term solution for high-speed Chip-to-Chip (C2C) connection
  - ✓ Modem, Wifi and Storage speeds increase
  - ✓ Existing serial interfaces speed became a bottleneck
  - ✓ Needed a long term, evolving, high speed interface which will meet future speed increase

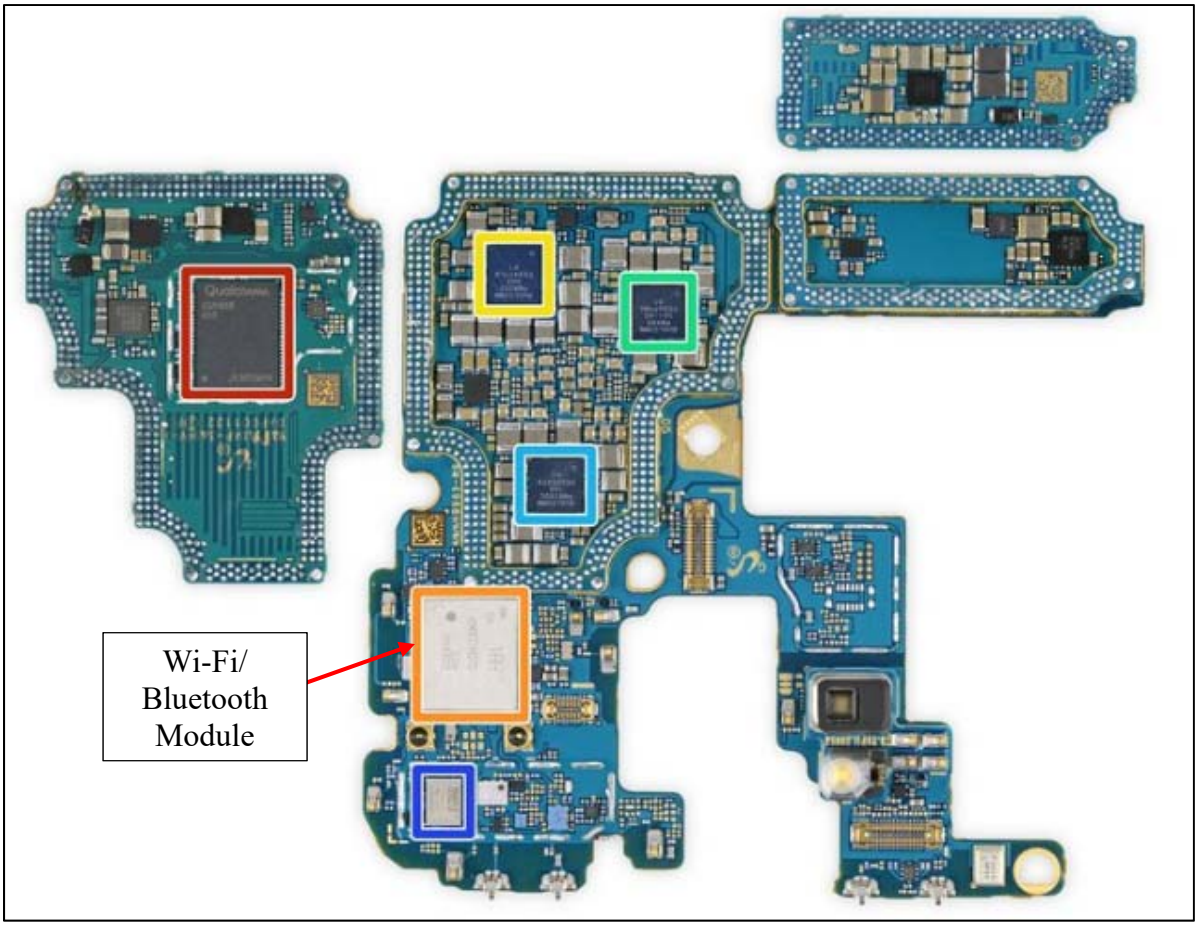
	802.11a	802.11n (20MHz)	802.11n (40MHz)	802.11ac (wave1)	802.11ac (wave2)
TPT (bps)	54M	300M	600M	1.3G	6.7G

	WCDMA	HSPA	HSPA+	LTE		
				CAT 3	CAT 5	CAT 10
Max DL rate (bps)	384K	14M	28M	100M	300M	450M
Max UL rate (bps)	128K	5.7M	11M	51M	75M	100M

- PCIe was chosen due to its extendibility, design philosophy, features and power management capabilities

Id. at slide 5 (emphasis added).

51. The Samsung Galaxy S20 Ultra 5G smartphone contains a Murata KM9D19075 Wi-Fi/Bluetooth module.



- Qualcomm SDR865 RF Tranceiver
- Murata KM9D19075 Wi-Fi & Bluetooth Module
- Qualcomm PM8250 power management IC
- Qualcomm PMX55 power management IC
- Qualcomm PM8150C power management IC
- Qualcomm QDM4870 front-end module

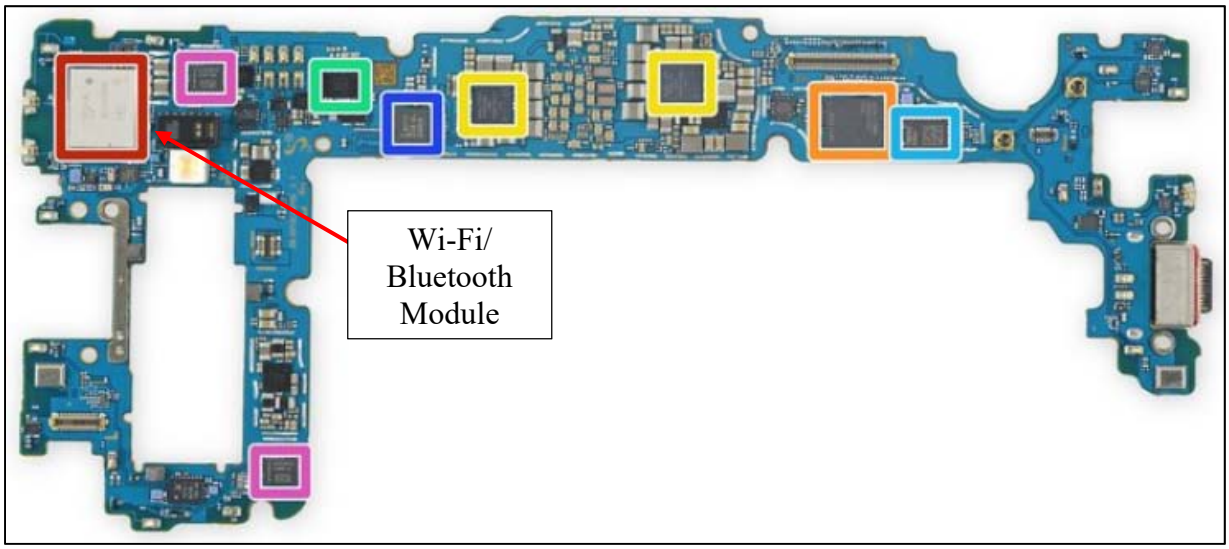
https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last accessed Sept. 3, 2020) (annotations added).

52. On information and belief, the Murata KM9D19075 Wi-Fi/Bluetooth module in the Samsung Galaxy S20 Ultra 5G smartphone is connected to the Qualcomm

Snapdragon 865 SoC via PCIe.

53. On information and belief, the PCIe interface designated "PCIE_0" in the Samsung Galaxy S20 Ultra 5G smartphone is used to connect the Qualcomm Snapdragon 865 SoC to the Murata KM9D19075 Wi-Fi/Bluetooth module.

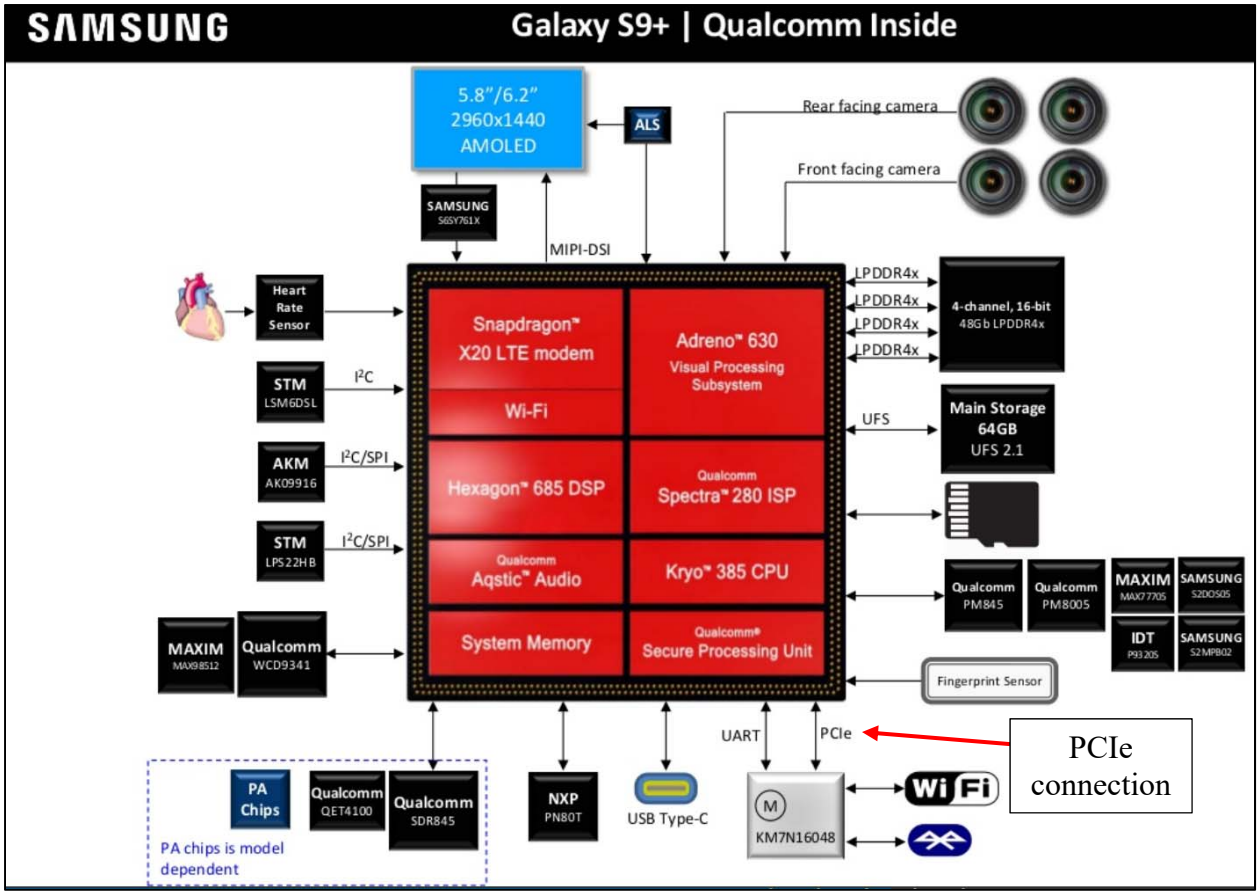
54. The Samsung Galaxy S10 smartphone also contains a Murata Wi-Fi/Bluetooth module, i.e., the Murata KM8D03042 Wi-Fi/Bluetooth module, which, on information and belief, is connected to the Qualcomm Snapdragon 855 SoC via PCIe.



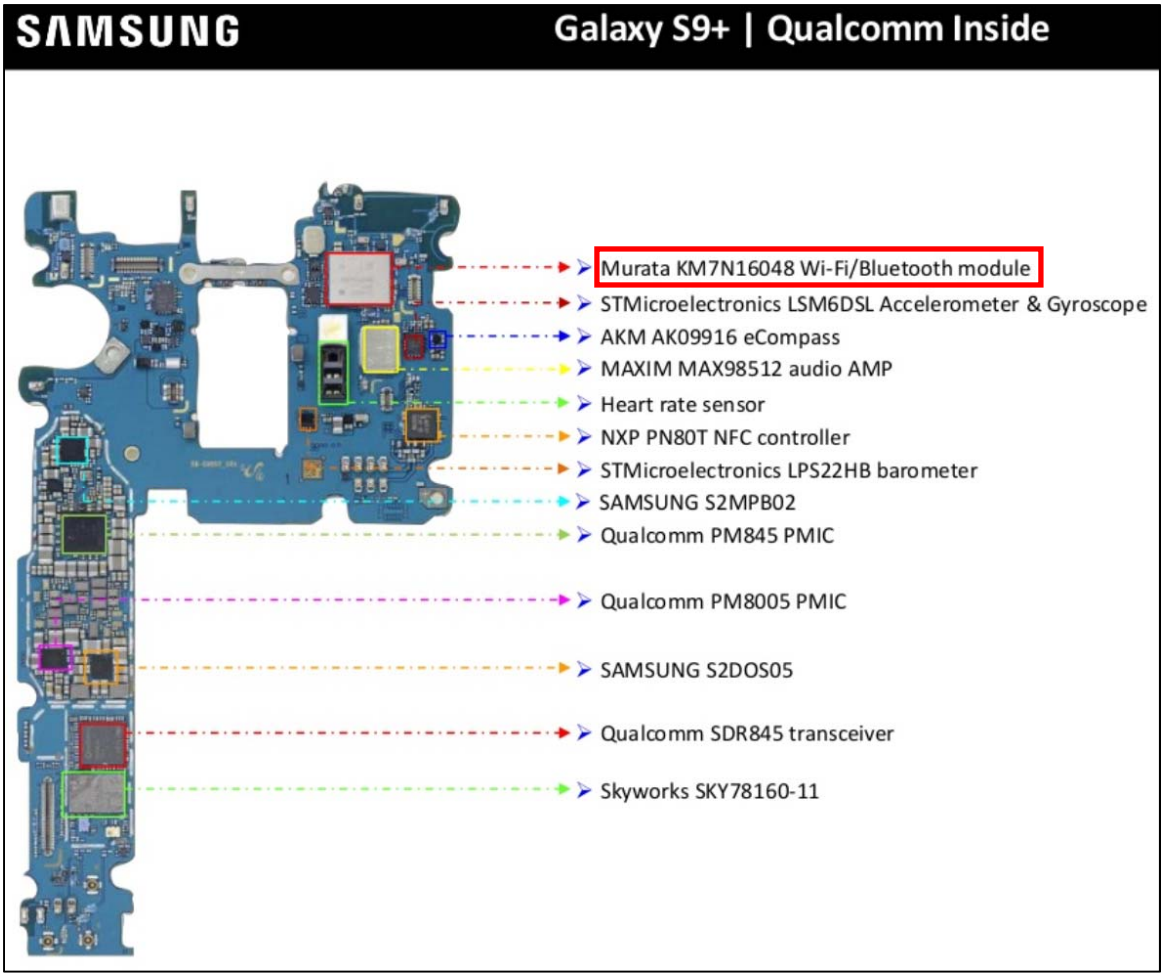
- Murata KM8D03042 (likely Wi-Fi/Bluetooth module)
- Qualcomm SDR8150 (likely RF transceiver)
- Qualcomm PM8150 (likely PMIC)
- IDT P93205 wireless power receiver
- Qorvo 78042
- NXP 80T17 NFC controller
- Qualcomm QDM3870 RF front end module

https://www.ifixit.com/Teardown/Samsung+Galaxy+S10+and+S10e+Teardown/120331 (last accessed Sept. 3, 2020) (annotations added).

55. Technical materials relating to another recent Samsung Galaxy S smartphone, the Galaxy S9+ (which was released in approximately March 2018), show that Samsung used the Qualcomm Snapdragon 845 SoC's PCIe functionality to connect the Snapdragon 845 SoC to the Wi-Fi/Bluetooth module, as illustrated below.



https://www.slideshare.net/jjwu6266/introducing-samsung-galaxy-s9s9 (slide 23) (last accessed Sept. 3, 2020) (annotations added).



https://www.slideshare.net/jjwu6266/introducing-samsung-galaxy-s9s9 (slide 22) (last accessed Sept. 3, 2020) (emphasis added).

56. The Samsung Galaxy S20 Ultra 5G smartphone contains a first LVDS channel directly extending from the interface controller in the Qualcomm Snapdragon 865 SoC.

57. In the Qualcomm Snapdragon 865 SoC in the Samsung Galaxy S20 Ultra 5G smartphone, each of at least PCIE_0 and PCIE_2 contains an LVDS channel that conveys data of a PCI bus transaction.

58. Each of these LVDS channels comprises a first unidirectional, differential

signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction.

59. The data that is transmitted by each of the LVDS channels includes address bits, data bits, and byte enable information bits. The transaction layer packets (TLPs) used for PCIe data transmission include address and data elements as well as byte enable ("BE") information.

The Address Element

The address elements of the TLP provide the address to select specific bytes within the memory and I/O address spaces. The address elements also provide the ID Routing and the register address to select the specific bytes of the configuration register block in the configuration address space. Finally, address elements also provide the ID and Implied Routing for the message address space.

Header field of TLP contains:

ADDRESS: The "typical" address bits for memory and I/O address space. The address can also be used in message vendor-defined transaction packets.

The Complete PCI Express Reference, Intel Press (2003), at 218.

The Data Element

The data element of the transaction packet provides the actual data being accessed.

Id. at 220.

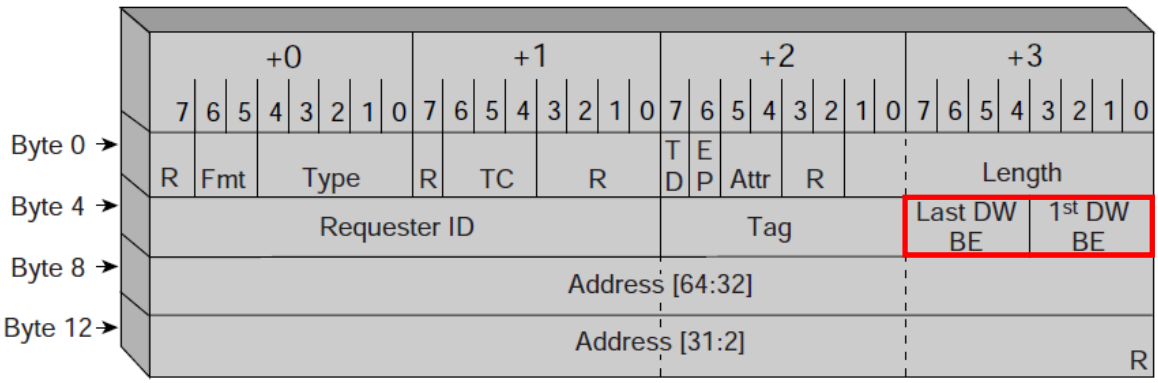


Figure 6.4 64-bit Address Memory Request Header

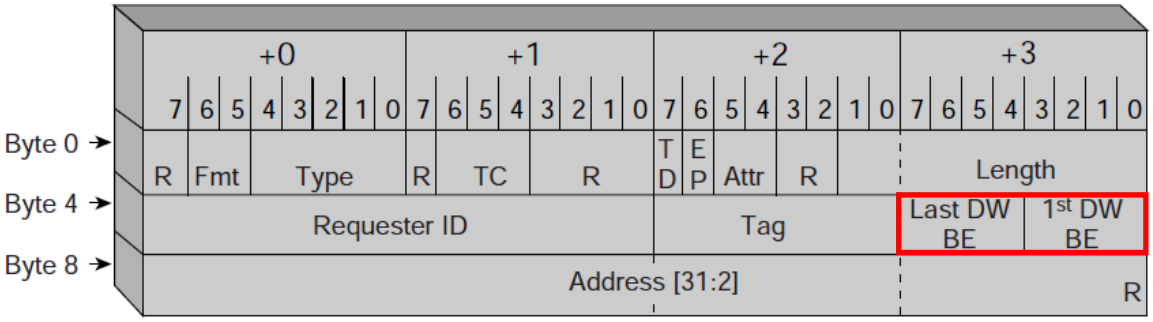
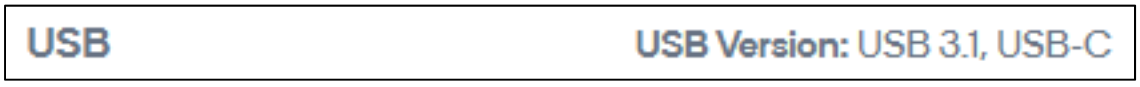


Figure 6.5 32-bit Address Memory Request Header

Introduction to PCI Express – A Hardware and Software Developers Guide, Intel Press (2003), at 100 (emphases added).

C. USB 3.x Functionality in the Samsung Galaxy S20 Ultra 5G Smartphone

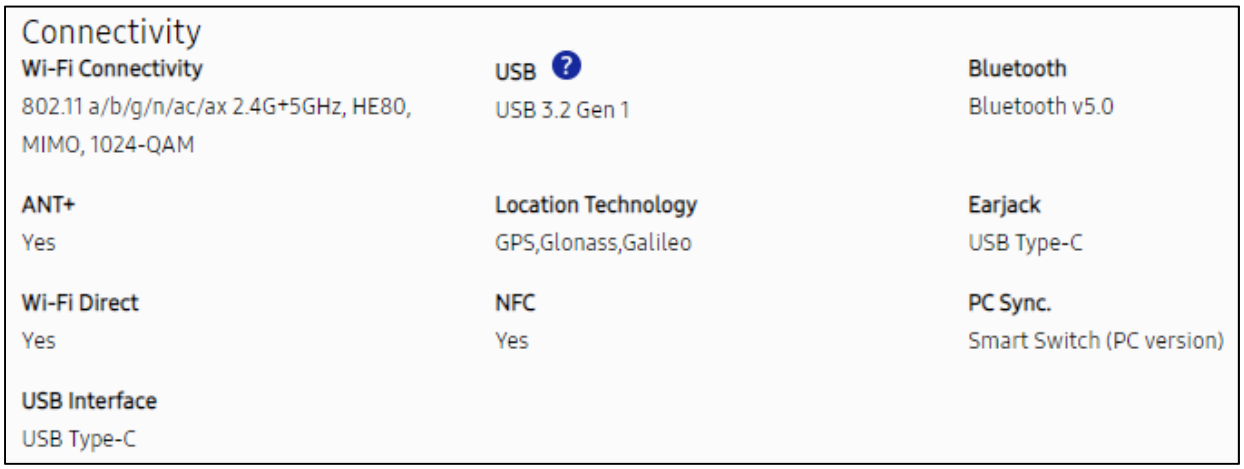
60. The Qualcomm Snapdragon 865 SoC found in the Samsung Galaxy S20 Ultra 5G smartphone supports USB-C and at least USB 3.1.



https://www.qualcomm.com/products/snapdragon-865-5g-mobile-platform (last accessed Sept. 3, 2020).

61. The Samsung Galaxy S20 Ultra 5G smartphone contains a USB Type-C

port. Samsung advertises versions of the Samsung Galaxy S20 Ultra 5G smartphone as supporting USB 3.2 Gen 1.



https://www.samsung.com/us/business/support/owners/product/galaxy-s20-ultra-5g-128gb-t-mobile/#fullspecs (last accessed Sept. 3, 2020).

https://www.samsung.com/us/mobile/galaxy-s20-5g/models/#see-in-360 (last accessed Sept. 3, 2020) (annotations added).

62. At a minimum, the Samsung Galaxy S20 Ultra 5G smartphone supports USB 3.1.

Communication Interfaces:	
Expansion Interfaces	TransFlash , microSD , microSDHC , microSDXC
USB	USB 3.1
	USB HS (480 Mbps) , USB SS (5 Gbps)
USB Services	USB charging , USB fast charging , USB Host , USB OTG 1.3 , USB OTG 2.0 , USB PD , USB PD 2.0 , USB PD 3.0
USB Connector	USB C reversible

http://phonedb.net/index.php?m=device&id=17069&c=samsung_sm-g988u1_galaxy_s20_ultra_5g_td-lte_us_512gb__samsung_hubble_2_5g (last accessed Sept. 3, 2020).

63. The USB type-C connector supports DisplayPort and can be used to connect the Samsung Galaxy S20 Ultra 5G smartphone to a console, e.g., a television or PC, and send digital video display signals.

TV connection

Wireless: Smart View (screen mirroring 1080p at 30 fps)
Wired: supports DisplayPort over USB type-C. Supports video out when connecting via HDMI Adapter. (DisplayPort 4K UHD at 60 fps)

https://www.samsung.com/us/mobile/galaxy-s20-5g/specs/ (last accessed Sept. 3, 2020).

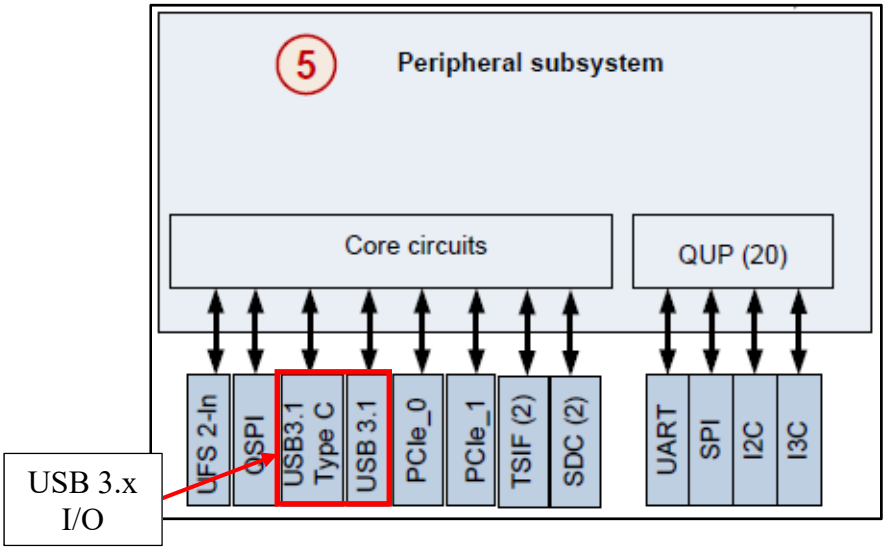
I/O Interfaces	1x PCIe, HDMI 2.0, 1x USB 3.1 Type C, 2x USB 3.0 Type A, 1x USB 2.0 micro-B for UART, 6x MIPI-CSI, 2x MIPI dual 4-lane DSI Expansion headers for additional features

Qualcomm Snapdragon 865 Mobile Hardware Development Kit at 2 (https://developer.qualcomm.com/downloads/snapdragon-mobile-865-hdk-product-brief).

I/O	• 1x USB3.1 Gen 2 (10.0 Gbps) Type-C with DisplayPort video out • 1x PCIe v3 2-lane to M.2 socket • 1x microSD/UFS Card Socket • 2x USB 3.0 Type-A host via on-board hub • 1x USB micro-B debug UART • Sensor expansion headers • Low speed GPIO expansion header

https://www.thundercomm.com/app_en/product/1580977369756523 (last accessed Sept. 3, 2020).

64. On information and belief, the USB 3.x interfaces in the Qualcomm Snapdragon 865 SoC in the Samsung Galaxy S20 Ultra 5G smartphone are similar to those of the Snapdragon 855 SoC, depicted below.



Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf) (annotations added).

65. The Samsung Galaxy S20 Ultra 5G smartphone contains a first LVDS channel directly extending from the integrated central processing unit and graphics subsystem of the Qualcomm Snapdragon 865 SoC. In the Qualcomm Snapdragon 865

SoC, each of at least the USB 3.1/3.2 Type-C I/O and the USB 3.1/3.2 I/O is an LVDS channel that conveys data using a Universal Serial Bus (USB) protocol. These LVDS channels directly extend from the SoC, which contains the integrated central processing unit and graphics subsystem.

66. Each of at least the USB 3.1/3.2 Type-C and USB 3.1/3.2 LVDS channels comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction.

67. USB 3.x uses differential signaling and at least two unidirectional channels, allowing simultaneous bidirectional data flow. Each lane has four wires, i.e., one signal pair to convey data in one direction, and another signal pair to convey data in the opposite direction.

Characteristic	Enhanced SuperSpeed USB	USB 2.0
Data Interface	Dual-simplex, four-wire differential signaling for each lane (separate from USB 2.0 signaling, a total of eight wires for a two lane configuration) Simultaneous bi-directional data flows	Half-duplex two-wire differential signaling Unidirectional data flow with negotiated directional bus transitions

Universal Serial Bus 3.2 Specification, Rev. 1.0 (Sept. 22, 2017), at 18 (emphasis added).

USB 3.1 is a dual-bus architecture that incorporates USB 2.0 and an Enhanced SuperSpeed bus. Table 3-1 summarizes the key architectural differences between an Enhanced SuperSpeed bus and a USB 2.0 bus.

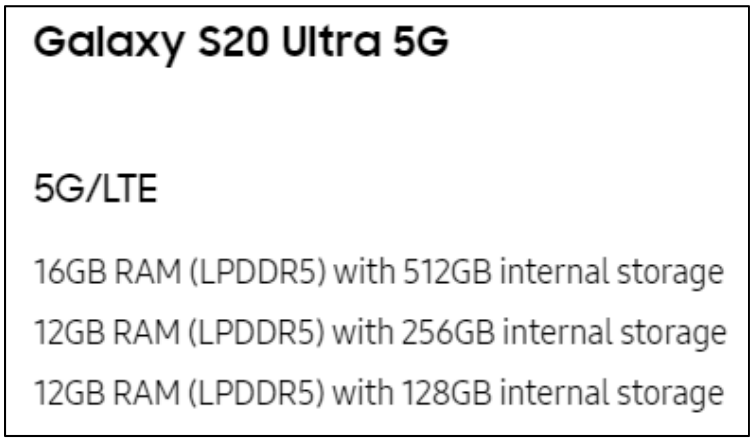
Table 3-1. Comparing Enhanced SuperSpeed Bus to USB 2.0 Bus

Characteristic	Enhanced SuperSpeed USB	USB 2.0
Data Rate	Gen 1 (5.0 Gbps), Gen 2 (10 Gbps)	low-speed (1.5 Mbps), full-speed (12 Mbps), and high-speed (480 Mbps)
Data Interface	Dual-simplex, four-wire differential signaling separate from USB 2.0 signaling Simultaneous bi-directional data flows	Half-duplex two-wire differential signaling Unidirectional data flow with negotiated directional bus transitions

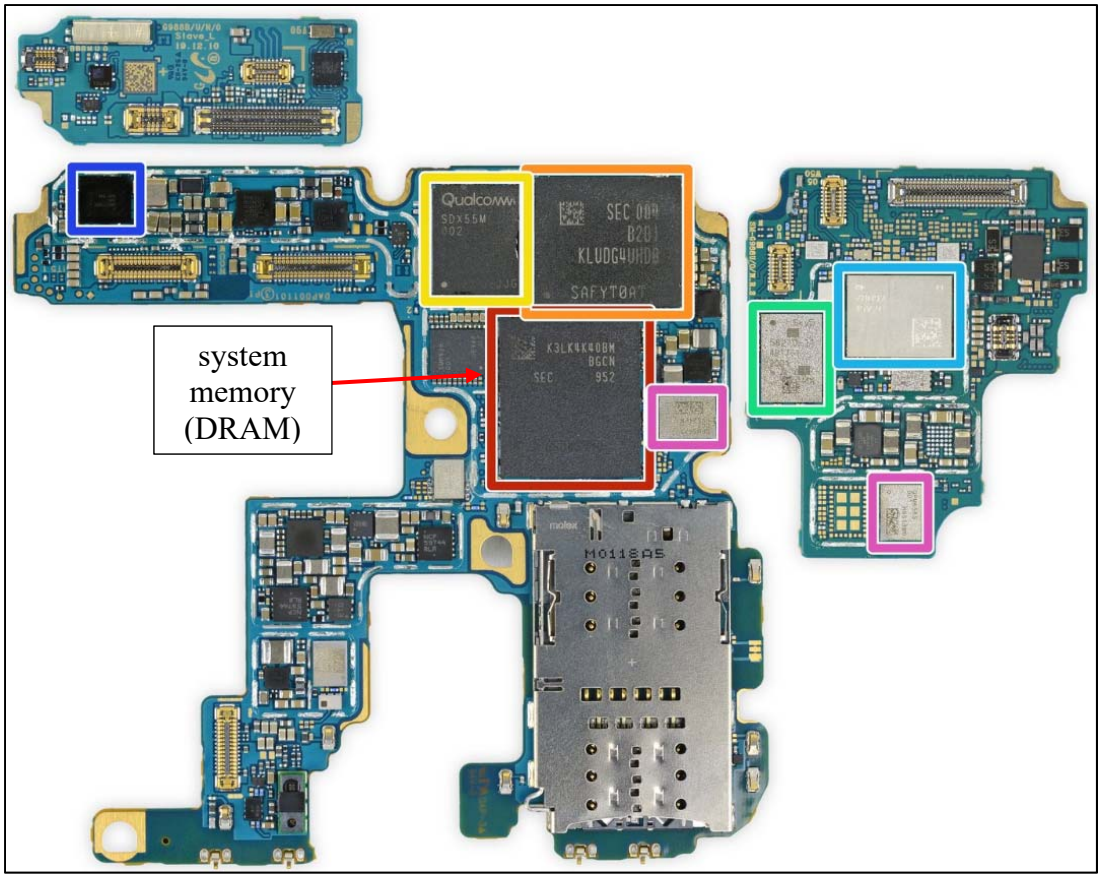
Universal Serial Bus 3.1 Specification, Rev. 1.0 (July 26, 2013), at page 3-4 (emphasis added).

D. Other Components in Samsung Galaxy S20 Ultra 5G Smartphone

68. The Samsung Galaxy S20 Ultra 5G smartphone contains system memory, i.e., the Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 DRAM, directly coupled to the Qualcomm Snapdragon 865 SoC, which contains the integrated central processing unit, graphics subsystem, and interface controller.



https://www.samsung.com/us/mobile/galaxy-s20-5g/specs/ (last accessed Sept. 3, 2020).



- Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 RAM layered over Qualcomm 865 SoC
- Samsung KLUDG4UHDB-B2D1 128 GB UFS 3.0 flash storage
- Qualcomm SDX55M 2nd-gen 5G modem
- Skyworks SKY58210-11 RF Front-End Module
- Qorvo QM78092 Front-End Module
- Maxim MAX77705C power management IC
- Qualcomm QPM5677 and QPM6585 5G power amplification modules

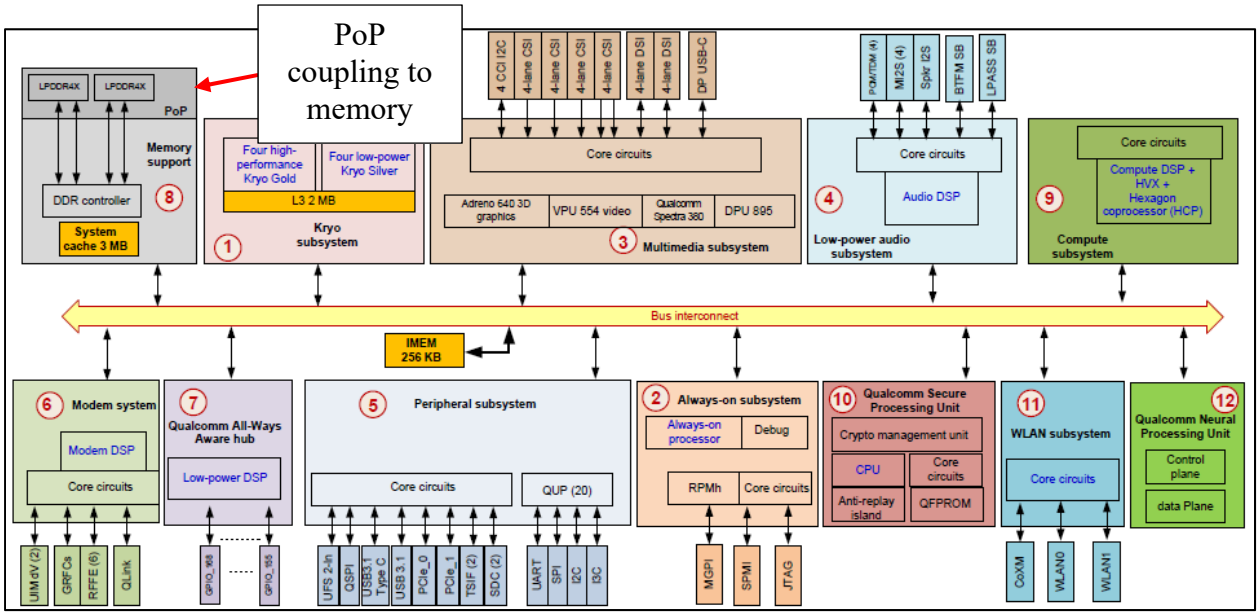
https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last

accessed Sept. 3, 2020) (annotations added).

69. The LPDDR5 is layered over the Snapdragon 865 SoC. The LPDDR5 is coupled to the SoC, i.e., integrated central processing unit, graphics subsystem, and interface controller, via package-on-package (PoP) packaging technology.

70. On information and belief, the LPDDR5 in the Samsung Galaxy S20 Ultra 5G smartphone is directly coupled to the DDR controller and thereby the integrated central processing unit and graphics subsystem of the Qualcomm Snapdragon 865 SoC.

71. On information and belief, the Snapdragon 865 SoC's coupling to LPDDR memory is similar to that of the Snapdragon 855 SoC, depicted below.



Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf) (annotations added).

72. The Samsung Galaxy S20 Ultra 5G smartphone also contains a graphics memory, i.e., the Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 DRAM, directly coupled to the integrated central processing unit and graphics subsystem. On information

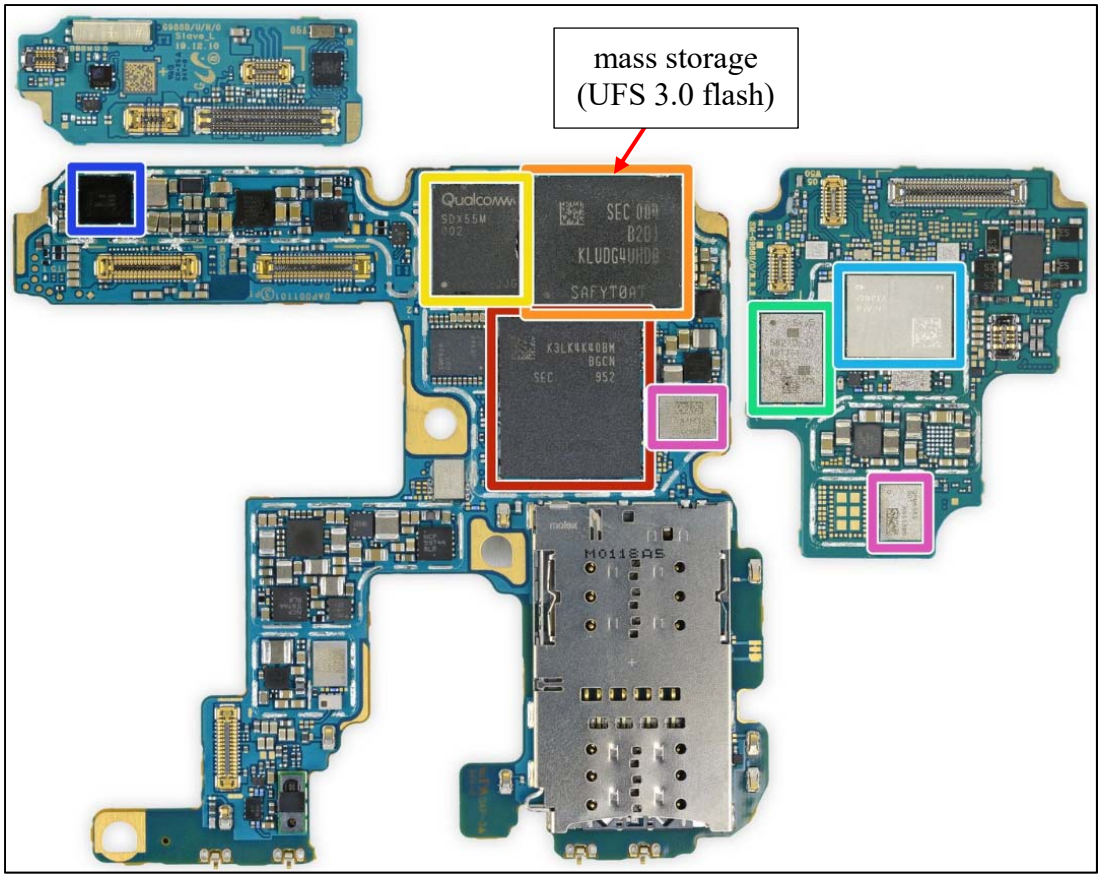
and belief, portions of the Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 DRAM are allocated for graphics operations.

73. On information and belief, the Qualcomm Snapdragon 865 SoC in the Samsung Galaxy S20 Ultra 5G smartphone also contains internal graphics memory, i.e., "GMEM," dedicated to graphics operations. On information and belief, the Snapdragon 865 SoC's internal graphics memory is similar to that of the Qualcomm Snapdragon 820E Processor (APQ8096SGE).

Memory support	
System memory via PoP and EBI	Dual-channel PoP high-speed memory – LPDDR4 SDRAM at 1866 MHz clock
Internal memory	256 kB OCIMEM 1 MB GMEM for GFX 512 kB VMEM for Video

Qualcomm Snapdragon 820E Processor (APQ8096SGE) Device Specification, LM80-P2751-1 Rev. E (Feb. 9, 2018), at 17 (https://developer.qualcomm.com/download/sd820e/qualcomm-snapdragon-820e-processor-apq8096sge-device-specification.pdf) (emphasis added).

74. The Samsung Galaxy S20 Ultra 5G smartphone also contains a mass storage device, i.e., the Samsung KLUDG4UHDB-B2D1 128 GB UFS 3.0 flash storage chip, directly coupled to the SoC, i.e., integrated central processing unit, graphics subsystem, and interface controller.



- Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 RAM layered over Qualcomm 865 SoC
- Samsung KLUDG4UHDB-B2D1 128 GB UFS 3.0 flash storage
- Qualcomm SDX55M 2nd-gen 5G modem
- Skyworks SKY58210-11 RF Front-End Module
- Qorvo QM78092 Front-End Module
- Maxim MAX77705C power management IC
- Qualcomm QPM5677 and QPM6585 5G power amplification modules

https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last

accessed Sept. 3, 2020) (annotations added).

75. The above-described acts of direct infringement committed by Defendants, and those described in detail below, have caused injury and damage to Plaintiff ACQIS, and will cause additional severe and irreparable injury and damages in the future.

V. ACQIS Provided Actual Notice to Samsung

76. ACQIS provided actual notice, pursuant to 35 U.S.C. § 287(a), of all of the ACQIS Patents and the infringement alleged herein on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America. In that letter, ACQIS identified all of the ACQIS Patents and described the applicability of the ACQIS Patents to PCI Express, USB 3.0, and other technologies. ACQIS's letter also identified Samsung's Galaxy and Galaxy Note smartphones, Galaxy Note tablets, and various notebook computers, including Chromebooks and Notebook 7, 9, and Odyssey series PCs. All of these product lines are included in the Accused Instrumentalities.

77. ACQIS's May 15, 2018 letter invited Samsung to discuss potential licensing arrangements for the ACQIS portfolio, including the ACQIS Patents, and described the enforcement history of ACQIS's portfolio, identifying previous litigation of patents related to the ACQIS Patents, including a jury verdict against IBM. ACQIS's litigation-based enforcement of its portfolio is also a matter of public record.

78. Samsung did not respond to ACQIS's May 15, 2018 letter and continued to make and sell the products and/or product lines identified in ACQIS's letter. Upon receiving actual notice, Samsung at the very least ignored the notice and remained willfully blind to its own infringement and the infringement that it was inducing others to

commit.

79. Samsung's choice to ignore ACQIS and instead continue making and selling infringing Accused Instrumentalities, in view of the opportunity to engage with ACQIS regarding the infringement allegations set forth in this Complaint and reach a mutually agreeable resolution, is egregious. Defendants have thus willfully infringed, and/or continue to willfully infringe, the ACQIS Patents, since at least May 15, 2018.

80. ACQIS has also provided actual notice of Defendants' infringement of the ACQIS Patents by filing this Complaint, after which Defendants' ongoing infringement is willful, particularly in view of Samsung's prior knowledge of the ACQIS Patents and the infringement allegations set forth herein.

VI. Samsung's Indirect Infringement

81. Defendants indirectly infringe the ACQIS Patents by inducing infringement by others, such as importers, resellers, customers, and end users under 35 U.S.C. § 271(b) in this District and elsewhere in the United States and the State of Texas.

82. Specifically, Defendants induce others' direct infringement of the ACQIS Patents by selling Accused Instrumentalities to third-party customers, such as retailers, who then directly infringe by using, offering to sell, selling within the United States, and/or importing into the United States those Accused Instrumentalities, which infringe the ACQIS Patents.

83. On information and belief, Defendants actively promote the Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants' Accused Instrumentalities sold in the United States, Defendants

pursue and obtain approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

84. Defendants know that their customers will sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States—or have deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced—and Defendants specifically intend their customers to purchase those Accused Instrumentalities from Defendants and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Defendants' direct and indirect purchasers directly infringe the ACQIS Patents by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

85. Defendants further induce others' direct infringement of the ACQIS Patents by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users use the Accused Instrumentalities and directly infringe the ACQIS Patents. Defendants have knowledge that end users will use Accused Instrumentalities in the manner directed by Defendants and specifically intend that end users will perform such uses in the United States. Such infringing uses occur upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendants have configured the Accused Instrumentalities in such a way as to induce

infringement by end users upon any use of those Accused Instrumentalities.

86. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the ACQIS Patents, as set forth herein. Defendants therefore have caused their purchasers and end users to directly infringe the ACQIS Patents with knowledge of the ACQIS Patents and specific intent that the purchasers and end users will directly infringe, or have deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced.

87. Defendants derive significant revenue by selling products, including the Accused Instrumentalities, to third parties who directly infringe one or more claims of the ACQIS Patents. Samsung had worldwide sales of approximately $198 billion in 2019.

88. The above-described acts of indirect infringement committed by Defendants have caused injury and damage to Plaintiff ACQIS, and will cause additional severe and irreparable injury and damages in the future.

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 9,529,768

89. The allegations set forth in paragraphs 1 through 88 of this Complaint are incorporated by reference as though fully set forth herein.

90. Pursuant to 35 U.S.C. § 282, the '768 patent is presumed valid.

91. Defendants have directly infringed and continue to infringe one or more claims of the '768 patent in violation of 35 U.S.C. § 271. The infringing products include Accused Mobile Devices, Accused Notebook Computers, and Accused Smart TVs.

92. The Accused Instrumentalities directly infringe at least claim 36 of the '768

patent at least in the manner described in paragraphs 95-101 below. Plaintiff's allegations of infringement are not limited to claim 36, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

93. Paragraphs 95-101 describe the manner in which the Accused Instrumentalities infringe claim 36 of the '768 patent, by way of the exemplary Samsung Galaxy S20 Ultra 5G smartphone.

94. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Samsung Galaxy S20 Ultra 5G smartphone, in particular with regard to the manner in which the Accused Instrumentalities include and utilize PCIe and/or USB 3.x functionality. Paragraphs 95-101 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

95. The Samsung Galaxy S20 Ultra 5G smartphone is a computer that runs the Android 10 operating system. Paragraph 39 above is incorporated herein by reference.

96. The Samsung Galaxy S20 Ultra 5G smartphone contains an integrated central processing unit and graphics subsystem in a single chip, i.e., the Qualcomm Snapdragon 865 SoC. Paragraphs 40-44 above are incorporated herein by reference.

97. The Samsung Galaxy S20 Ultra 5G smartphone comprises a first LVDS channel directly extending from the integrated central processing unit and graphics subsystem of the Qualcomm Snapdragon 865 SoC. Paragraphs 60-67 above are incorporated herein by reference.

98. In the Qualcomm Snapdragon 865 SoC, each of at least the USB 3.1/3.2 Type-C I/O and the USB 3.1/3.2 I/O is an LVDS channel that conveys data using a

Universal Serial Bus (USB) protocol. Paragraphs 60-67 above are incorporated herein by reference.

99. Each of at least the USB 3.1/3.2 Type-C and USB 3.1/3.2 LVDS channels comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction. Paragraphs 60-67 above are incorporated herein by reference.

100. The Samsung Galaxy S20 Ultra 5G smartphone contains system memory, i.e., the Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 DRAM, directly coupled to the integrated central processing unit and graphics subsystem. Paragraphs 68-71 above are incorporated herein by reference.

101. The Samsung Galaxy S20 Ultra 5G smartphone also contains a graphics memory directly coupled to the integrated central processing unit and graphics subsystem. Paragraphs 72-73 above are incorporated herein by reference.

102. Defendants have actual notice pursuant to 35 U.S.C. § 287(a) of the ’768 patent and the infringement alleged herein as of on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America, and at least upon the filing of this Complaint. Paragraphs 76-80 above are incorporated herein by reference.

103. Defendants have indirectly infringed, and continue to indirectly infringe, the ’768 patent by actively inducing the direct infringement of others of the ’768 patent, in the United States, the State of Texas, and the Eastern District of Texas.

104. Defendants have induced, and are continuing to induce, through affirmative acts, their customers and other third parties, such as retailers and end users, to directly

infringe the ’768 patent by using, offering to sell, selling within the United States, and/or importing into the United States those Accused Instrumentalities, which infringe the ’768 patent.

105. On information and belief, Defendants actively promote the Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants’ Accused Instrumentalities sold in the United States, Defendants pursue and obtain approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

106. Defendants know that their customers will sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Defendants specifically intend their customers to purchase those Accused Instrumentalities from Defendants and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Defendants’ direct and indirect purchasers directly infringe the ’768 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

107. Defendants further induce others’ direct infringement of the ’768 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users use the Accused Instrumentalities and directly infringe the ’768 patent. Defendants have knowledge that end users will use

Accused Instrumentalities in the manner directed by Defendants and specifically intend that end users will perform such uses in the United States. Such infringing uses occur upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendants have configured the Accused Instrumentalities in such a way as to induce infringement by end users upon any use of those Accused Instrumentalities.

108. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the '768 patent. As of at least May 15, 2018, and no later than the filing of this Complaint, Defendants knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

109. The above-described acts of infringement committed by Defendants have caused injury and damage to ACQIS, and will cause additional severe and irreparable injury and damages in the future.

110. Defendants' acts of infringement as described above have been and continue to be willful.

111. ACQIS is entitled to recover damages sustained as a result of Defendants' wrongful acts in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 9,703,750

112. The allegations set forth in paragraphs 1 through 88 of this Complaint are incorporated by reference as though fully set forth herein.

113. Pursuant to 35 U.S.C. § 282, the ’750 patent is presumed valid.

114. Defendants have directly infringed and continue to infringe one or more claims of the ’750 patent in violation of 35 U.S.C. § 271. The infringing products include Accused Mobile Devices, Accused Notebook Computers, and Accused Smart TVs.

115. The Accused Instrumentalities directly infringe at least claim 1 of the ’750 patent at least in the manner described in paragraphs 118-123 below. Plaintiff’s allegations of infringement are not limited to claim 1, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

116. Paragraphs 118-123 describe the manner in which the Accused Instrumentalities infringe claim 1 of the ’750 patent, by way of the exemplary Samsung Galaxy S20 Ultra 5G smartphone.

117. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Samsung Galaxy S20 Ultra 5G smartphone, in particular with regard to the manner in which the Accused Instrumentalities include and utilize PCIe and/or USB 3.x functionality. Paragraphs 118-123 are thus illustrative of the manner in which each of the Accused Instrumentalities infringes.

118. The Samsung Galaxy S20 Ultra 5G smartphone is a computer that runs the Android 10 operating system. Paragraph 39 above is incorporated herein by reference.

119. The Samsung Galaxy S20 Ultra 5G smartphone contains an integrated

central processing unit and interface controller in a single chip, i.e., the Qualcomm Snapdragon 865 SoC. Paragraphs 40-44 above are incorporated herein by reference.

120. The Samsung Galaxy S20 Ultra 5G smartphone comprises a first LVDS channel directly extending from an interface controller of the Qualcomm Snapdragon 865 SoC. Paragraphs 45-59 above are incorporated herein by reference.

121. In the Qualcomm Snapdragon 865 SoC in the Samsung Galaxy S20 Ultra 5G smartphone, each of PCIE_0 and PCIE_2 contains an LVDS channel that conveys address bits, data bits, and byte enable information bits of a PCI bus transaction in a serial bit stream. Paragraphs 45-59 above are incorporated herein by reference.

122. Each of at least the PCIE_0 and PCIE_2 LVDS channels comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction. Paragraphs 45-59 above are incorporated herein by reference.

123. The Samsung Galaxy S20 Ultra 5G smartphone contains a system memory, i.e., the Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 DRAM, directly coupled to the integrated central processing unit and interface controller. Paragraphs 68-71 above are incorporated herein by reference.

124. Defendants have actual notice pursuant to 35 U.S.C. § 287(a) of the ’750 patent and the infringement alleged herein as of on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America, and at least upon the filing of this Complaint. Paragraphs 76-80 above are incorporated herein by reference.

125. Defendants have indirectly infringed, and continue to indirectly infringe,

the ’750 patent by actively inducing the direct infringement of others of the ’750 patent, in the United States, the State of Texas, and the Eastern District of Texas.

126. Defendants have induced, and are continuing to induce, through affirmative acts, their customers and other third parties, such as retailers and end users, to directly infringe the ’750 patent by selling Accused Instrumentalities to third-party customers who then directly infringe by using, offering to sell, selling within the United States, and/or importing into the United States those Accused Instrumentalities, which infringe the ’750 patent.

127. On information and belief, Defendants actively promote the Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants’ Accused Instrumentalities sold in the United States, Defendants pursue and obtain approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

128. Defendants know that their customers will sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Defendants specifically intend their customers to purchase those Accused Instrumentalities from Defendants and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Defendants’ direct and indirect purchasers directly infringe the ’750 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the

United States.

129. Defendants further induce others' direct infringement of the '750 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users use the Accused Instrumentalities and directly infringe the '750 patent. Defendants have knowledge that end users will use Accused Instrumentalities in the manner directed by Defendants and specifically intend that end users will perform such uses in the United States. Such infringing uses occur upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendants have configured the Accused Instrumentalities in such a way as to induce infringement by end users upon any use of those Accused Instrumentalities.

130. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the '750 patent. As of at least May 15, 2018, and no later than the filing of this Complaint, Defendants knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

131. The above-described acts of infringement committed by Defendants have caused injury and damage to ACQIS, and will cause additional severe and irreparable injury and damages in the future.

132. Defendants' acts of infringement as described above have been and continue to be willful.

133. ACQIS is entitled to recover damages sustained as a result of Defendants' wrongful acts in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 8,977,797

134. The allegations set forth in paragraphs 1 through 88 of this Complaint are incorporated by reference as though fully set forth herein.

135. Pursuant to 35 U.S.C. § 282, the '797 patent is presumed valid.

136. Defendants have directly infringed and continue to infringe one or more claims of the '797 patent in violation of 35 U.S.C. § 271(a) at least when manufacturing and/or testing the Accused Instrumentalities in the United States and 35 U.S.C. § 271(g) when importing into the United States products made abroad using the claimed '797 methods.

137. Samsung infringes at least claim 33 of the '797 patent at least in the manner described in paragraphs 140-143 below. Plaintiff's allegations of infringement are not limited to claim 33, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

138. Paragraphs 140-143 describe the manner in which Samsung infringes claim 33 of the '797 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone, and/or when importing into the United States Accused Instrumentalities, as

exemplified by the Samsung Galaxy S20 Ultra 5G smartphone, made abroad using the claimed process.

139. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Samsung Galaxy S20 Ultra 5G smartphone, in particular with regard to the manner in which the Accused Instrumentalities include and utilize PCIe and/or USB 3.x functionality. Paragraphs 140-143 are thus illustrative of the manner in which Samsung infringes the claims of the '797 patent as to each of the Accused Instrumentalities.

140. Samsung practices claim 33's method of improving external peripheral data performance within a computer at least when manufacturing and/or testing the Accused Instrumentalities in the United States and/or when importing into the United States products made abroad using the claimed process.

141. At least in manufacturing and/or testing the Accused Instrumentalities, Samsung couples an integrated CPU and graphics controller chip to a connector, i.e., the USB-C connector of the Samsung Galaxy S20 Ultra 5G smartphone. Paragraphs 39-44 and 60-67 above are incorporated herein by reference.

142. At least in manufacturing and/or testing the Accused Instrumentalities, Samsung conveys an LVDS channel through the USB-C connector, and the LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. Paragraphs 60-67 above are incorporated herein by reference.

143. At least in manufacturing and/or testing the Accused Instrumentalities, Samsung conveys USB protocol data from the integrated CPU and graphics controller

chip, over the first LVDS channel for external USB protocol data communication via the USB-C connector. Paragraphs 60-67 above are incorporated herein by reference.

144. Defendants have actual notice pursuant to 35 U.S.C. § 287(a) of the '797 patent and the infringement alleged herein as of on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America, and at least upon the filing of this Complaint. Paragraphs 76-80 above are incorporated herein by reference.

145. Defendants have indirectly infringed, and continue to indirectly infringe, the '797 patent by actively inducing the direct infringement of others of the '797 patent, in the United States, the State of Texas, and the Eastern District of Texas.

146. Defendants have induced, and are continuing to induce, through affirmative acts, their customers and other third parties to directly infringe the '797 patent. Defendants induce others' direct infringement of the '797 patent by selling Accused Instrumentalities to third-party customers who then directly infringe by performing the claimed methods in the United States using the Accused Instrumentalities.

147. On information and belief, Defendants actively promote the Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants' Accused Instrumentalities sold in the United States, Defendants pursue and obtain approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

148. Defendants know that their customers will use the Accused Instrumentalities to perform the claimed methods in the United States, and Defendants

specifically intend their customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendants' direct and indirect purchasers directly infringe the '797 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

149. Defendants further induce others' direct infringement of the '797 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringe the '797 patent. Defendants have knowledge that end users will use Accused Instrumentalities in the manner directed by Defendants and specifically intend that end users will perform such uses in the United States. For example, Defendants instruct end users regarding the use of the USB-C connector of the Samsung Galaxy S20 Ultra 5G smartphone to convey USB protocol data externally.

150. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringe the '797 patent. As of at least May 15, 2018, and no later than the filing of this Complaint, Defendants knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been and continue to be committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

151. The above-described acts of infringement committed by Defendants have caused injury and damage to ACQIS, and will cause additional severe and irreparable

injury and damages in the future.

152. Defendants' acts of infringement as described above have been and continue to be willful.

153. ACQIS is entitled to recover damages sustained as a result of Defendants' wrongful acts in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. RE44,654

154. The allegations set forth in paragraphs 1 through 88 of this Complaint are incorporated by reference as though fully set forth herein.

155. Pursuant to 35 U.S.C. § 282, the '654 patent is presumed valid.

156. Defendants have directly infringed one or more claims of the '654 patent in violation of 35 U.S.C. § 271(a) at least when manufacturing and/or testing the Accused Instrumentalities in the United States and 35 U.S.C. § 271(g) when importing into the United States products made abroad using the claimed '654 methods.

157. Samsung has infringed at least claim 20 of the '654 patent at least in the manner described in paragraphs 160-168 below. Plaintiff's allegations of infringement are not limited to claim 20, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

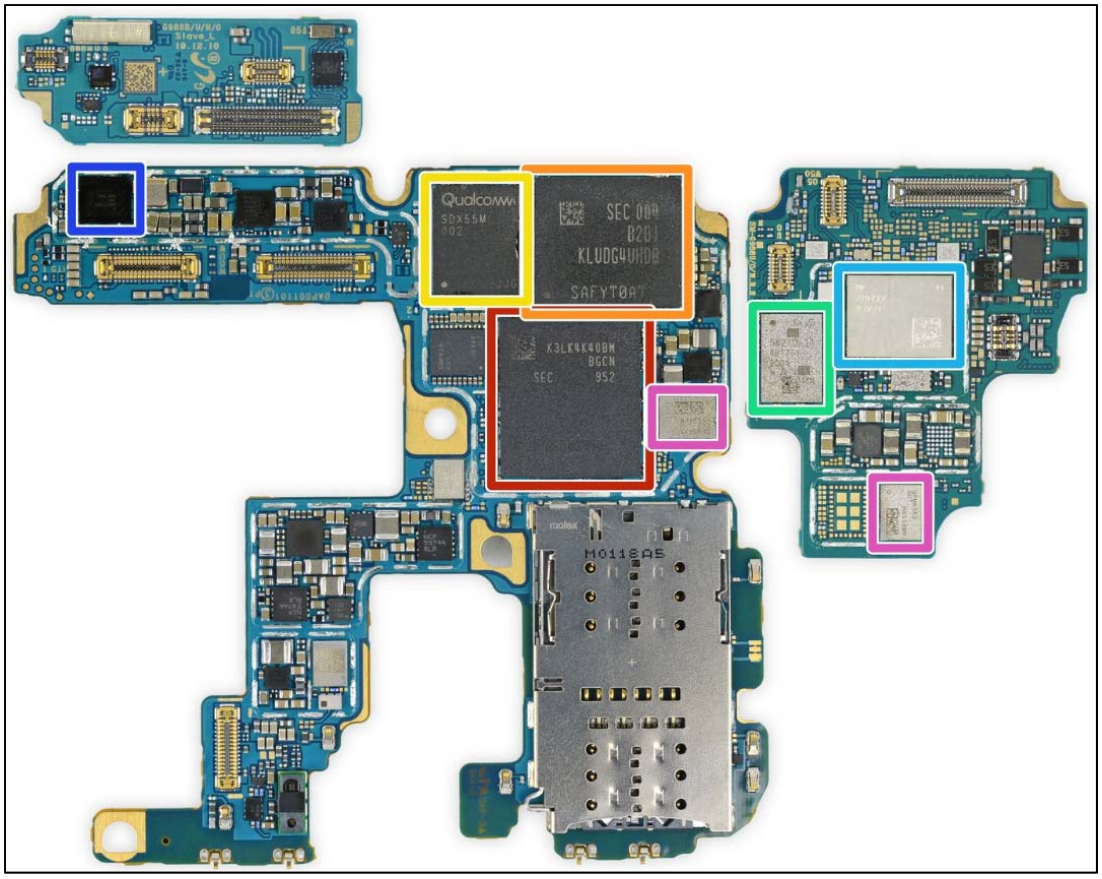
158. Paragraphs 160-168 describe the manner in which Samsung has infringed claim 20 of the '654 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, and/or when importing into the

United States Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, made abroad using the claimed process.

159. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Samsung Galaxy S20 Ultra 5G smartphone and Samsung Galaxy S10 smartphone, in particular with regard to the manner in which the Accused Instrumentalities include and utilize PCIe and/or USB 3.x functionality. Paragraphs 160-168 are thus illustrative of the manner in which Samsung has infringed the claims of the ’654 patent as to each of the Accused Instrumentalities.

160. Samsung has practiced claim 20’s method of increasing external data communication speed of a computer at least when manufacturing and/or testing the Accused Instrumentalities in the United States and/or when importing into the United States products made abroad using the claimed process.

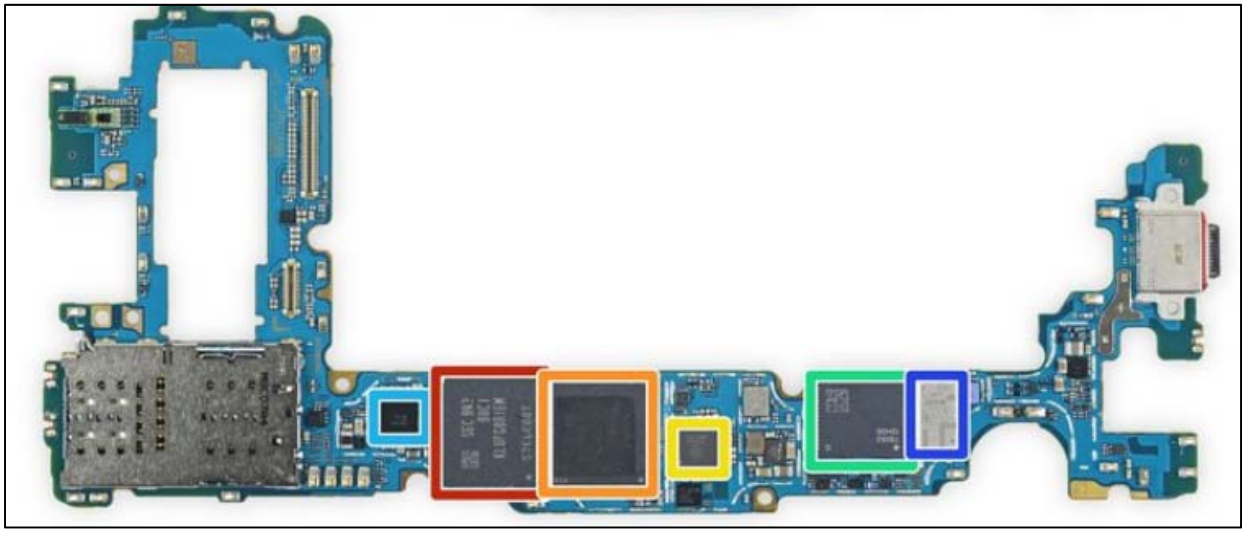
161. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has provided an integrated CPU and graphics controller on a printed circuit board of a computer. Specifically, the Qualcomm Snapdragon 865 SoC, which contains an integrated CPU and graphics controller in a single chip, is mounted on a printed circuit board, as shown below. Paragraphs 40-44 above are incorporated herein by reference.



- Samsung K3LK4K40BM-BGCN 12 GB LPDDR5 RAM layered over Qualcomm 865 SoC
- Samsung KLUDG4UHDB-B2D1 128 GB UFS 3.0 flash storage
- Qualcomm SDX55M 2nd-gen 5G modem
- Skyworks SKY58210-11 RF Front-End Module
- Qorvo QM78092 Front-End Module
- Maxim MAX77705C power management IC
- Qualcomm QPM5677 and QPM6585 5G power amplification modules

https://www.ifixit.com/Teardown/Samsung+Galaxy+S20+Ultra+Teardown/131607 (last accessed Sept. 3, 2020).

162. The Samsung Galaxy S10 smartphone also contains an integrated CPU and graphics controller chip, i.e., the Qualcomm Snapdragon 855 SoC, which is mounted on a printed circuit board, as shown below.



- S10: 512 GB Samsung eUFS NAND flash storage
- Samsung K3UH7H70AM LPDDR4X layered over Qualcomm Snapdragon 855 SoC
- Qualcomm WCD9341 audio codec
- Qorvo 78062, likely a RF Fusion front-end module
- Maxim MAX77705C PMIC
- Skyworks 78160-5

https://www.ifixit.com/Teardown/Samsung+Galaxy+S10+and+S10e+Teardown/120331 (last accessed Sept. 3, 2020).

163. At least in manufacturing and/or testing the Accused Instrumentalities,

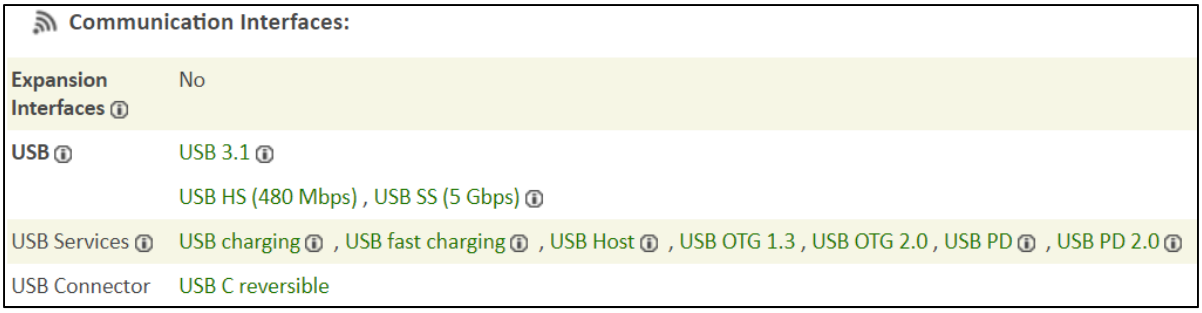
including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has connected a first LVDS channel directly to the integrated CPU and graphics controller, and the first LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. Paragraphs 45-59 above are incorporated herein by reference.

164. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has provided a connector, i.e., the USB-C connector of the Accused Mobile Devices, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, for the computer to connect to a console, e.g., a PC or television. Paragraphs 60-67 above are incorporated herein by reference.

165. The Samsung Galaxy S10 smartphone also includes a USB-C connector.

> The USB Type-C (or USB-C) is a fairly recent connector standard, and became available on Galaxy devices with Galaxy S8 and S8+. Its name basically refers to the physical shape of the plug. In this case, it's reversible meaning that you can plug in the USB Type-C cable any way because either way is up. And it doesn't matter which end of the cable you plug in either, since USB Type-C is interchangeable.
>
> USB Type-C is available on Galaxy S20, S20+, S20 Ultra, Z Flip, Note10, Note10+, Fold, S10e, S10, S10+, Fold, Note9, S9, S9+, Note8, S8, and S8+.

https://www.samsung.com/global/galaxy/what-is/usb-type-c/ (last accessed Sept. 3, 2020).

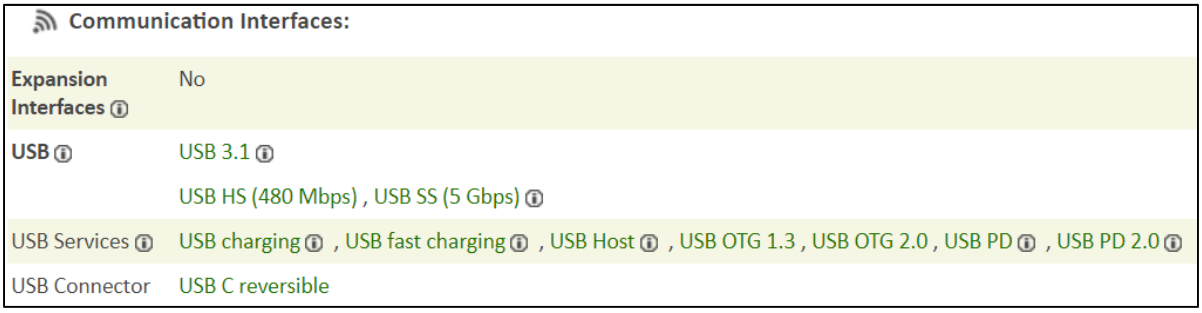


Communication Interfaces:	
Expansion Interfaces	No
USB	USB 3.1
	USB HS (480 Mbps) , USB SS (5 Gbps)
USB Services	USB charging , USB fast charging , USB Host , USB OTG 1.3 , USB OTG 2.0 , USB PD , USB PD 2.0
USB Connector	USB C reversible

http://phonedb.net/index.php?m=device&id=15512&c=samsung_sm-g977u_galaxy_s10_5g_td-lte_us_512gb__sm-g977v__samsung_beyond_x (last accessed Sept. 3, 2020).

166. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has provided a second LVDS channel comprising two unidirectional, serial channels that transmit data in opposite directions. Paragraphs 60-67 above are incorporated herein by reference.

167. The Samsung Galaxy S10 smartphone supports USB 3.1, as does the Qualcomm Snapdragon 855 SoC itself. The USB 3.1 Type-C functionality provides a second LVDS channel to couple to a console through the USB Type-C port, and through which USB protocol data can be conveyed.



Communication Interfaces:	
Expansion Interfaces	No
USB	USB 3.1
	USB HS (480 Mbps) , USB SS (5 Gbps)
USB Services	USB charging , USB fast charging , USB Host , USB OTG 1.3 , USB OTG 2.0 , USB PD , USB PD 2.0
USB Connector	USB C reversible

http://phonedb.net/index.php?m=device&id=15512&c=samsung_sm-g977u_galaxy_s10_5g_td-lte_us_512gb__sm-g977v__samsung_beyond_x (last accessed Sept. 3, 2020).

https://www.qualcomm.com/products/snapdragon-855-mobile-platform (last accessed Sept. 3, 2020).

168. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has enabled USB protocol data to be conveyed over the second LVDS channel. Paragraphs 60-67 above are incorporated herein by reference.

169. Defendants have actual notice pursuant to 35 U.S.C. § 287(a) of the '654 patent and the infringement alleged herein as of on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America. Paragraphs 76-80 above are incorporated herein by reference.

170. Defendants have indirectly infringed the '654 patent by actively inducing the direct infringement of others of the '654 patent, in the United States, the State of Texas, and the Eastern District of Texas.

171. Defendants have induced, through affirmative acts, their customers and other third parties to directly infringe the '654 patent. Defendants have induced others' direct infringement of the '654 patent by selling Accused Instrumentalities to third-party customers who then directly infringed by performing the claimed methods in the United States using the Accused Instrumentalities.

172. On information and belief, Defendants have actively promoted Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants' Accused Instrumentalities sold in the United States, Defendants

pursued and obtained approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

173. Defendants knew that their customers would use the Accused Instrumentalities to perform the claimed methods in the United States, and Defendants specifically intended their customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendants' direct and indirect purchasers directly infringed the '654 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

174. Defendants further induced others' direct infringement of the '654 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringed the '654 patent. Defendants had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendants and specifically intended that end users would perform such uses in the United States. For example, Defendants instructed end users regarding the use of the USB-C connector of Accused Instrumentalities to convey USB protocol data externally.

175. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '654 patent. As of at least May 15, 2018, Defendants knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce

infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

176. The above-described acts of infringement committed by Defendants have caused injury and damage to ACQIS.

177. Defendants' acts of infringement as described above have been willful.

178. ACQIS is entitled to recover damages sustained as a result of Defendants' wrongful acts in an amount subject to proof at trial, but in no event less than a reasonable royalty.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. RE45,140

179. The allegations set forth in paragraphs 1 through 88 of this Complaint are incorporated by reference as though fully set forth herein.

180. Pursuant to 35 U.S.C. § 282, the '140 patent is presumed valid.

181. Defendants have directly infringed one or more claims of the '140 patent in violation of 35 U.S.C. § 271(a) at least when manufacturing and/or testing the Accused Instrumentalities in the United States and 35 U.S.C. § 271(g) when importing into the United States products made abroad using the claimed '140 methods.

182. Samsung has infringed at least claim 30 of the '140 patent at least in the manner described in paragraphs 185-194 below. Plaintiff's allegations of infringement are not limited to claim 30, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

183. Paragraphs 185-194 describe the manner in which Samsung has infringed

claim 30 of the ’140 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, and/or when importing into the United States Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, made abroad using the claimed process.

184. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Samsung Galaxy S20 Ultra 5G smartphone and Samsung Galaxy S10 smartphone, in particular with regard to the manner in which the Accused Instrumentalities include and utilize PCIe and/or USB 3.x functionality. Paragraphs 185-194 are thus illustrative of the manner in which Samsung has infringed the claims of the ’140 patent as to each of the Accused Instrumentalities.

185. Samsung has practiced claim 30’s method of improving performance of a computer at least when manufacturing and/or testing the Accused Instrumentalities in the United States and/or when importing into the United States products made abroad using the claimed process.

186. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has obtained an integrated CPU with a graphics controller in a single chip. Paragraphs 40-44 and 162 above are incorporated herein by reference.

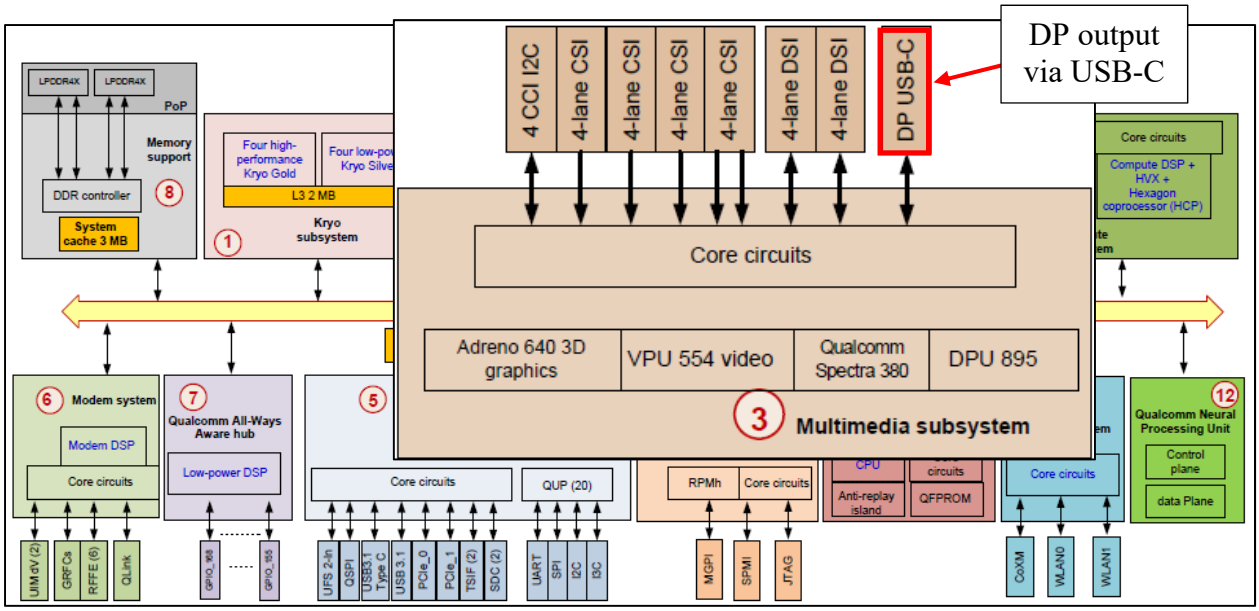
187. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10

smartphone, Samsung has connected an LVDS channel directly to the integrated CPU and graphics controller, and the LVDS channel comprises two unidirectional, serial bit channels that transmit data in opposite directions. Paragraphs 45-59 above are incorporated herein by reference.

188. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has conveyed serially encoded address and data of a PCI bus transaction through the LVDS channel. Paragraphs 45-59 above are incorporated herein by reference.

189. At least in manufacturing and/or testing the Accused Instrumentalities, including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has connected a Differential Signal channel directly to the integrated CPU and graphics controller to output video data. For example, the USB-C connector of the Accused Mobile Devices, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone, supports DisplayPort and can be used to connect the device to a console, e.g., a television or PC, and output video data. The DisplayPort via USB-C interface is directly connected to the integrated CPU and graphics controller. Paragraphs 60-67 above are incorporated herein by reference.

190. On information and belief, the DisplayPort via USB-C interface in the Qualcomm Snapdragon 865 SoC is similar to the Snapdragon 855 SoC depicted in the block diagram below.



Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf) (call-out and annotations added).

191. The USB-C connector in the Samsung Galaxy S10 smartphone also supports DisplayPort and can be used to connect the device to a console, e.g., a television or PC, and output video data. The DisplayPort via USB-C interface is directly connected to the integrated CPU and graphics controller, as shown in the SM8150 block diagram in paragraph 190 above.

> **TV connection**
>
> Wireless: Smart View (screen mirroring 1080p at 30fps)
>
> Wired: supports DisplayPort over USB type-C. Supports video out when connecting via HDMI Adapter. (DisplayPort 4K UHD at 60 fps)

https://www.samsung.com/global/galaxy/galaxy-s10/specs/ (last accessed Sept. 3, 2020).

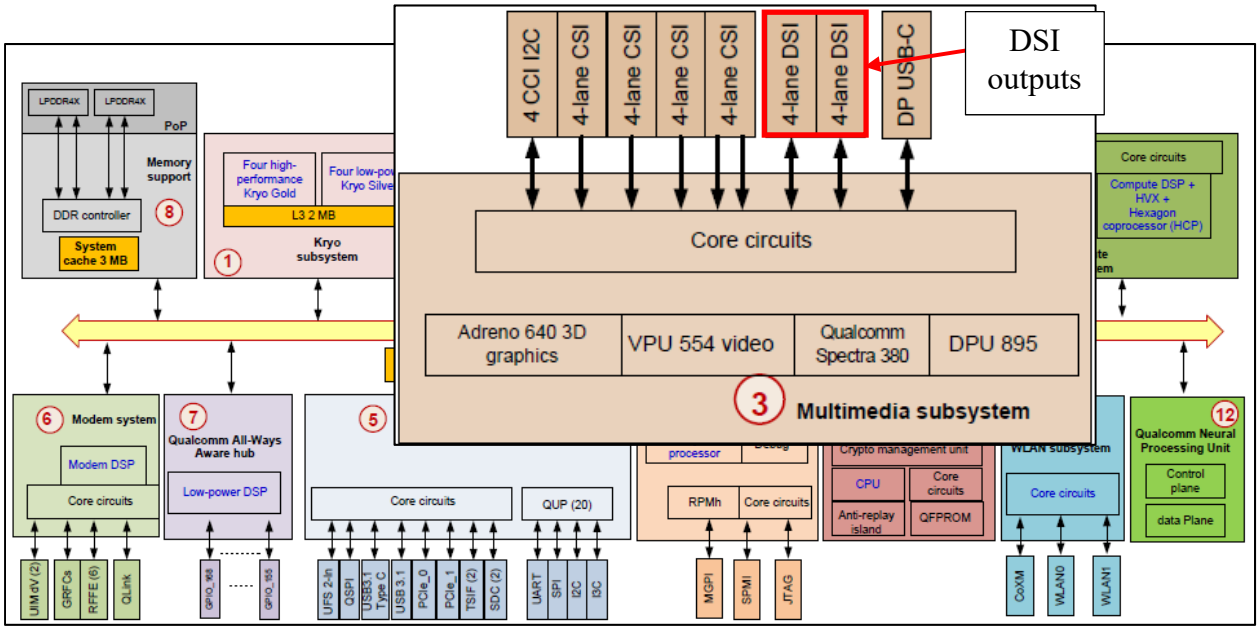
192. As a further example, in the Accused Instrumentalities, as exemplified by the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone,

the integrated CPU and graphics controller output video data to the device display via a differential signal channel directly connected to the integrated CPU and graphics controller, i.e., MIPI-DSI.

I/O Interfaces	1x PCIe, HDMI 2.0, 1x USB 3.1 Type C, 2x USB 3.0 Type A, 1x USB 2.0 micro-B for UART, 6x MIPI-CSI 2x MIPI dual 4-lane DSI Expansion headers for additional features

Qualcomm Snapdragon 865 Mobile Hardware Development Kit at 2 (https://developer.qualcomm.com/downloads/snapdragon-mobile-865-hdk-product-brief) (emphasis added).

193. On information and belief, the MIPI-DSI interfaces in the Qualcomm Snapdragon 865 SoC are similar to the Snapdragon 855 SoC depicted in the block diagram below.



Qualcomm Hexagon DSP User Guide, 80-VB419-108 Rev. C (Sept. 24, 2018), at 7 (https://www.devever.net/~hl/f/80-VB419-108_Hexagon_DSP_User_Guide.pdf) (call-out and annotations added).

194. At least in manufacturing and/or testing the Accused Instrumentalities,

including the Samsung Galaxy S20 Ultra 5G smartphone and the Samsung Galaxy S10 smartphone, Samsung has connected memory directly to the integrated CPU and graphics controller. Paragraphs 68-73 above are incorporated herein by reference.

195. Defendants have actual notice pursuant to 35 U.S.C. § 287(a) of the '140 patent and the infringement alleged herein as of on or around May 15, 2018, when ACQIS sent a notice letter to Samsung Electronics North America. Paragraphs 76-80 above are incorporated herein by reference.

196. Defendants have indirectly infringed the '140 patent by actively inducing the direct infringement of others of the '140 patent, in the United States, the State of Texas, and the Eastern District of Texas.

197. Defendants have induced, through affirmative acts, their customers and other third parties to directly infringe the '140 patent. Defendants have induced others' direct infringement of the '140 patent by selling Accused Instrumentalities to third-party customers who then directly infringed by performing the claimed methods in the United States using the Accused Instrumentalities.

198. On information and belief, Defendants have actively promoted the Accused Instrumentalities for the U.S. market. For example, on information and belief, for every one of Defendants' Accused Instrumentalities sold in the United States, Defendants pursued and obtained approval from U.S. and state regulatory agencies, such as the United States Federal Communications Commission, to allow sales of such Accused Instrumentalities in the United States.

199. Defendants knew that their customers would use the Accused

Instrumentalities to perform the claimed methods in the United States, and Defendants specifically intended their customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendants' direct and indirect purchasers directly infringed the '140 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

200. Defendants further induced others' direct infringement of the '140 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringed the '140 patent. Defendants had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendants and specifically intended that end users would perform such uses in the United States. For example, Defendants instructed end users regarding the use of the USB-C connector of the Accused Instrumentalities to output video data.

201. Defendants have induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '140 patent. As of at least May 15, 2018, Defendants knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

202. The above-described acts of infringement committed by Defendants have

caused injury and damage to ACQIS.

203. Defendants' acts of infringement as described above have been willful.

204. ACQIS is entitled to recover damages sustained as a result of Defendants' wrongful acts in an amount subject to proof at trial, but in no event less than a reasonable royalty.

JURY TRIAL DEMANDED

ACQIS LLC, hereby demands a trial by jury on all claims and issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff ACQIS respectfully requests that this Court:

A. Enter judgment that each of the Defendants has infringed one or more claims of each of the ACQIS Patents and continues to infringe those claims, and that such infringement is willful;

B. Enter an order, pursuant to 35 U.S.C. § 284, awarding to Plaintiff ACQIS monetary relief in an amount adequate to compensate for Defendants' infringement of the ACQIS Patents, in an amount to be determined at trial, but not less than a reasonable royalty, as well as pre- and post-judgment interest and costs and enhanced damages for Defendants' willful infringement of the ACQIS Patents;

C. Enter an order that Defendants pay to Plaintiff ACQIS ongoing royalties in an amount to be determined for any infringement occurring after the date that judgment is entered;

D. Enter an order, pursuant to 35 U.S.C. § 285, declaring this to be an exceptional case and thereby awarding to Plaintiff ACQIS its reasonable attorneys' fees; and

E. Enter an order awarding to Plaintiff ACQIS such other and further relief, whether at law or in equity, that this Court seems just, equitable, and proper.

Dated: September 3, 2020

Respectfully submitted,

By: */s/ Ronald J. Schutz w/permission Andrea L. Fair*

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