UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

ACQIS LLC, a Texas limited liability company, Plaintiff, v. ASUSTEK COMPUTER, INC., a Taiwan corporation, Defendant.	**Civil Action No.** 6:20-CV-00966 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff ACQIS LLC ("Plaintiff" or "ACQIS"), by its attorneys, hereby alleges patent infringement against Defendant ASUSTeK Computer, Inc. ("Defendant" or "ASUS") as follows:

INTRODUCTION

1. This is an action for patent infringement under the United States Patent Laws, 35 U.S.C. § 1 *et seq*. Beginning in the late 1990s, Dr. William Chu founded ACQIS and invented a variety of pioneering computer technologies that employed serial transmission along low voltage differential signal (LVDS) channels to dramatically increase the speed at which data can be transmitted while also reducing power consumption and noise. Dr. Chu's inventions have become foundational in the computer industry, and are found in a variety of data transmission systems, including PCI Express (PCIe) and/or USB 3.x[1] transactions.

2. ASUS has infringed and continues to infringe, directly and/or indirectly, the following patents owned by ACQIS: U.S. Patent Nos. 9,529,768 ("'768 patent"), 9,703,750 ("'750 patent"),

[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.

8,756,359 ("'359 patent"), 8,626,977 ("'977 patent"), RE44,739 ("'739 patent"), 8,977,797 ("'797 patent"), 9,529,769 ("'769 patent"), RE45,140 ("'140 patent"), and RE44,654 ("'654 patent") (collectively, the "ACQIS Patents"). Copies of the ACQIS Patents are attached to this Complaint as Exhibits 1-9.

3. Specifically, ASUS has directly and/or indirectly infringed and continues to infringe the ACQIS Patents through: (1) the manufacture, use, offering to sale, and/or sale in the United States, and/or the importation into the United States, of infringing computer products; (2) the practice of claimed methods of the ACQIS Patents by using and/or testing computer products in the United States; (3) the importation into the United States of computer products made abroad using ACQIS's patented processes; (4) the inducement of third parties to engage in the activity described above with knowledge of the ACQIS Patents and of the third parties' infringing actions; and (5) contributing to the direct infringement of third parties by importing motherboards with instructing to install CPUs, memory and other peripherals in the motherboards to create a functioning and infringing device knowing that the motherboards are a material part of an infringing printed circuit board and do not have substantial non-infringing uses.

4. ACQIS seeks damages and other relief for ASUS's infringement of the ACQIS Patents. ACQIS is entitled to past damages because, without limitation, it has provided actual notice to ASUS and for method claims which do not require marking.

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 ASUS is a Taiwan corporation with its headquarters located in the LiDe Building at No.15, LiDe Rd., Beitou Dist., Taipei City 112, Taiwan, R.O.C.

7. Defendant has a distribution chain (together with other ASUS subsidiaries, affiliates, and intermediaries) with respect to the manufacture, use, offering to sell, and/or sale of infringing ASUS-brand computer products and with respect to the importation into the United States of infringing ASUS-brand computer products and of ASUS-brand computer products made abroad using patented processes claimed in the ACQIS Patents.

JURISDICTION AND VENUE

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

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

10. This Court has personal jurisdiction over the Defendant consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, Defendant has purposefully manufactured and/or distributed computer products that infringe the ACQIS Patents, or that were made abroad using patented processes claimed in the ACQIS Patents, through established distribution channels with the expectation that those products would be sold in the United States, State of Texas, and in this District. Further, Defendant has (itself and/or through the activities of subsidiaries, affiliates, or intermediaries) committed and continue to commit acts of patent infringement in the United States, State of Texas and this District, including by making, using, offering to sell, and/or selling infringing ASUS-brand computer products in the United States, State of Texas and this District; importing infringing ASUS-brand computer products and/or ASUS-brand computer products made abroad using ACQIS's patented processes into the United States for sale in the State of Texas and this

District; and/or inducing others to commit acts of patent infringement in the United States, State of Texas and this District. Accordingly, ASUS has established minimum contacts within Texas and purposefully availed itself of the benefits of Texas, and the exercise of personal jurisdiction over ASUS would not offend traditional notions of fair play and substantial justice. In addition, or in the alternative, this Court has personal jurisdiction over ASUS pursuant to Federal Rule of Civil Procedure 4(k)(2).

11. Venue is proper in this District pursuant to 28 U.S.C. § 1391(c)(3) because Defendant do not reside in the United States and thus may be sued in any judicial district in the United States.

FACTUAL BACKGROUND

Dr. Chu and the ACQIS Patents

12. Dr. William Chu has been a prolific innovator in the computing industry since the 1970s.

13. In 1976, Dr. Chu received his Ph.D. in Electrical Engineering from the University of California, Berkeley.

14. Dr. Chu then began working in semiconductor design for American Microsystems, Inc. from 1976 to 1977, and then for Zilog, Inc. from 1977 to 1982.

15. In 1982, Dr. Chu founded Verticom, Inc., which developed innovative technologies relating to video transmission over telephone lines. Verticom also developed graphics products for the PC computer-aided design (CAD) market. Verticom's success resulted in its stock being listed on the NASDAQ exchange in 1997. In 1998, Verticom was acquired by Western Digital Imaging, Inc.

16. Dr. Chu served as Vice President of Engineering for Western Digital from 1988 to 1991, overseeing a development 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.

17. After Western Digital, Dr. Chu worked for Acumos, Inc. from 1991 to 1992 as a Vice President managing engineering for computer graphics chip development. Acumos was acquired by Cirrus Logic, Inc. in 1992.

18. 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.

19. In 1998, Dr. Chu founded ACQIS Technology, Inc. to pursue his vision of developing a small, portable computer module that could be interchangeably connected with a variety of different peripheral consoles. In the course of this development effort, Dr. Chu recognized the need for a better interconnection between the core computing module and a peripheral console. Such interconnections traditionally conveyed peripheral component interconnect (PCI) bus transactions in parallel using a large number of signal channels and connector pins. This made it difficult to employ LVDS channels, which are more "cable friendly," consume less power, and generate less noise. Dr. Chu wanted to develop an interconnection system that was scalable, used connectors with low pin counts, was power-efficient, high performing, and easily extendible for future computing needs and technologies. This development work resulted in a large family of patents now owned by ACQIS, which disclose and claim a variety of pioneering inventions relating to improved, high-performance and low-power consuming interconnection technologies for computer modules.

20. After several decades in the industry, Dr. Chu is now a named inventor of approximately forty-one (41) U.S. Patents.

21. Among the patent portfolio covering Dr. Chu's inventions and owned by ACQIS are the ACQIS Patents asserted in this case.

22. 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.

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

24. The '359 patent, entitled "Computer System Including CPU or Peripheral Bridge to Communicate Serial Bits of Peripheral Component Interconnect Bus Transaction and Low Voltage Differential Signal Channel to Convey the Serial Bits," was duly and legally issued on June 17, 2014, from a patent application filed January 17, 2013, with William W.Y. Chu as the sole namedinventor. The '359 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

25. The '977 patent, entitled "Computer System Including CPU or Peripheral Bridge to Communicate Serial Bits of Peripheral Component Interconnect Bus Transaction and Low Voltage Differential Signal Channel to Convey the Serial Bits," was duly and legally issued on January 7, 2014, from a patent application filed July 27, 2012, with William W.Y. Chu as the sole named

inventor. The ’977 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

26. The ’739 patent, entitled “Data Security Method and Device for Computer Modules,” was duly and legally issued on January 28, 2014, from a patent application filed May 21, 2013, with William W.Y. Chu as the sole named inventor. The ’739 patent claims priority to U.S. Patent Application No. 11/056,604, filed on February 10, 2005.

27. 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.

28. The ’769 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 February 26, 2016, with William W.Y. Chu as the sole named inventor. The ’769 patent claims priority to U.S. Patent Application No. 11/097,694, filed on March 31, 2005.

29. 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.

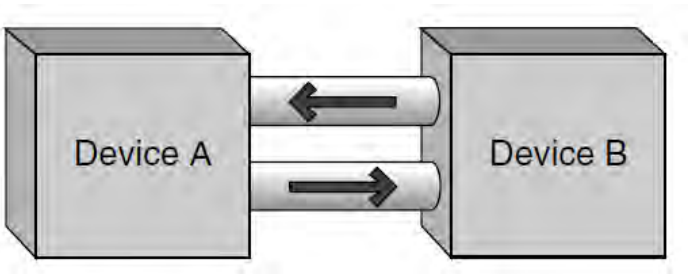
30. The ’654 patent, entitled “Data Security Method and Device for Computer Modules,” was duly and legally issued on December 17, 2013, from a reissue application filed October 10, 2012,

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.

31. The inventions claimed in the ACQIS Patents enable computers to operate faster with better efficiency through faster interconnections including between the core computing power modules and any connected consoles.

32. The claims in the ACQIS Patents generally relate to computers and computer systems that employ CPUs coupled to LVDS channels that convey various types of data (*e.g.*, PCI bus transactions, USB 3.x data, and/or digital video data) in a serial bit stream using pairs of unidirectional channels to convey the data in opposite directions.

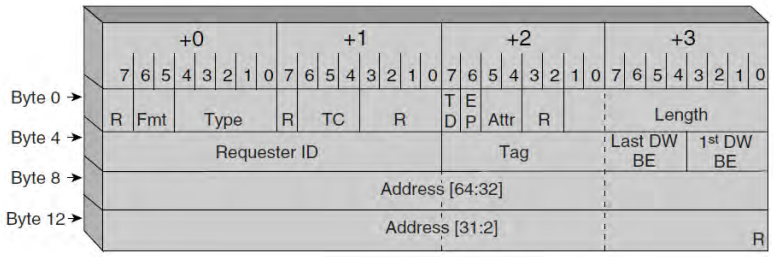
33. Over the years, Dr. Chu's inventive developments have become more and more widely used in computing technologies. One prime example is the computing industry's adoption of PCI Express, which post-dates Dr. Chu's inventions but embodies Dr. Chu's patented interconnection invention by using "high speed, low voltage, differential serial pathway for two devices … to communicate simultaneously by implementing dual unidirectional paths between two devices[.]"



See Introduction to PCI Express – A Hardware and Software Developers Guide, Intel Press (2003), at 1-2 ("There are certain times in the evolution of technology that serve as inflection points that forever change the course of events. For the computing sector and communications, the adoption of PCI Express, a groundbreaking new general input/output architecture, will serve as one of these

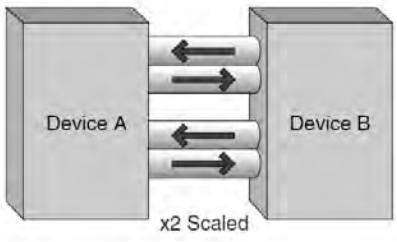
inflection points.”).

34. PCI Express connections transmit data packets known as transaction layer packets (TLP) that include data bits, address bits, and byte enable (BE) information bits.



Id. at 93-114.

35. In sum, PCI Express connections are LVDS channels that convey data bits, address bits, and byte enable information bits of a PCI bus transaction in a serial bit stream using pairs of unidirectional, differential signal lanes to convey the information in opposite directions allowing the connection to be scalable and dramatically reducing the pin-count required for connectors, as well as other benefits. “Currently PCI Express defines the following configuration of serial links: x1, x2, x4, x8, x12, x16, and x32. … An x2 configuration indicates two serial paths to and from a device[.]”



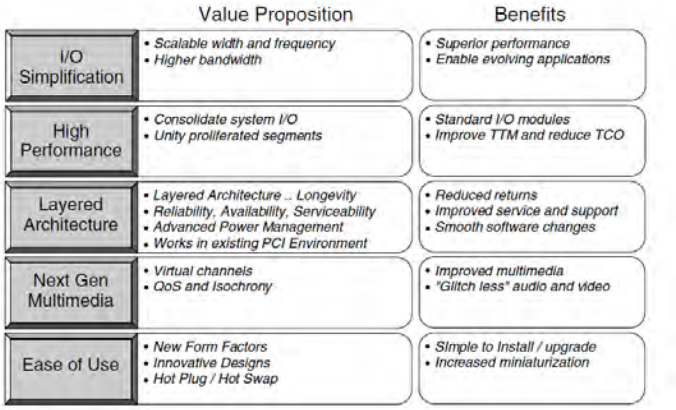
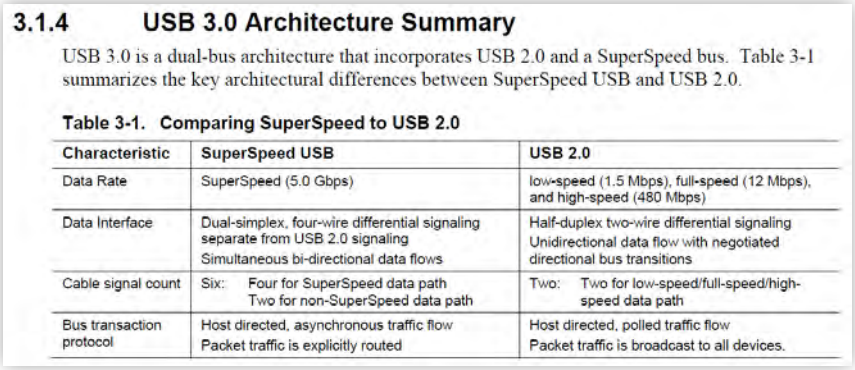


Figure 4.1 PCI Express Benefits

Id. at 3, 50.

36. Another example of a computer-to-peripheral interconnection that embodies Dr. Chu’s patented invention is the USB 3.x connection. The “Super Speed” USB 3.0 architecture uses

at least two pairs of unidirectional, point-to-point differential signal paths. Each pair includes a transmit path and a receiving path, thus transmitting the USB data packet information in opposite directions.



3.1.4 USB 3.0 Architecture Summary

USB 3.0 is a dual-bus architecture that incorporates USB 2.0 and a SuperSpeed bus. Table 3-1 summarizes the key architectural differences between SuperSpeed USB and USB 2.0.

Table 3-1. Comparing SuperSpeed to USB 2.0

Characteristic	SuperSpeed USB	USB 2.0
Data Rate	SuperSpeed (5.0 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
Cable signal count	Six: Four for SuperSpeed data path Two for non-SuperSpeed data path	Two: Two for low-speed/full-speed/high-speed data path
Bus transaction protocol	Host directed, asynchronous traffic flow Packet traffic is explicitly routed	Host directed, polled traffic flow Packet traffic is broadcast to all devices.

Universal Serial Bus 3.0 Specification, Rev. 1.0 (Nov. 12, 2008), at 3-1 to 3.5. In sum, USB 3.x connections are LVDS channels using two unidirectional, differential signal pairs that transmit USB protocol data packets in opposite directions.

37. Intel's Direct Media Interface (DMI) is similar to PCIe and implements at least four serial lanes that all use differential signaling constituting 2 transmit lanes and 2 receive lanes and, therefore, transmitting data in opposite directions. *See* https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/ia-introduction-basics-paper.pdf . *See also* https://en.wikipedia.org/wiki/Direct_Media_Interface ("DMI shares many characteristics with PCI Express, using multiple lanes and differential signaling to form a point-to-point link.").

38. Each claim of the ACQIS Patents is a patentable, valid and enforceable invention that is novel and non-obvious over the prior art.

39. ACQIS has not authorized or licensed ASUS to practice any of the inventions claimed in the ACQIS Patents.

ASUS's Infringing Products

40. ASUS is a global leader in the personal and business computer market. ASUS makes and sells a variety of laptop computers, desktop computers, motherboards, and computer servers. ASUS imports infringing laptop computers, desktop computers, computer servers, and motherboards, and laptop computers, desktop computers, computer servers, and motherboards made using infringing processes, into the United States through an established distribution channel with the expectation that those products would be sold in the United States, State of Texas, and this District.

41. On information and belief, ASUS's sale of laptops, desktops, motherboards and servers generates billions of dollars in revenue every year.

42. ASUS sells billions of dollars in computer products every year. It has been repeatedly recognized as the Most Valuable International Brand from Taiwan and stands in the top three computer laptop suppliers world-wide.

43. ASUS has directly infringed, and continues to infringe, one or more claims of each of the ACQIS Patents under at least 35 U.S.C. §§ 271(a) and (g), by making, using, offering to sell, and/or selling within the United States, and/or importing into the United States computer products that embody the claimed inventions of Dr. Chu, and by importing into the United States computer products that were made abroad using patented processes claimed in the ACQIS Patents.

44. ASUS makes, uses, imports and sells a variety of laptop computer products in the United States that infringe one or more of the claims in the ACQIS Patents, and/or imports into the United States laptop computer products that were made abroad using patented processes claimed in the ACQIS Patents including, without limitation, laptops sold under the brand names ZenBook, VivoBook, Republic of Gamers (ROG), Q, ExpertBook, StudioBook, ASUS Chromebook, ASUS TUF, and ASUS. These products are collectively referred to as the "Accused Laptops."

45. ASUS makes, uses, imports and sells a variety of desktop computer products in the United States that infringe one or more of the claims in the ACQIS Patents, and/or imports into the United States desktop computer products that were made abroad using patented processes claimed in the ACQIS Patents including, without limitation, desktop computers sold under the brand names ZenAiO, VivoAiO, ASUSPRO, VivoPC, Republic of Gamers (ROG), VivoMini, and Mini PC series. These products are collectively referred to as the "Accused Desktops."

46. ASUS makes, uses, imports and sells a variety of computer server products in the United States that infringe one or more of the claims in the ACQIS Patents, and/or imports into the United States computer server products that were made abroad using patented processes claimed in the ACQIS Patents including, without limitation, the TS series, RS series, S Storage, E Workstations, and ESC series. These products are collectively referred to as the "Accused Servers."

47. ASUS makes, uses, imports and sells a variety of motherboard products in the United States that, when combined with a CPU and memory as instructed by ASUS, infringe one or more of the claims in the ACQIS Patents, and/or imports into the United States motherboard products that were made abroad using patented processes claimed in the ACQIS Patents including, without limitation, motherboards sold under the brand names Republic of Gamers (ROG), ASUS Prime, ProArt, ASUS Pro, the WS series, and TUF Gaming. These products are collectively referred to as the "Accused Motherboards."

48. The Accused Laptops, Accused Desktops, Accused Servers, and Accused Motherboards are collectively referred to herein as the "Accused ASUS Products."

49. On information and belief, ASUS manufactures and tests Accused ASUS Products abroad and uses, offers to sell, sells and/or imports the Accused ASUS Products into the United States.

50. On information and belief, the Accused ASUS Products that ASUS imports into the United States are manufactured outside the United States using one or more processes claimed in the

ACQIS Patents.

51. The Accused ASUS Products include products made, used, offered for sale, sold within the United States, and/or imported into the United States at least since ACQIS provided ASUS actual notice of its infringement on or around May 15, 2018.

52. The Accused ASUS Products also include products made using the processes claimed in the ACQIS Patents and imported into the United States within the six years preceding the date of this Complaint.

53. The Accused ASUS Products also include products that are used to perform one or more methods claimed in the ACQIS Patents within the six years preceding the date of this Complaint.

The Accused Laptops

54. On information and belief, all of the Accused Laptops are configured and operate in substantially the same way as explained below using the ASUS ZenBook Pro 15 as an example for illustrative purposes.

55. The ZenBook Pro 15 is a computer system that runs the Windows operation system.

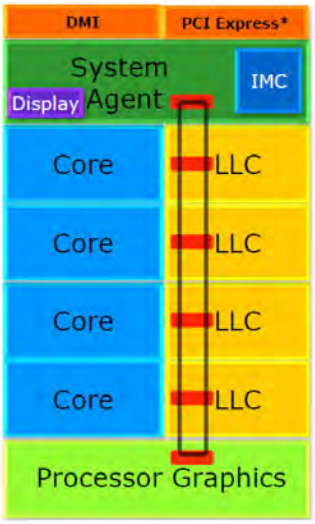
https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/

56. The ZenBook Pro 15 uses an Intel® Core processor, such as the 10th Gen Intel® Core i7-10750H.

Processor	**Intel® Core™ i7-10750H processor** 2.6 GHz quad-core with Turbo Boost (up to 5.00 GHz) and 12 MB cache

https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/Tech-Specs/

57. Intel's standard core architecture (including the 10th Gen Intel® Core i7-10750H architecture) integrates the central processing unit (CPU) with a graphics subsystem and an interface controller. On information and belief, the Intel Core processors integrate one or more interface controllers within Intel's "System Agent" to control PCIe and other data transmissions from the CPU.



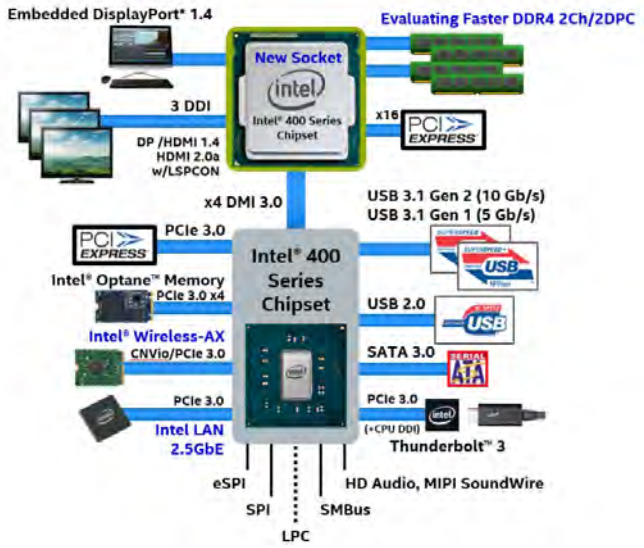
https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/ia-introduction-basics-paper.pdf

Processor Graphics	
Processor Graphics ‡ ?	Intel® UHD Graphics for 10th Gen Intel® Processors

PCI Express Revision ?	3.0
PCI Express Configurations ‡ ?	Up to 1x16, 2x8, 1x8+2x4
Max # of PCI Express Lanes ?	16

https://ark.intel.com/content/www/us/en/ark/products/201837/intel-core-i7-10750h-processor-12m-cache-up-to-5-00-ghz.html?wapkw=Core%20i7-10750H

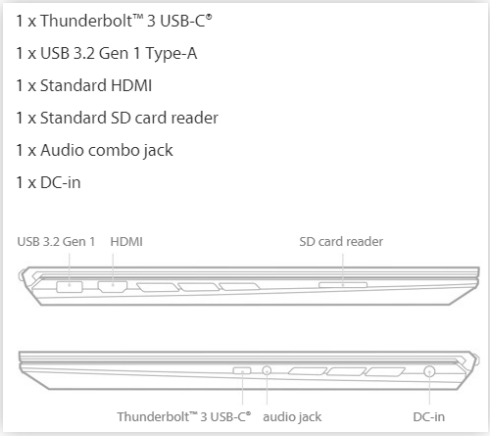
58. The ZenBook Pro 15 laptops include a variety of connectors that can couple the CPU to a console, including through Intel's Embedded DisplayPort® connector and through USB 3.0, HDMI[2], and Thunderbolt[3] ports.



10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

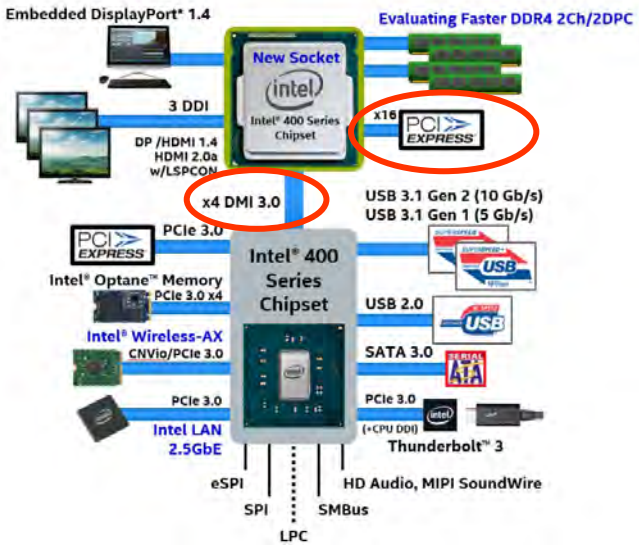
[2] High-Definition Multimedia Interface (HDMI) uses transition minimized differential signaling (TMDS) to carry digital video signals. *See* 10th Generation Intel® CoreTM Processors Datasheet, vol. 1 of 2, at p. 41 (July 2020, Rev. 005) (Doc. No. 615211-005).

[3] Thunderbolt 3 connectors can transmit USB 3.x, PCIe and DisplayPort data signals. *See* https://thunderbolttechnology.net/thunderbolt-3-infographic; https://www.engadget.com/2011-02-24-intel-thunderbolt-a-closer-look.html.



https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/Tech-Specs/

59. The Intel processors employed in the ZenBook Pro 15 laptops connect directly to a variety of LVDS channels that convey data bits in a serial stream using unidirectional pairs of lanes transmitting data in opposite direction, including Intel's DMI and PCIe channels, and the directly-connected PCIe channels connect the CPU to a graphics card.

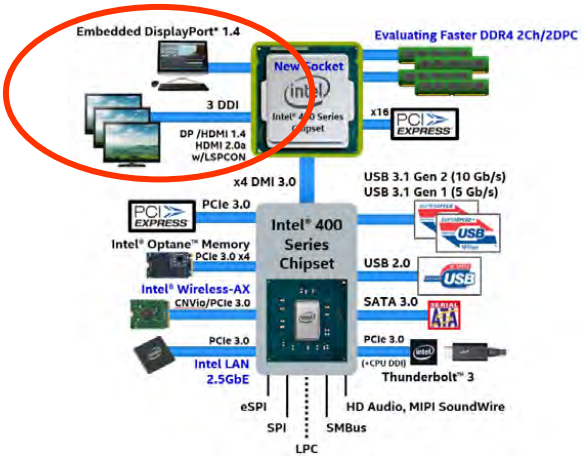


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11, 26-30 (July 2020, Rev. 005) (Doc. No. 615211-005)

Graphics	NVIDIA® GeForce® GTX 1650 Ti with Max-Q Design, with 4 GB GDDR6

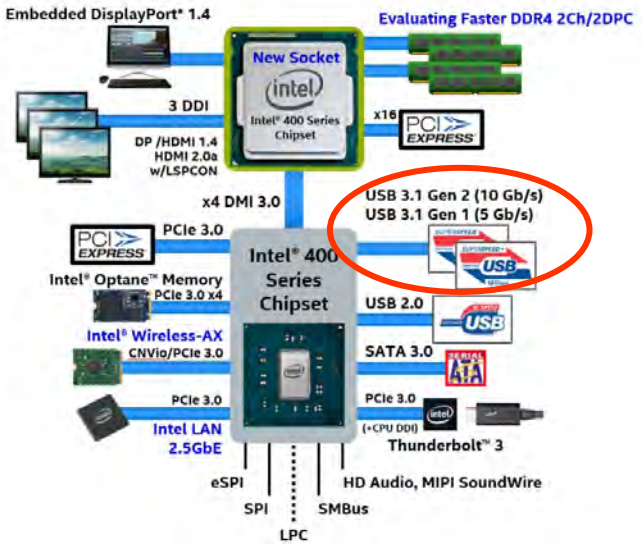
https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/Tech-Specs/

60. The Intel processors employed in the ZenBook Pro 15 laptops also connect directly to a variety of differential signal channels that output digital video signals through a connector, including HDMI and DisplayPort.



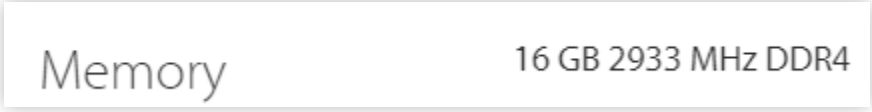
10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

61. The Intel processors employed in the ZenBook Pro 15 laptops also connect to LVDS channels that convey USB data packets through pairs of unidirectional differential signal paths in opposite directions—USB 3.x ports.

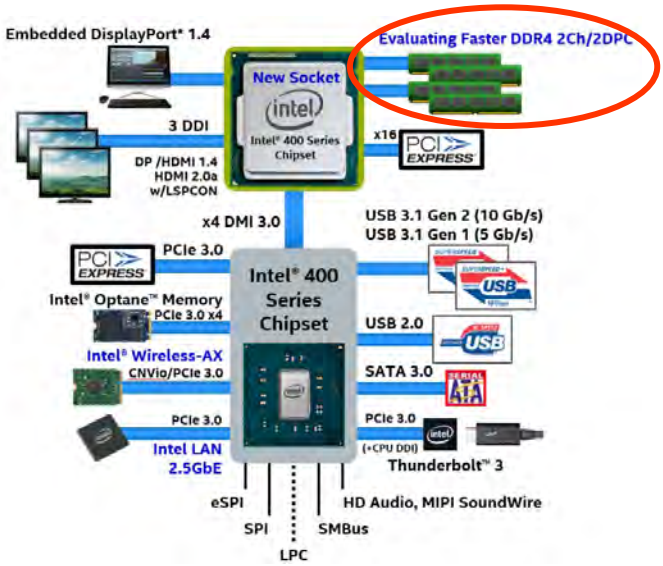


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

62. The ZenBook Pro 15 laptops have DDR4 system memory connected directly to the CPU.



https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/Tech-Specs/

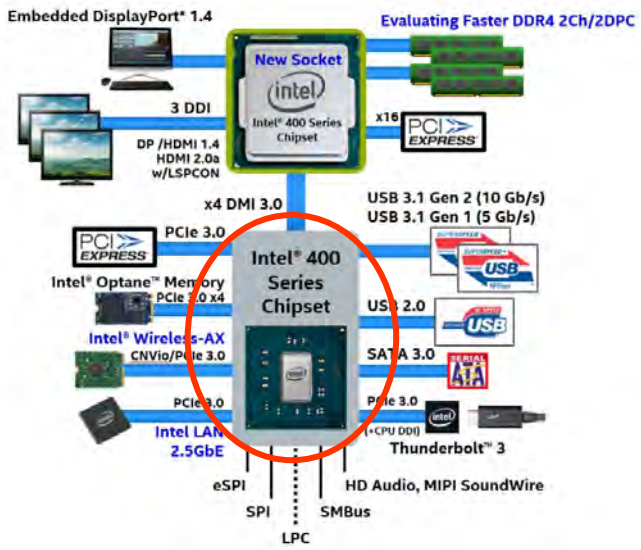


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

63. The ZenBook Pro 15 laptops have a mass storage hard drive coupled to the CPU.

https://www.asus.com/us/Laptops/ASUS-ZenBook-Pro-15-UX535LI/Tech-Specs/

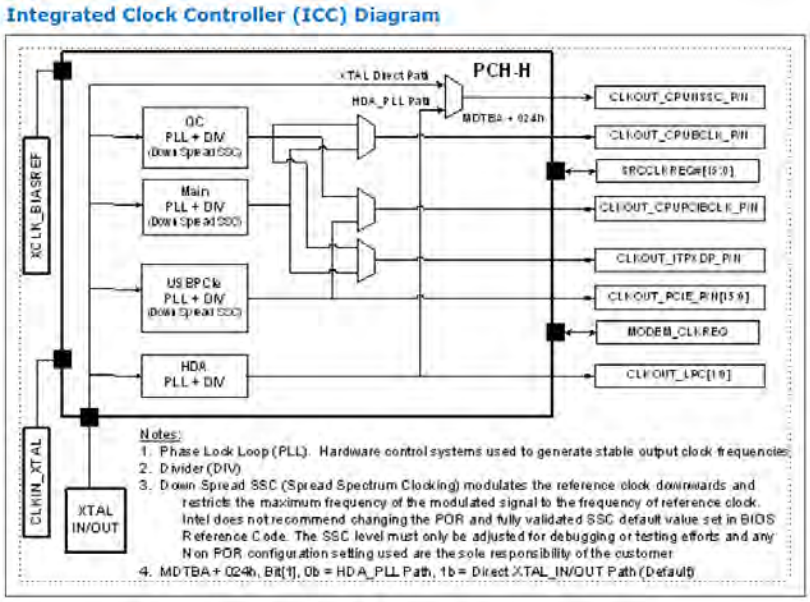
64. The Intel processors used in the ZenBook Pro 15 laptops have a peripheral bridge called the Platform Controller Hub (PCH) connected to the CPU via the DMI. Because the PCH is coupled to PCIe, USB 3.x, and other interface connections, it necessarily has integrated interface controllers to control data transmission through those interfaces.



10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

65. The Intel PCH used in the ZenBook Pro 15 laptops has an Integrated Clock Controller (ICC) that includes PLL circuitry, which uses Spread Spectrum Clocking (SSC) to generate different

clock frequencies to convey the PCI bus transactions and USB transactions through the PCIe and USB channels based on the different clock frequencies.



Intel® 400 Series Chipset Family Platform Controller Hub Datasheet, Vol. 1, p. 169-171 (May 2020, Rev. 2; Doc. No. 620854-002).

66. In view of the foregoing facts concerning the technical features and functionalities of the Accused Laptops (*see* ¶¶ 54-65), when ASUS manufactures the Accused Laptops, it improves the speed and performance of the peripheral data communication in its computer products by using a method of manufacturing that includes the following steps: (a) obtaining a CPU with a graphics controller in a single chip; (b) connecting one or more unidirectional differential signal channels to the CPU to output digital video data; (c) providing a connector with an LVDS channel to facilitate data communication with external peripherals, including digital video data communication; (d) providing multiple LVDS channels, connecting them to the CPU, which use one or more pairs of unidirectional lanes that convey USB protocol data and/or PCIe bus transaction data in serial bit streams in opposite directions; (e) connecting the CPU directly to a peripheral bridge on a circuit

board; and (f) directly connecting to the peripheral bridge one or more LVDS channels with pairs of unidirectional lanes that convey data in serial bit streams in opposite directions.

67. On information and belief, ASUS performs the foregoing manufacturing steps outside the United States to make the Accused Laptops and then imports the Accused Laptops into the United States to be marketed and sold.

The Accused Desktops

68. On information and belief, all of the Accused Desktops are configured and operate in substantially the same way as explained below using the ASUS S340MF Tower as an example for illustrative purposes.

69. The ASUS S340MF is a computer system that runs the Windows operation system.

https://www.asus.com/us/Tower-PCs/ASUS-S340MF/

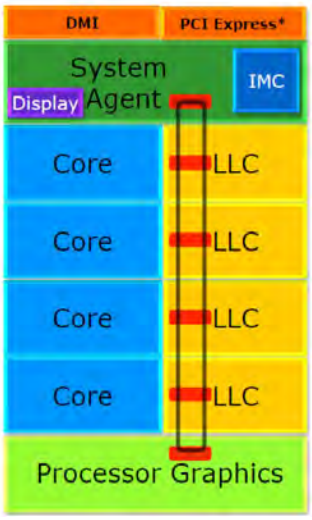
70. The ASUS S340MF uses an Intel® Core processor, such as the 9th Gen Intel® Core i5-9500 processor.

Processor	The 9th generation Intel® Core™ i3/i5 Processor Intel® Core™ i3 9100 Intel® Core™ i5 8500/9400 U0/R0/9500

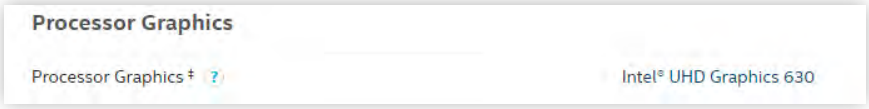
https://www.asus.com/us/Tower-PCs/ASUS-S340MF/specifications/

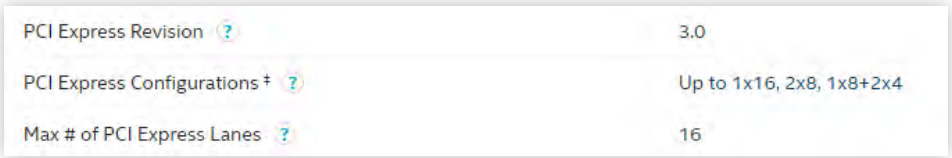
71. On information and belief, Intel's standard core architecture (including the 9th Gen Intel® Core i5-9500 processor architecture) integrates the central processing unit (CPU) with a

graphics subsystem and an interface controller on a single chip. On information and belief, the Intel Core processors integrate one or more interface controllers within Intel's "System Agent" to control PCIe and other data transmissions from the CPU.



https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/ia-introduction-basics-paper.pdf





https://ark.intel.com/content/www/us/en/ark/products/134895/intel-core-i5-9500-processor-9m-cache-up-to-4-40-ghz.html

https://www.asus.com/us/Tower-PCs/ASUS-S340MF/specifications/

72. The ASUS S340MF includes a variety of connectors that can couple the CPU to a console through the Embedded DisplayPort®, DVI, HDMI, USB 3.x, USB-C[4] and other ports.

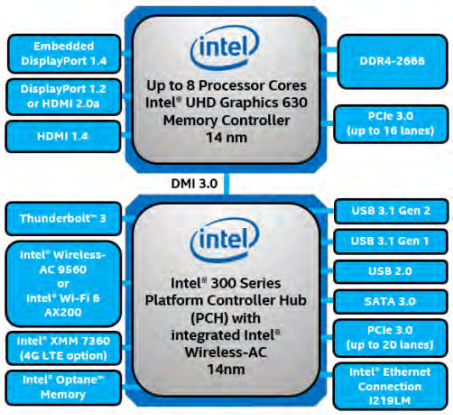


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf

https://www.asus.com/us/Tower-PCs/ASUS-S340MF/Features/

[4] USB Type C connectors can convey both USB protocol data as well as DisplayPort digital video. *See* https://www.usb.org/sites/default/files/D2T1-4%20-%20VESA%20DP%20Alt%20Mode%20over%20USB%20Type-C.pdf; https://www.displayport.org/displayport-over-usb-c-7-reasons/; https://www.androidauthority.com/what-is-usb-type-c-594575/.

73. The Intel processors employed in the ASUS S340MF connect directly to a variety of LVDS channels that convey data bits in a serial stream using unidirectional pairs of lanes transmitting data in opposite direction, including Intel's DMI and PCIe channels, and the directly-connected PCIe channels connect the CPU to a graphics card.

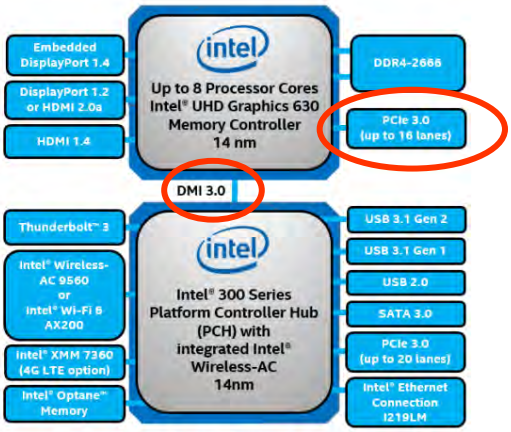


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf; *see also* 8th and 9th Generation Intel® Core™ Processor Families Datasheet, vol. 1 of 2, at p. 10-12, 28-31 (July 2020, Rev. 006) (Doc. No. 337344-006); https://www.asus.com/us/Tower-PCs/ASUS-S340MF/specifications/.

74. The Intel processors employed in the ASUS S340MF also connect directly to a variety of differential signal channels that output digital video signals through a connector, including DisplayPort connectors.

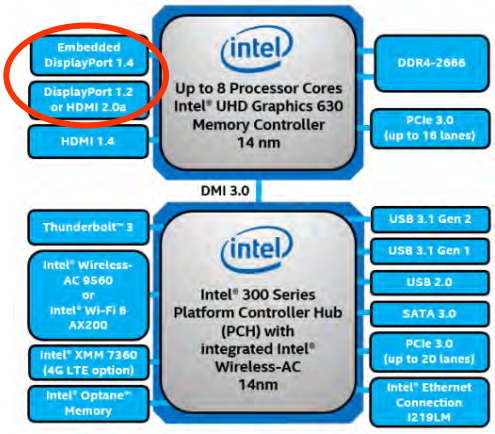


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf; *see also* 8th and 9th Generation Intel® Core™ Processor Families Datasheet, vol. 1 of 2, at p. 40-51 (July 2020, Rev. 006) (Doc. No. 337344-006).

75. The Intel processors employed in the ASUS S340MF also connect to LVDS channels that convey USB data packets through pairs of unidirectional differential signal paths in opposite directions—USB 3.x ports.

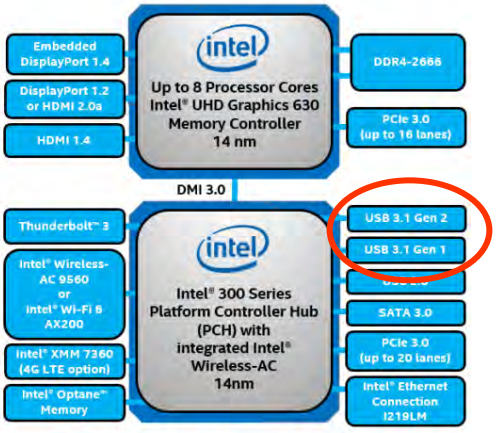


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf

76. The ASUS S340MF has DDR4 system memory connected directly to the CPU.

Memory	4 GB Up to 32 GB Dual Channel at 2666MHz 2 x DIMM

https://www.asus.com/us/Tower-PCs/ASUS-S340MF/specifications/

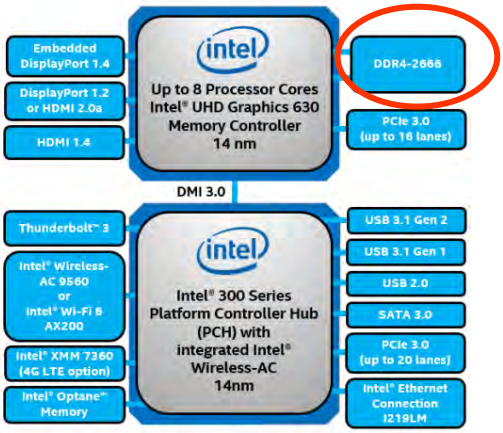


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf

77. The ASUS S340MF has a mass storage hard drive coupled to the CPU.

Storage	3.5" 500GB Up to 2TB SATA III Hard Drive M.2 Up to 512GB

https://www.asus.com/us/Tower-PCs/ASUS-S340MF/specifications/

78. The Intel processors used in the ASUS S340MF have a peripheral bridge called the PCH connected to the CPU via the DMI. Because the PCH is coupled to PCIe, USB 3.x, and other interface connections, it necessarily has integrated interface controllers to control data transmission through those interfaces.

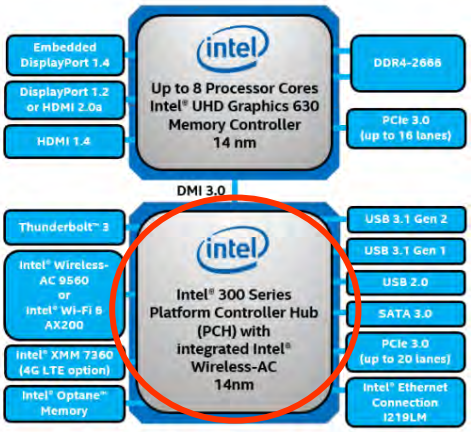
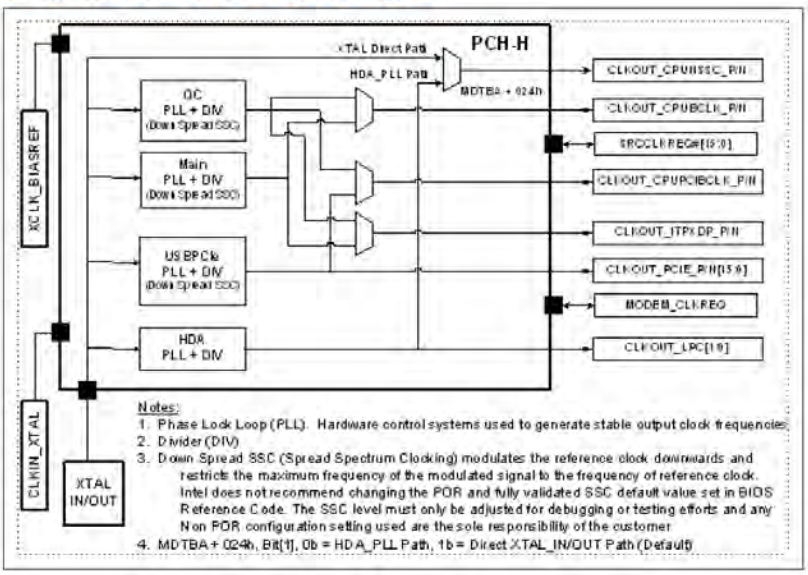


Figure 1: 9th Gen Intel® Core® vPro™ Processor Block Diagram

https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/9th-gen-core-vpro-processor-brief.pdf

79. The Intel PCH used in the ASUS S340MF has an Integrated Clock Controller (ICC) that includes PLL circuitry, which uses Spread Spectrum Clocking (SSC) to generate different clock frequencies to convey the PCI bus transactions and USB transactions through the PCIe and USB channels based on the different clock frequencies.

Integrated Clock Controller (ICC) Diagram



Intel® 300 Series Chipset Family Platform Controller Hub Datasheet, Vol. 1, p. 160 (Sept. 2019, Rev. 3; Doc. No. 337867-003)

80. In view of the foregoing facts concerning the technical features and functionalities of the Accused Desktops (*see* ¶¶ 68-79), when ASUS manufactures the Accused Desktops, it improves the speed and performance of the peripheral data communication in its computer products by using a method of manufacturing that includes the following steps: (a) obtaining a CPU with a graphics controller in a single chip; (b) connecting one or more unidirectional differential signal channels to the CPU to output digital video data; (c) providing a connector with an LVDS channel to facilitate data communication with external peripherals, including digital video data communication; (d) providing multiple LVDS channels, connecting them to the CPU, which use one or more pairs of unidirectional lanes that convey USB protocol data and/or PCIe bus transaction data in serial bit streams in opposite directions; (e) connecting the CPU directly to a peripheral bridge on a circuit board; and (f) directly connecting to the peripheral bridge one or more LVDS channels with pairs of unidirectional lanes that convey data in serial bit streams in opposite directions.

81. On information and belief, ASUS performs the foregoing manufacturing steps outside the United States to make the Accused Desktops and then imports the Accused Desktops into the United States to be marketed and sold.

The Accused Servers

82. On information and belief, all of the Accused Servers are configured and operate in substantially the same way as explained below using the ASUS ESC8000 G4 server as an example for illustrative purposes.

83. The ESC8000 G4 is a computer system that can run on various server operating systems.

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/

84. The ESC8000 G4 uses Intel® Xeon Scalable processors, which have integrated interface controllers on a single chip to drive the PCIe channels connected to the processor.

Processor / System Bus	2 x Socket P (LGA 3647) 1st and 2nd Gen Xeon® Scalable Processor Family

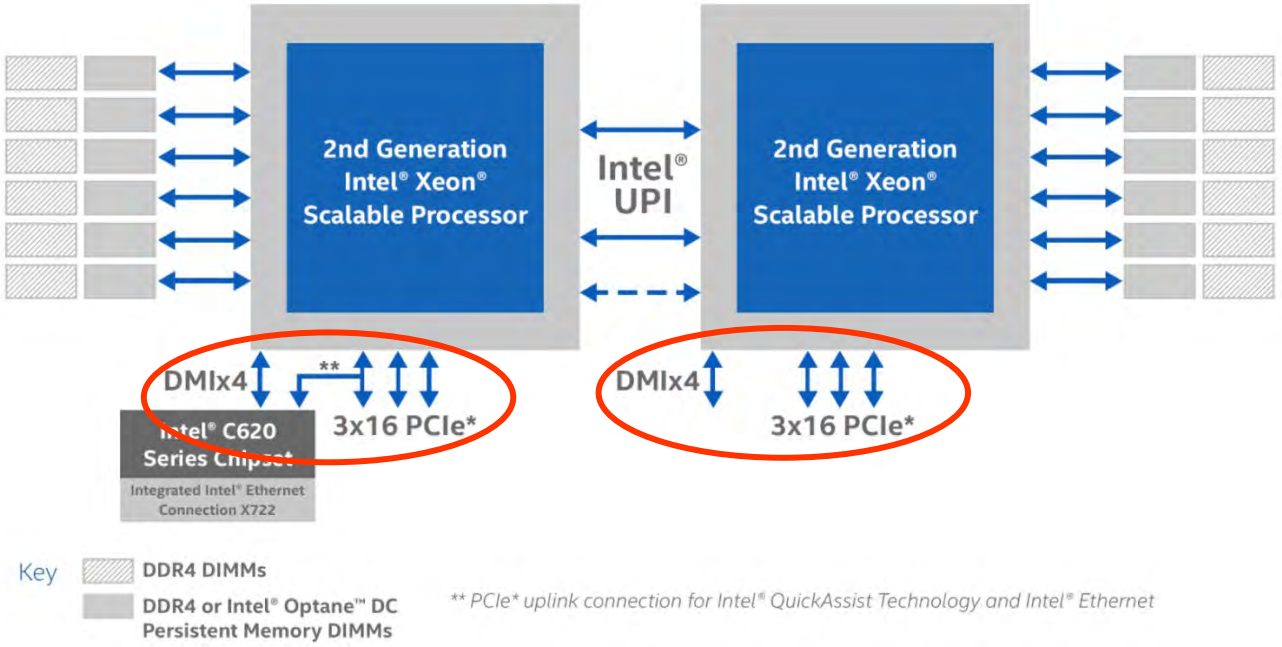
https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

85. The ESC8000 G4 includes a variety of connectors that can couple the CPU to a console, including USB 3.x and VGA connectors.

Front I/O Ports	2 x USB 3.0 ports 2 x USB 2.0 ports 1 x VGA port 1 x COM port

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

86. The Intel processors employed in the ESC8000 G4 connect directly to a variety of LVDS channels that convey data bits in a serial stream using unidirectional pairs of lanes transmitting data in opposite direction, including Intel's DMI and PCIe channels, and the directly-connected PCIe channels connect the CPU to a graphics processor.



https://www.intel.com/content/www/us/en/design/products-and-solutions/processors-and-chipsets/cascade-lake/2nd-gen-intel-xeon-scalable-processors.html

Graphic	Aspeed AST2500 with 64MB VRAM

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

87. The Intel processors employed in the ESC8000 G4 also connect to LVDS channels that convey USB data packets through pairs of unidirectional differential signal paths in opposite directions—USB 3.x ports. *See, supra,* https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

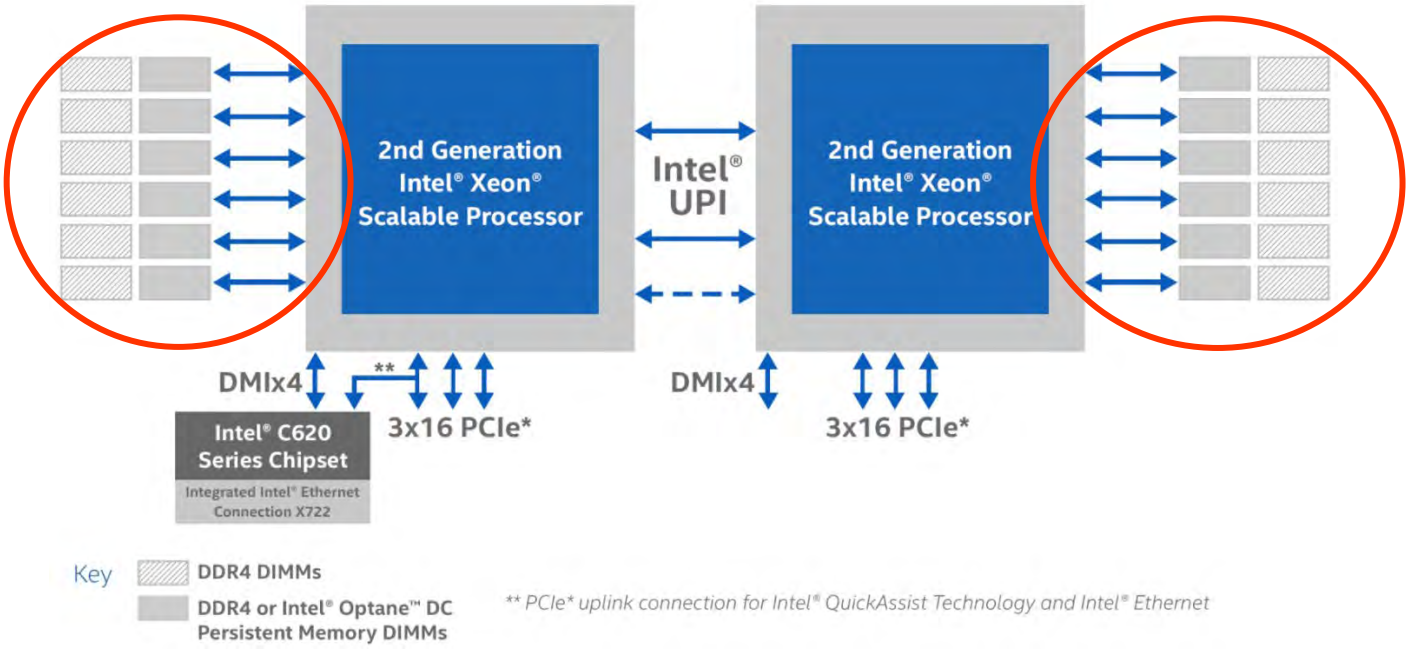
- Supports PCIe*, USB, SATA* and connects to Ethernet, SSD and FPGA peripherals

https://www.intel.com/content/www/us/en/design/products-and-solutions/processors-and-chipsets/cascade-lake/2nd-gen-intel-xeon-scalable-processors.html

88. The ESC8000 G4 has DDR4 system memory connected directly to the CPU.

Memory	**Total Slots :** 24 (6-channel per CPU, 12 DIMM per CPU) **Capacity :** Maximum up to 3072GB RDIMM **Memory Type :** DDR4 2933/2666/2400 /2133 RDIMM DDR4 2933/2666/2400 /2133 LRDIMM DDR4 2933/2666/2400 /2133 LR-DIMM 3DS DDR4 Intel® Optane™ DC Persistent Memory

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/



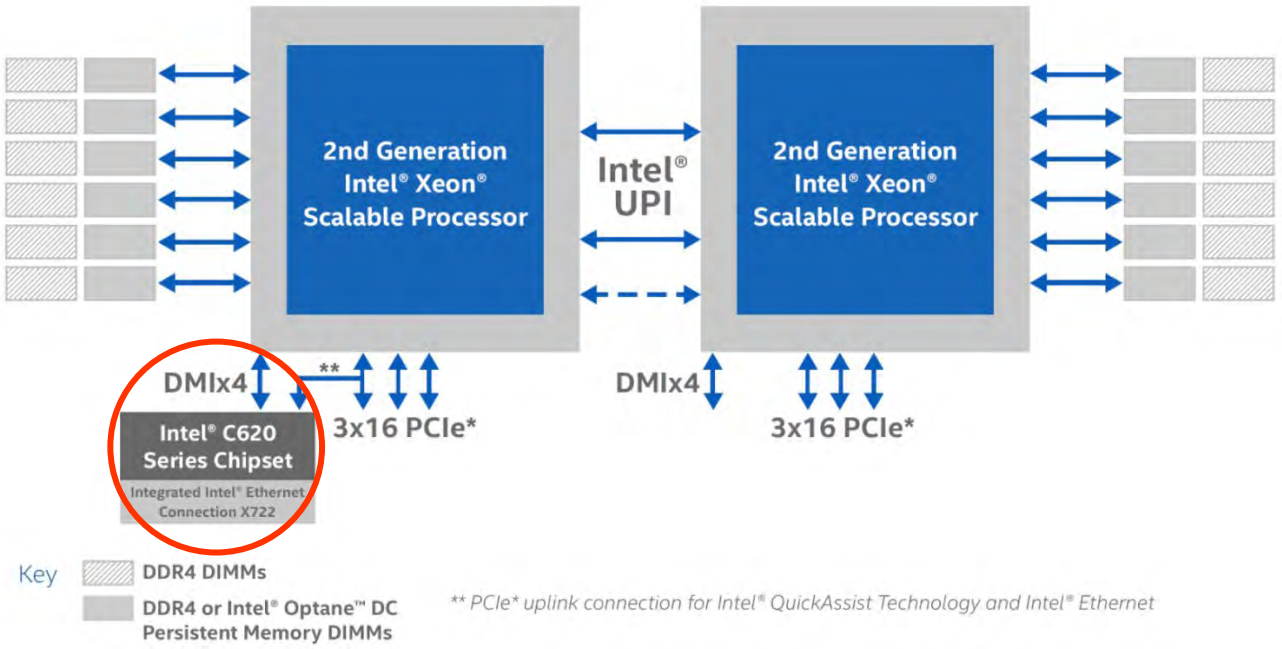
https://www.intel.com/content/www/us/en/design/products-and-solutions/processors-and-chipsets/cascade-lake/2nd-gen-intel-xeon-scalable-processors.html

89. The ESC8000 G4 has a mass storage hard drive coupled to the CPU.

Storage	**SATA Controller :** Intel® C621 8 x SATA3 6Gb/s ports + 2 x M.2 connector (SATA 6Gb/s & PCIe® Gen3 x4 link 22110/2280/2260) or 6 x SATA3 6Gb/s ports + 2 x NVMe drives + 2 x M.2 connector (SATA 6Gb/s & PCIe® Gen3 x4 link 22110/2280/2260) Intel® Rapid Storage Technology Enterprise(RSTe) (For Linux/Windows) (Support Software RAID 0, 1, 5, 10) Intel®VROC (For Linux/Windows)

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

90. The Intel processors used in the ESC8000 G4 have a peripheral bridge called the C620 series chipset PCH connected to the CPU via the DMI, which has an integrated controller.



https://www.intel.com/content/www/us/en/design/products-and-solutions/processors-and-chipsets/cascade-lake/2nd-gen-intel-xeon-scalable-processors.html

The Intel Xeon Processor Scalable Family is the next generation of 64-bit, multi-core server processor built on 14-nm process technology. The processor supports up to 46 bits of physical address space and 48 bits of virtual address space. The processor is designed for a platform consisting of at least one Intel Xeon Scalable Family processor and the Platform Controller Hub (PCH). Included in this family of processors are integrated memory controller (IMC) and an Integrated I/O (IIO) on a single silicon die.

Intel® Xeon® Processor Scalable Family Datasheet, Vol. 1, p. 7 (May 2018 Doc. No. 336062-003)

Core Logic	Intel® Lewisburg PCH C621

https://www.asus.com/us/Commercial-Servers-Workstations/ESC8000-G4/specifications/

The Intel® C620 Series Chipset PCH provides extensive I/O support. Functions and capabilities include:

- ACPI Power Management Logic Support, Revision 4.0a
- *PCI Express* Base Specification*, Revision 3.0
- Integrated Serial ATA host controller, supports data transfer rates of up to 6 Gb/s on all ports.
- xHCI USB controller with SuperSpeed USB 3.0 ports
- Direct Media Interface
- Serial Peripheral Interface
- Enhanced Serial Peripheral Interface
- Flexible I/O—Allows some high speed I/O signals to be configured as PCIe* root ports, PCIe uplink for use with certain PCH SKUs, SATA (and sSATA), or USB 3.0.

Intel® C620 Series Chipset Platform Controller Hub Datasheet, p. 34, 38 (May 2019 Doc. No. 336067-007US).

91. The Intel C620 series PCH used in the ESC8000 G4 has an Integrated Clock Controller (ICC) that includes PLL circuitry, which generates different clock frequencies to convey the PCI bus transactions and USB transactions through the PCIe and USB channels based on the different clock frequencies.

Acronyms	Description
ICC	Integrated Clock Controller
LPC	Low Pin Count
PCH	Platform Controller Hub
PLL	Phase Locked Loop Circuit
SSC	Spread Spectrum Clocking

Overview

This document describes the signals and different clocking modes that the Intel® C620 Series Chipset PCH supports. How you route the signals is the province of the appropriate platform PDG, as each platform can have different rules and restrictions on how the clocks are routed, connectivity, and modes supported.

Controls USB3Gen2PCIe PLL and its output clocks behavior. This offset is lockable by setting LOCK_G2PLLC bit (ICCSEC offset 1020h bit 10).

Intel® C620 Series Chipset Platform Controller Hub Datasheet, p. 98-116 (May 2019 Doc. No. 336067-007US).

92. The Intel Xeon Scalable processor used in the ESC8000 G4 also has integrated clock circuitry that includes PLL circuitry, which generates different clock frequencies to convey the PCI bus transactions through the PCIe channels based on the different clock frequencies.

Clock multiplying within the processor is provided by the internal phase locked loop (PLL), which requires a constant frequency BCLK{0/1/2}_DP, BCLK{0/1/2}_DN input, with exceptions for spread spectrum clocking. DC specifications for the BCLK{0/1/2}_DP, BCLK{0/1/2}_DN inputs are provided in Section 2.8.3.7.

System Reference Clock (BCLK{0/1/2}) Signals

Signal Name	Description
BCLK{0,1,2}_DN/DP	Reference Clock Differential input. These pins provide the required reference inputs to various PLLs inside the processor, such as Intel UPI and PCIe. BCLK0, BCLK1 and BCLK2 run at 100 MHz from the same clock source.

Intel® Xeon® Processor Scalable Family Datasheet, Vol. 1, p. 15, 56 (May 2018 Doc. No. 336062-003).

93. In view of the foregoing facts concerning the technical features and functionalities of the Accused Servers (*see* ¶¶ 82-94), when ASUS manufactures the Accused Servers, it improves the speed and performance of the peripheral data communication in its computer products by using a method of manufacturing that includes the following steps: (a) connecting a CPU directly to a peripheral bridge on a printed circuit board; (b) directly connecting to the peripheral bridge one or more LVDS channels with pairs of unidirectional lanes that convey data in serial bit streams in opposite directions; and (c) providing a connector with an LVDS channel to facilitate data communication with external peripherals using two unidirectional serial lanes to transmit data in opposite directions, including USB protocol data.

94. On information and belief, ASUS performs the foregoing manufacturing steps outside the United States to make the Accused Servers and then imports the Accused Servers into the United States to be marketed and sold.

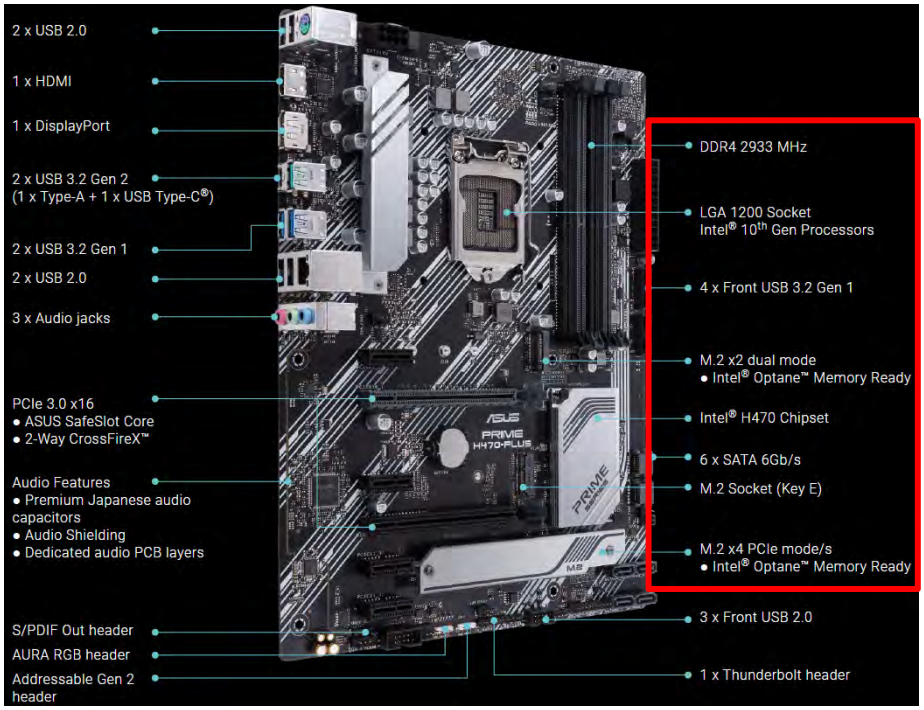
95. Through making, using, selling, offering for sale, and importing the Accused ASUS Products with the features and functionalities alleged above, ASUS has and continues to infringe one or more of the claims in each of the ACQIS Patents.

96. ASUS's infringing conduct has caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause additional severe and irreparable injury and damages to ACQIS unless enjoined by this Court.

The Accused Motherboards

97. The Accused Motherboards are configured with a processor socket configured to receive specified AMD or Intel processors, memory sockets configured to receive system memory, and sockets for coupling to hard drive storage devices. *See, e.g.*, https://www.asus.com/us/Motherboards/.

98. ASUS advertises that the Accused Motherboards are "ready" for use with specified CPUs, system memory, hard drives and other peripherals.



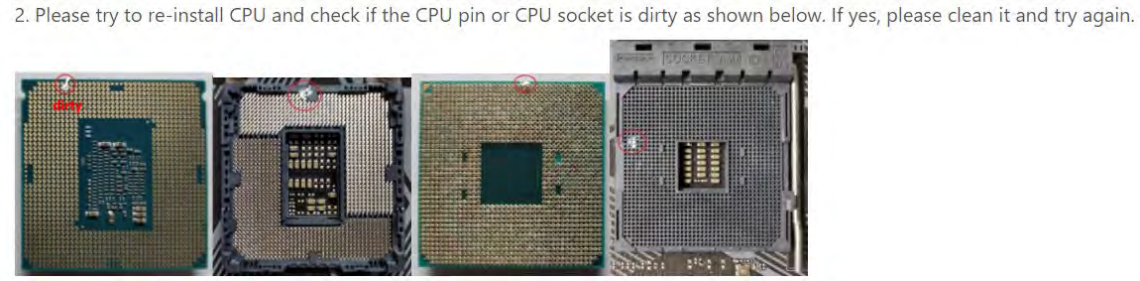
https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/

99. ASUS provides its customers with "CPU Support" and "Memory/Device Support" information to instruct its customers on how to find compatible CPUs, memory, and hard drives that the customer can then connect to an ASUS motherboard.

See https://www.asus.com/us/support/FAQ/1043883;

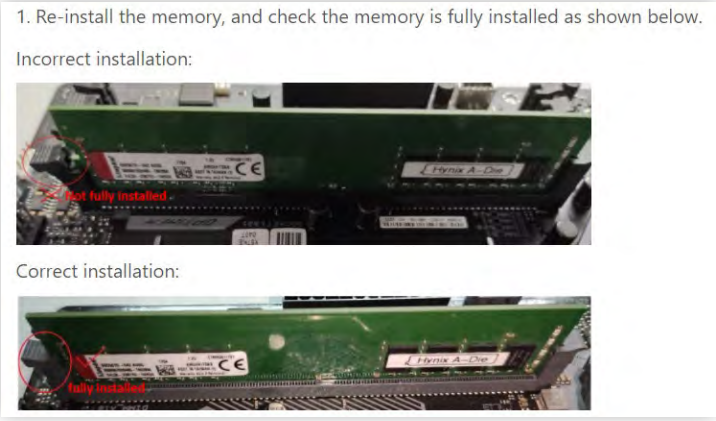
see also https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/HelpDesk_CPU/

100. ASUS provides its customers with a database within the ASUS Download Center to "check compatibility of the motherboard and the CPU" and also provides instructions on how to install a CPU in the motherboard correctly.



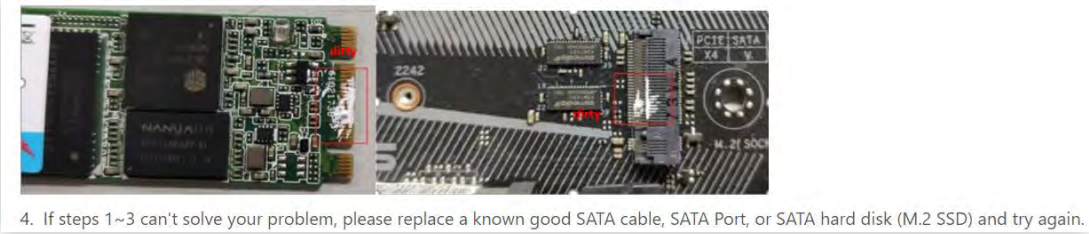
https://www.asus.com/us/support/FAQ/1043948

101. ASUS also provides its customers with instructions relating to installing system memory in ASUS motherboards.



https://www.asus.com/us/support/FAQ/1043948

102. ASUS also provides its customers detailed assistance relating to connecting a hard drive to the ASUS motherboards.



4. If steps 1~3 can't solve your problem, please replace a known good SATA cable, SATA Port, or SATA hard disk (M.2 SSD) and try again.

https://www.asus.com/us/support/FAQ/1043948

103. By marketing the Accused Motherboards as "ready" for specified processors, memory, hard-drives, and other peripherals and by providing express instructions on how to properly connect a CPU, memory and hard drive to an ASUS motherboard, ASUS knowingly and intentionally induces its customers to install a CPU, memory, and hard drive in the provided sockets of an ASUS motherboard to enable its customers to make, use, and/or sell a fully-functional motherboard.

104. On information and belief, ASUS uses and tests the Accused Motherboards prior to sale by installing a processor, memory, and hard drive in the specified sockets in order to confirm the functionality of the Accused Motherboards as full-functioning computer systems.

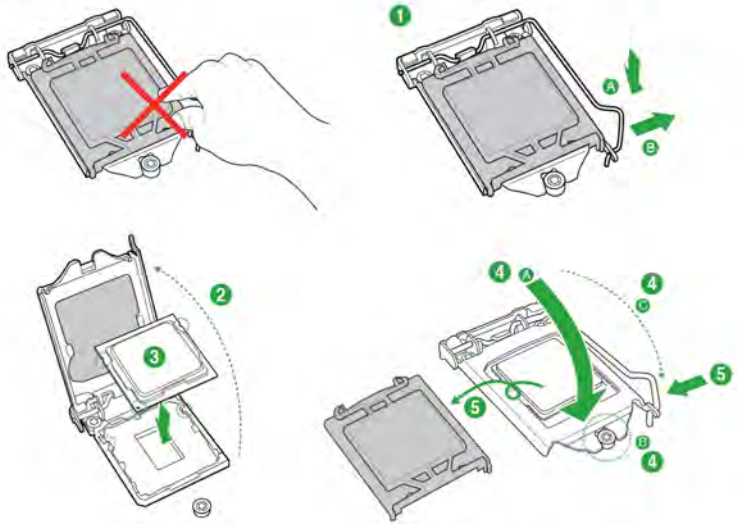
105. On information and belief, all of the Accused Motherboards when combined with the appropriate ASUS-specified processor, memory and hard drive storage are configured and operate in substantially the same way as explained below using the ASUS PRIME H470-PLUS motherboard combined with a 10th Gen. Intel Core processor, memory and hard-drive as an example for illustrative purposes.

106. The PRIME H470-PLUS user manual instructs the user to connect a compatible CPU, system memory, and a hard drive.

1.3 Central Processing Unit (CPU)

This motherboard comes with a surface mount Intel® Socket LGA1200 designed for 10th Gen Intel® Core™, Pentium® Gold and Celeron® Processors.

Installing the CPU



1.4 System memory

This motherboard comes with four Double Data Rate 4 (DDR4) Dual Inline Memory Module (DIMM) sockets. The figure illustrates the location of the DDR4 DIMM sockets:

Channel	Sockets
Channel A	DIMM_A1 & DIMM_A2*
Channel B	DIMM_B1 & DIMM_B2*

Installing a DIMM

7. SATA 6Gb/s ports

The SATA 6Gb/s ports allow you to connect SATA devices such as optical disc drives and hard disk drives via a SATA cable.

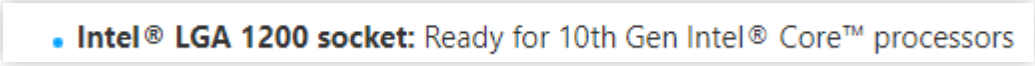
https://dlcdnets.asus.com/pub/ASUS/mb/LGA1200/PRIME_H470-PLUS/E16775_PRIME_H470-PLUS_UM_v2_WEB.pdf

The following information regarding the configuration of the PRIME H470-PLUS motherboard is referring to the PRIME H470-PLUS motherboard with the applicable CPU, system memory, and hard-drive installed and connected per ASUS' explicit instructions.

107. The PRIME H470-PLUS is a printed circuit board for use in a computer system.

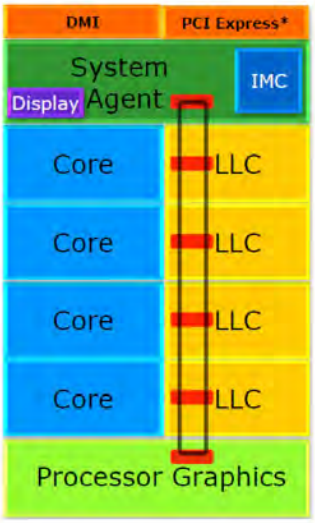
https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/

108. The PRIME H470-PLUS uses an Intel® Core processor, such as a 10th Gen Intel® Core processor.

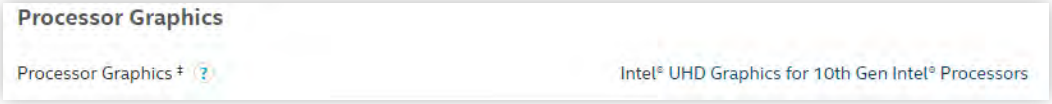


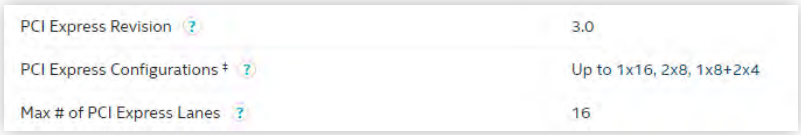
https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/

109. Intel's standard core architecture (including 10th Gen Intel® Core architecture) integrates the central processing unit (CPU) with a graphics subsystem and an interface controller. On information and belief, the Intel Core processors integrate one or more interface controllers within Intel's "System Agent" to control PCIe and other data transmissions from the CPU.



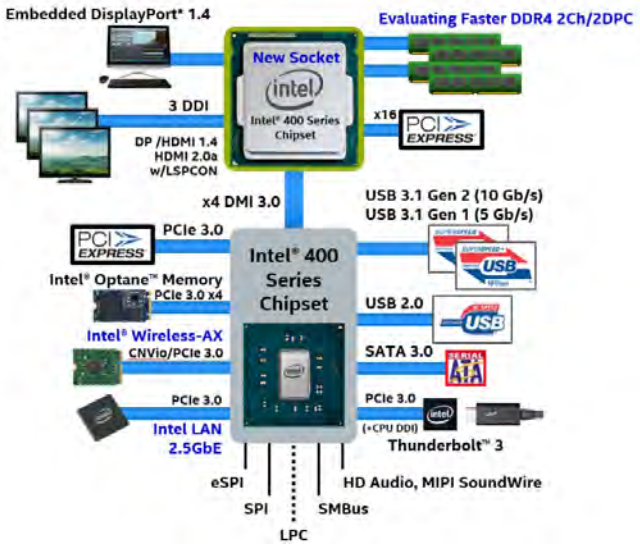
https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/ia-introduction-basics-paper.pdf



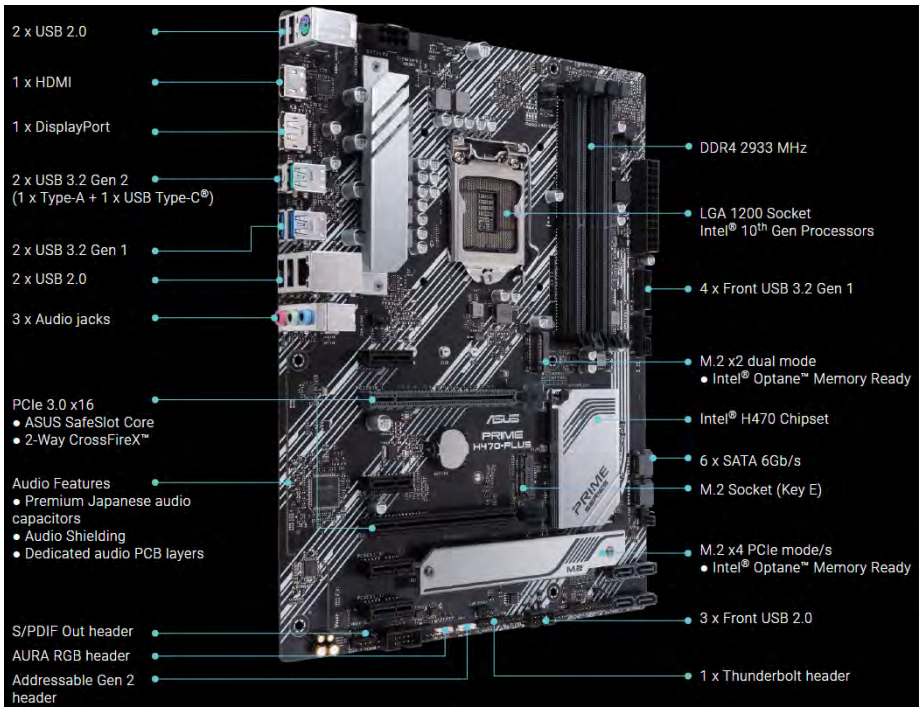


https://ark.intel.com/content/www/us/en/ark/products/201837/intel-core-i7-10750h-processor-12m-cache-up-to-5-00-ghz.html?wapkw=Core%20i7-10750H

110. The PRIME H470-PLUS include a variety of connectors that can couple the CPU to a console, including through DisplayPort®, USB 3.x, HDMI, and Thunderbolt ports.

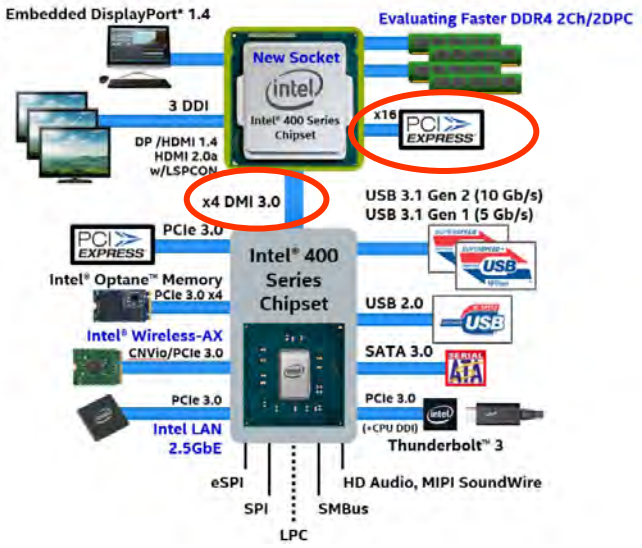


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).



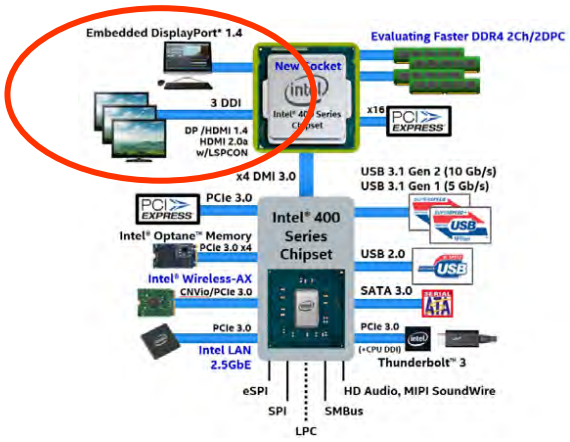
https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/

111. The Intel processors employed in the PRIME H470-PLUS connect directly to a variety of LVDS channels that convey data bits in a serial stream using unidirectional pairs of lanes transmitting data in opposite direction, including Intel's DMI and PCIe channels.



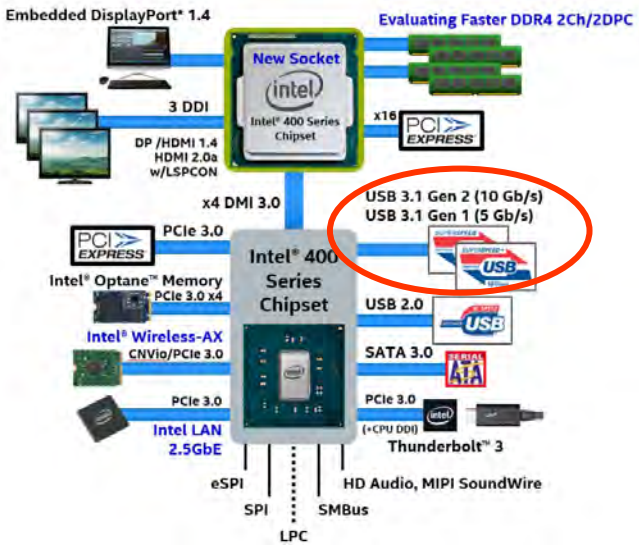
10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

112. The Intel processors employed in the PRIME H470-PLUS also connect directly to a variety of differential signal channels that output digital video signals through a connector, including HDMI and DisplayPort.



10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

113. The Intel processors employed in the PRIME H470-PLUS also connect to LVDS channels that convey USB data packets through pairs of unidirectional differential signal paths in opposite directions—USB 3.x ports.

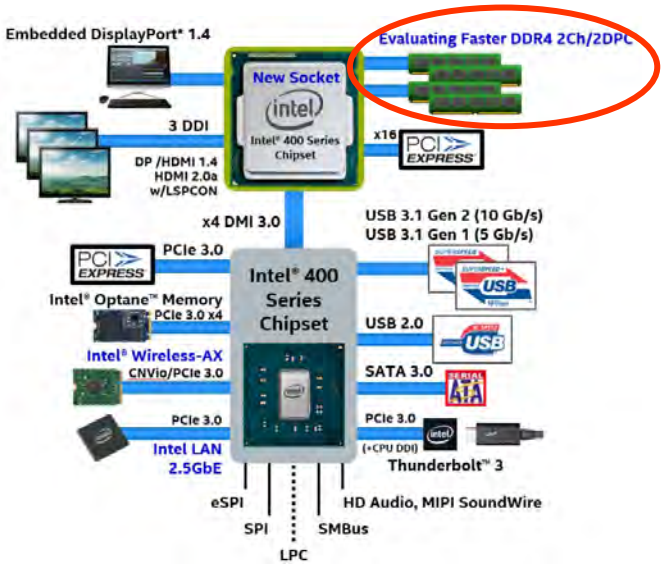


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

114. The PRIME H470-PLUS motherboards have DDR4 system memory connected directly to the CPU.

Memory	4 x DIMM, Max. 128GB, DDR4 2933/2800/2666/2400/2133 MHz Non-ECC, Un-buffered Memory * Dual Channel Memory Architecture Supports Intel® Extreme Memory Profile (XMP) OptiMem * 10th Gen Intel® Core™i9/i7 CPUs support 2933/2800/2666/2400/2133 natively, Refer to www.asus.com for the Memory QVL (Qualified Vendors Lists).

https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/specifications/



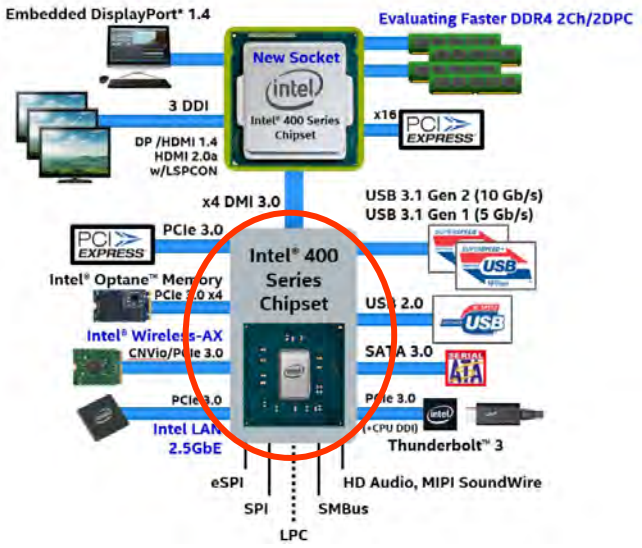
10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

115. The PRIME H470-PLUS motherboards have a mass storage hard drive coupled to the CPU.

Storage	**Total supports 2 x M.2 slots and 6 x SATA 6Gb/s ports** **Intel® H470 Chipset :** 1 x M.2 Socket 3, with M key, type 2242/2260/2280/22110 storage devices support (PCIE 3.0 x 4 mode) 1 x M.2 Socket 3, with M Key, type 2242/2260/2280 storage devices support (SATA & PCIE 3.0 x 2 mode)*1 6 x SATA 6Gb/s port(s) Support Raid 0, 1, 5, 10 Intel® Rapid Storage Technology supports Intel® Optane™ Memory Ready

https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/specifications/

116. The Intel processors used in the PRIME H470-PLUS have a peripheral bridge called the PCH connected to the CPU via the DMI. Because the PCH is coupled to PCIe, USB 3.x, and other interface connections, it necessarily has integrated interface controllers to control data transmission through those interfaces.

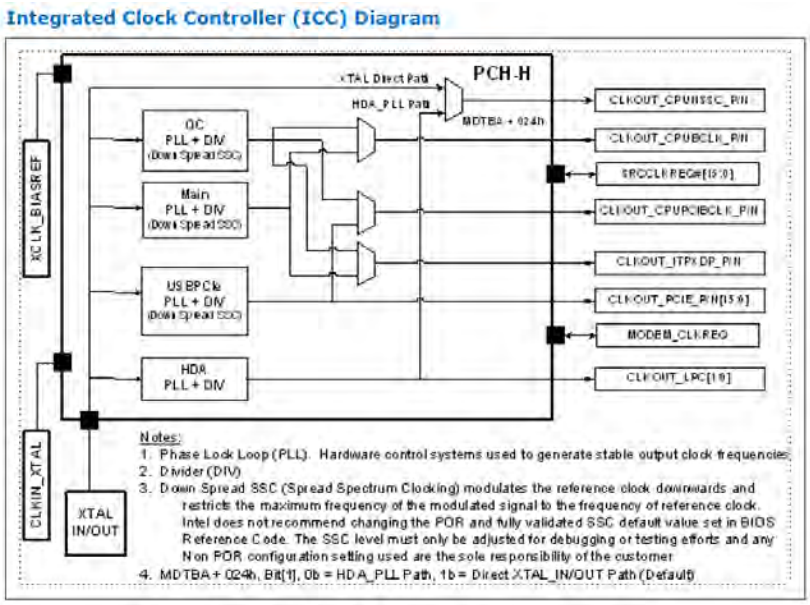


10th Generation Intel® Core™ Processors Datasheet, vol. 1 of 2, at p. 9-11 (July 2020, Rev. 005) (Doc. No. 615211-005).

Chipset	Intel® H470

https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/specifications/

117. The Intel PCH used in the PRIME H470-PLUS has an Integrated Clock Controller (ICC) that includes PLL circuitry, which uses Spread Spectrum Clocking (SSC) to generate different clock frequencies to convey the PCI bus transactions and USB transactions through the PCIe and USB channels based on the different clock frequencies.



Intel® 400 Series Chipset Family Platform Controller Hub Datasheet, Vol. 1, p. 169-171 (May 2020, Rev. 2; Doc. No. 620854-002).

118. The PRIME H470-PLUS has a network controller coupled to the CPU.

LAN	Realtek® RTL8111H

https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/specifications/

https://www.asus.com/us/Motherboards/PRIME-H470-PLUS-CSM/gallery/

ACQIS Provided ASUS Actual Notice of its Infringement

119. On or around May 15, 2018, ACQIS notified ASUS, pursuant to 35 U.S.C. § 287(a), of all of the ACQIS Patents and ASUS's infringement thereof based on the Accused ASUS Products. Specifically, ACQIS' letter identified all of the ACQIS Patents asserted herein and described the applicability of the ACQIS Patents to the PCI Express, USB 3.0, and other computer interface

technologies. ACQIS's letter specifically identified ASUS's various laptop, desktop, server, and motherboard brands, including the Accused Laptops, Accused Desktops, Accused Servers, and Accused Motherboards addressed herein as using ACQIS' patented technologies. ACQIS also described the enforcement history of ACQIS's patent portfolio, and specifically noted a prior lawsuit enforcing ACQIS Patents related to the presently-asserted ACQIS Patents, which resulted in a significant jury verdict against IBM.

120. ACQIS invited ASUS to discuss potential licensing arrangements to allow ASUS to continue to utilize the patented technologies in the ACQIS patent portfolio, including the ACQIS Patents.

121. ASUS did not respond to ACQIS's May 15, 2018 letter and continues to make, import, and sell the Accused ASUS Products identified in ACQIS's letter in willful violation of ACQIS' patent rights, or at the very least in reckless disregard of ACQIS' patent rights.

122. Upon receiving actual notice of the ACQIS Patents and how they apply to ASUS's computer products, ASUS at the very least ignored the notice and chose to remain willfully blind to its own infringement and the infringement that it was inducing others to commit through the use of the Accused ASUS Products.

123. ASUS's choice to ignore ACQIS, the ACQIS Patents, and ACQIS' offer to engage in a licensing arrangement, and instead to continue making and selling the infringing Accused ASUS Products, is egregious and exceptional.

124. ASUS's conduct constitutes willful infringement of the ACQIS Patents, beginning at least as early as May 15, 2018.

125. Any continued actions of infringement subsequent to the filing of this Complaint by ASUS is willful and exceptional, particularly in view of ASUS's prior knowledge of the ACQIS Patents.

ASUS's Indirect Infringement

126. ASUS indirectly infringes the ACQIS Patents under 35 U.S.C. § 271(b), (c) by inducing third parties, such as importers, resellers, customers, and end users, to directly infringe the ACQIS Patents by using, offering for sale, selling and/or importing the Accused ASUS Products in this District and elsewhere in the United States and by importing and selling the Accused ASUS Products despite knowledge that those products are material parts of a computer system, and are not staple articles of commerce with substantial non-infringing uses. For example, ASUS Accused Products are offered for sale and sold in this District and elsewhere in the United States by retailers like Best Buy and Amazon.

127. On information and belief, ASUS took affirmative acts to induce third parties to commit those direct infringing acts. ASUS did so by, at least, actively promoting the Accused ASUS Products for the U.S. market. For example, on information and belief, for the Accused ASUS Products sold in the United States, ASUS pursues and obtains approval from U.S. and state regulatory agencies to allow sales of such Accused ASUS Products in the United States. ASUS competes for business in the United States (including by advertising). ASUS's website offers support for US consumers of the Accused Products by offering US-based support phone numbers.

128. ASUS has taken these acts despite knowledge of the ACQIS Patents and the infringement by the Accused ASUS Products, ASUS knows and specifically intends that its customers will use and/or sell the infringing Accused ASUS Products in the United States or cause the Accused ASUS Products to be sold in the United States.

129. ASUS's customers directly infringe the ACQIS Patents by importing the Accused ASUS Products into the United States, offering to sell and selling the Accused ASUS Products in the United States, and using the Accused ASUS Products in the United States.

130. ASUS further induces direct infringement of the ACQIS Patents by providing instruction and direction to end users of the Accused ASUS Products about how to use the Accused ASUS Products in a manner that infringes one or more claims of the ACQIS Patents. ASUS knows and specifically intends that end users will use the Accused ASUS Products in an infringing manner as directed by ASUS. On information and belief, ASUS has configured the Accused ASUS Products in such a manner that direct infringing use necessarily occurs upon operation of the Accused ASUS Products in their normal, intended manner without any specific action of the end user other than turning on the product.

131. ASUS has induced others' direct infringement as stated above despite actual notice that the Accused ASUS Products infringe the ACQIS Patents, as set forth herein. ASUS therefore has caused its purchasers and end users to directly infringe the ACQIS Patents with knowledge of the ACQIS Patents and with the specific intent, or at the very least willful blindness, that the purchasers and end users will directly infringe. ASUS knew the acts it induced (like importation, US retail sales, and use by consumers) constituted infringement.

132. ASUS's acts of indirect infringement as stated herein have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause additional severe and irreparable injury and damages to ACQIS in the future if not enjoined by this Court.

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

133. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 132 of this Complaint in support of its first cause of action as though fully set forth herein.

134. Pursuant to 35 U.S.C. § 282, the claims of the ’768 patent are presumed valid.

135. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-118 above, ASUS has directly infringed and continues to directly infringe one or more claims of the ’768 patent in violation of 35 U.S.C. § 271(a) by making, using, selling, offering to sell, and/or importing the Accused ASUS Products.

136. ASUS’s direct infringement of the ’768 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrates infringement of at least claim 33 of the ’768 patent by showing:

(a) the ZenBook Pro 15 laptop is a computer running the Windows® operating system;

(b) the ZenBook Pro 15 laptop has a central processing unit (CPU) with an integrated interface controller that is directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions through different numbers of differential signal pairs;

(c) the ZenBook Pro 15 laptop has system memory directly coupled to the CPU;

(d) the ZenBook Pro 15 laptop has a mass storage hard drive coupled to the CPU; and

(e) the ZenBook Pro 15 laptop has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data communication links, including various USB 3.x channels, Thunderbolt connectors, and additional PCIe channels.

137. ACQIS’ infringement allegations against the Accused Laptops are not limited to claim 33 of the ’768 patent, and additional infringed claims will be identified through infringement contentions and discovery.

138. ASUS's direct infringement of the '768 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrates infringement of at least claim 33 of the '768 patent by showing:

(a) the ASUS S340MF Tower is a computer running the Windows® operating system;

(b) the ASUS S340MF Tower has a central processing unit (CPU) with an integrated interface controller that is directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions through different numbers of differential signal pairs;

(c) the ASUS S340MF Tower has system memory directly coupled to the CPU;

(d) the ASUS S340MF Tower has a mass storage hard drive coupled to the CPU; and

(e) the ASUS S340MF Tower has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data communication links, including various USB 3.x channels and additional PCIe channels.

139. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 33 of the'768 patent, and additional infringed claims will be identified through infringement contentions and discovery.

140. ASUS's direct infringement of the '768 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Servers is shown by way of the exemplary ESC8000 G4 server as set forth in paragraphs 31-37 and 82-96 above, which demonstrates infringement of at least claim 33 of the '768 patent by showing:

(a) the ESC8000 G4 is a computer running the Windows® operating system;

(b) the ESC8000 G4 has a central processing unit (CPU) with an integrated interface controller that is directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions through different numbers of differential signal pairs;

(c) the ESC8000 G4 has system memory directly coupled to the CPU;

(d) the ESC8000 G4 has a mass storage hard drive coupled to the CPU; and

(e) the ESC8000 G4 has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data communication links, including various USB 3.x channels, Thunderbolt connectors, and additional PCIe channels.

141. ACQIS' infringement allegations against the Accused Servers are not limited to claim 33 of the '768 patent, and additional infringed claims will be identified through infringement contentions and discovery.

142. To the extent ASUS uses and tests the Accused Motherboards with a CPU, system memory, and hard drive installed in the United States, ASUS's direct infringement of the '768 patent is shown by way of the exemplary PRIME H470-PLUS motherboard as set forth in paragraphs 31-37 and 97-118 above, which demonstrates infringement of at least claim 10 of the '768 patent by showing:

(a) the PRIME H470-PLUS is a printed circuit board;

(b) the PRIME H470-PLUS has a central processing unit (CPU);

(c) the PRIME H470-PLUS has a peripheral bridge directly coupled to the central processing unit without any intervening Peripheral Component Interconnect (PCI) bus, because it uses a 10th Gen Intel Core processor;

(d) the ESC8000 G4 has a low voltage differential signal (LVDS) channel directly extending from the peripheral bridge comprising two unidirectional, serial channels of multiple differential signal line pairs to convey data in opposite directions, wherein the LVDS channel conveys address and data bits of a PCI bus transaction in serial form, because it has PCIe channels; and

(e) the ESC8000 G4 has a network controller coupled to the central processing unit.

143. Based on the foregoing, ASUS knowingly induces its customers to directly infringe at least claim 10 of the '768 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Motherboards, together with explicit instructions to its customers via its website, marketing materials and user manuals to connect a CPU, system memory, and hard drive to the Accused Motherboards to enable its customers to directly infringe by using and/or selling the Accused Motherboards.

144. As evidenced by ASUS' marketing materials, user manuals, and the physical structure of the Accused Motherboards, ASUS specifically and knowingly designs and manufactures the Accused Motherboards to be a material part of a computer system, and to be combined with a CPU, system memory and hard drive storage to become a functional computer system.

145. ASUS knows that the Accused Motherboards are not staple articles of commerce, and will not be a fully-functional computer system without an appropriate CPU, system memory, and storage. Accordingly, the Accused Motherboards have no substantial non-infringing usefulness outside the infringing use identified above when combined with those components.

146. By importing and selling the Accused Motherboards, ASUS has engaged in and continues to engage in contributory infringement of at least claim 10 of the '768 patent under 35 U.S.C. § 271(c).

147. ACQIS' infringement allegations against the Accused Servers are not limited to claim 10 of the '768 patent, and additional infringed claims will be identified through infringement contentions and discovery.

148. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '768 patent and the infringement alleged herein.

149. ASUS's actions as alleged herein, including those alleged in paragraphs 119-132, constitute indirect infringement of the '768 patent pursuant to 35 U.S.C. § 271(b) and (c).

150. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

151. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

152. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

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

153. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 152 of this Complaint in support of its second cause of action as though fully set forth herein.

154. Pursuant to 35 U.S.C. § 282, the claims of the '750 patent are presumed valid.

155. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-118 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '750

patent in violation of 35 U.S.C. § 271(a) by making, using, selling, offering to sell, and/or importing the Accused ASUS Products.

156. ASUS's direct infringement of the '750 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrates infringement of at least claim 46 of the '750 patent by showing:

(a) the ZenBook Pro 15 laptop is a computer;

(b) the ZenBook Pro 15 laptop has a central processing unit (CPU) directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions;

(c) the ZenBook Pro 15 laptop has system memory directly connected to the CPU;

(d) the ZenBook Pro 15 laptop has a mass storage hard drive coupled to the CPU; and

(e) the ZenBook Pro 15 laptop has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data communication links that convey USB protocol data packets, including various USB 3.x channels.

157. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 46 of the '750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

158. ASUS's direct infringement of the '750 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrates infringement of at least claim 46 of the '750 patent by showing:

(a) the ASUS S340MF Tower is a computer;

(b) the ASUS S340MF Tower has a CPU directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions;

(c) the ASUS S340MF Tower has system memory directly connected to the CPU;

(d) the ASUS S340MF Tower has a mass storage hard drive coupled to the CPU; and

(e) the ASUS S340MF Tower has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data communication links conveying USB protocol data packets, including various USB 3.x channels.

159. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 46 of the'750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

160. ASUS's direct infringement of the '750 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Servers is shown by way of the exemplary ESC8000 G4 server as set forth in paragraphs 31-37 and 82-96 above, which demonstrates infringement of at least claim 46 of the '750 patent by showing:

(a) the ESC8000 G4 is a computer;

(b) the ESC8000 G4 has a CPU directly connected to an LVDS channel using two sets of unidirectional, multiple, differential signal pairs to transmit encoded address and data bits of a PCI bus transaction in opposite directions;

(c) the ESC8000 G4 has system memory directly connected to the CPU;

(d) the ESC8000 G4 has a mass storage hard drive coupled to the CPU; and

(e) the ESC8000 G4 has other LVDS channels that use two sets of unidirectional, differential signal pairs to transmit data serially in opposite directions constituting point-to-point data

communication links conveying USB protocol data packets, including various USB 3.x channels.

161. ACQIS' infringement allegations against the Accused Servers are not limited to claim 46 of the '750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

162. To the extent ASUS uses and tests the Accused Motherboards with a CPU, system memory, and hard drive installed in the United States, ASUS's direct infringement of the '750 patent is shown by way of the exemplary PRIME H470-PLUS motherboard as set forth in paragraphs 31-37 and 97-118 above, which demonstrates infringement of at least claim 25 of the '750 patent by showing:

(a) the PRIME H470-PLUS is a printed circuit board;

(b) the PRIME H470-PLUS an integrated central processing unit (CPU) and interface controller in a single chip, because it uses a 10th Gen Intel Core processor;

(c) the ESC8000 G4 has a low voltage differential signal (LVDS) channel directly extending from the CPU to convey address bits, data bits, and byte enable information bits of a Peripheral Component Interconnect (PCI) bus transaction in a serial form through two unidirectional, serial channels of multiple differential signal line pairs to convey data in opposite directions, because it has PCIe channels; and

(d) the ESC8000 G4 has a socket for a system memory module directly coupled to the CPU.

163. Based on the foregoing, ASUS knowingly induces its customers to directly infringe at least claim 25 of the '750 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Motherboards, together with explicit instructions to its customers via its website, marketing materials and user manuals to connect a CPU, system memory, and hard drive to the

Accused Motherboards to enable its customers to directly infringe by using and/or selling the Accused Motherboards.

164. As evidenced by ASUS' marketing materials, user manuals, and the physical structure of the Accused Motherboards, ASUS specifically and knowingly designs and manufactures the Accused Motherboards to be a material part of a computer system, and to be combined with a CPU, system memory and hard drive storage to become a functional computer system.

165. ASUS knows that the Accused Motherboards are not staple articles of commerce, and will not be a fully-functional computer system without an appropriate CPU, system memory, and storage. Accordingly, the Accused Motherboards have no substantial non-infringing usefulness outside the infringing use identified above when combined with those components.

166. By importing and selling the Accused Motherboards, ASUS has engaged in and continues to engage in contributory infringement of at least claim 25 of the '750 patent under 35 U.S.C. § 271(c).

167. ACQIS' infringement allegations against the Accused Servers are not limited to claim 25 of the '750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

168. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '750 patent and the infringement alleged herein.

169. ASUS's actions as alleged herein, including those alleged in paragraphs 119-132, constitute indirect infringement of the '750 patent pursuant to 35 U.S.C. § 271(b) and (c).

170. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

171. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

172. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 8,756,359

173. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 172 of this Complaint in support of its third cause of action as though fully set forth herein.

174. Pursuant to 35 U.S.C. § 282, the claims of the '359 patent are presumed valid.

175. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-96 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '359 patent in violation of 35 U.S.C. § 271(a) by making, using, selling, offering to sell, and/or importing the Accused ASUS Products.

176. ASUS's direct infringement of the '359 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrates infringement of at least claim 6 of the '359 patent by showing:

(a) the ZenBook Pro 15 laptop is a computer;

(b) the ZenBook Pro 15 laptop has a variety of connectors configured to couple to a console, including USB 3.x connectors;

(c) the ZenBook Pro 15 laptop has a central processing unit (CPU);

(d) the ZenBook Pro 15 laptop has an LVDS channel directly extending from the CPU using two sets of unidirectional, differential signal line pairs to transmit data in opposite directions; and

(e) the ZenBook Pro 15 laptop has other LVDS channels that can couple to a console through one or more USB 3.x connectors, which use two sets of unidirectional, differential signal pairs to convey USB protocol data packets in opposite directions.

177. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 6 of the '359 patent, and additional infringed claims will be identified through infringement contentions and discovery.

178. ASUS's direct infringement of the '359 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrates infringement of at least claim 6 of the '359 patent by showing:

(a) the ASUS S340MF Tower is a computer;

(b) the ASUS S340MF Tower has a variety of connectors configured to couple to a console, including USB 3.x connectors;

(c) the ASUS S340MF Tower has a central processing unit (CPU);

(d) the ASUS S340MF Tower has an LVDS channel directly extending from the CPU using two sets of unidirectional, differential signal line pairs to transmit data in opposite directions; and

(e) the ASUS S340MF Tower has other LVDS channels that can couple to a console through one or more USB 3.x connectors, which use two sets of unidirectional, differential signal pairs to convey USB protocol data packets in opposite directions.

179. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 6 of the '359 patent, and additional infringed claims will be identified through infringement contentions and discovery.

180. ASUS's direct infringement of the '359 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Servers is shown by way of the exemplary ESC8000 G4 server as set forth in paragraphs 31-37 and 82-96 above, which demonstrates infringement of at least claim 6 of the '359 patent by showing:

(a) the ESC8000 G4 is a computer;

(b) the ESC8000 G4 has a variety of connectors configured to couple to a console, including USB 3.x connectors;

(c) the ESC8000 G4 has a central processing unit (CPU);

(d) the ESC8000 G4 has an LVDS channel directly extending from the CPU using two sets of unidirectional, differential signal line pairs to transmit data in opposite directions; and

(e) the ESC8000 G4 has other LVDS channels that can couple to a console through one or more USB 3.x connectors, which use two sets of unidirectional, differential signal pairs to convey USB protocol data packets in opposite directions.

181. ACQIS' infringement allegations against the Accused Servers are not limited to claim 6 of the '359 patent, and additional infringed claims will be identified through infringement contentions and discovery.

182. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '359 patent and the infringement alleged herein.

183. ASUS's actions as alleged herein, including those alleged in paragraphs 119-133, constitute indirect infringement of the '359 patent pursuant to 35 U.S.C. § 271(b) and (c).

184. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

185. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

186. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 8,626,977

187. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 186 of this Complaint in support of its third cause of action as though fully set forth herein.

188. Pursuant to 35 U.S.C. § 282, the claims of the '977 patent are presumed valid.

189. In view of the foregoing facts and allegations, including paragraphs 31-38 and 43-81 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '977 patent in violation of 35 U.S.C. § 271(a) by making, using, selling, offering to sell, and/or importing the ASUS Accused Laptops and Accused Desktops.

190. ASUS's direct infringement of the '977 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrates infringement of at least claim 1 of the '977 patent by showing:

(a) the ZenBook Pro 15 laptop is a computer;

(b) the ZenBook Pro 15 laptop has a variety of connectors configured to couple to a console, including HDMI, DiplayPort and USB 3.x connectors;

(c) the ZenBook Pro 15 laptop has an integrated central processing unit (CPU) and graphics subsystem in a single chip;

(d) the ZenBook Pro 15 laptop has an LVDS channel directly extending from the CPU using two sets of unidirectional, differential signal line pairs to transmit encoded address and data bits of a PCI bus transaction in a serial bit stream in opposite directions;

(e) the ZenBook Pro 15 laptop has other serial bit channels coupled to the USB 3.x connectors that are adapted to convey USB protocol data packets in opposite directions; and

(f) the CPU of the ZenBook Pro 15 laptop outputs digital video display signals through HDMI or DisplayPort channels.

191. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 1 of the '977 patent, and additional infringed claims will be identified through infringement contentions and discovery.

192. ASUS's direct infringement of the '977 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrates infringement of at least claim 1 of the '977 patent by showing:

(a) the ASUS S340MF Tower is a computer;

(b) the ASUS S340MF Tower has a variety of connectors configured to couple to a console, including HDMI, DiplayPort and USB 3.x connectors;

(c) the ASUS S340MF Tower has an integrated central processing unit (CPU) and graphics subsystem in a single chip;

(d) the ASUS S340MF Tower has an LVDS channel directly extending from the CPU using two sets of unidirectional, differential signal line pairs to transmit encoded address and data bits of a PCI bus transaction in a serial bit stream in opposite directions;

(e) the ASUS S340MF Tower has other serial bit channels coupled to the USB 3.x connectors that are adapted to convey USB protocol data packets in opposite directions; and

(f) the CPU of the ASUS S340MF Tower outputs digital video display signals through HDMI or DisplayPort channels.

193. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 1 of the '977 patent, and additional infringed claims will be identified through infringement contentions and discovery.

194. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '977 patent and the infringement alleged herein.

195. ASUS's actions as alleged herein, including those alleged in paragraphs 119-132, constitute indirect infringement of the '977 patent pursuant to 35 U.S.C. § 271(b) and (c).

196. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

197. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

198. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. RE44,739

199. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 198 of this Complaint in support of its third cause of action as though fully set forth herein.

200. Pursuant to 35 U.S.C. § 282, the claims of the ’739 patent are presumed valid.

201. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-81 above, ASUS has directly infringed and continues to directly infringe one or more claims of the ’739 patent in violation of 35 U.S.C. § 271(a) by making, using, selling, offering to sell, and/or importing the ASUS Accused Laptops and Accused Desktops.

202. ASUS’s direct infringement of the ’739 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrates infringement of at least claim 18 of the ’739 patent by showing:

(a) the ZenBook Pro 15 laptop is a computer;

(b) the ZenBook Pro 15 laptop has an integrated central processing unit (CPU) and graphics controller in a single chip directly coupled to one or more differential signal channels to convey digital video display information, including HDMI and DisplayPort channels;

(c) the ZenBook Pro 15 laptop has various LVDS channels with at least two pairs of unidirectional, differential signal lanes to transmit data in opposite directions, including USB 3.x channels; and

(d) the ZenBook Pro 15 laptop has a variety of connectors configured to couple to a console, including USB 3.x connectors which transmit USB protocol data through the USB 3.x connectors to a console.

203. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 18 of the '739 patent, and additional infringed claims will be identified through infringement contentions and discovery.

204. ASUS's direct infringement of the '739 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrates infringement of at least claim 18 of the '739 patent by showing:

(a) the ASUS S340MF Tower is a computer;

(b) the ASUS S340MF Tower has an integrated central processing unit (CPU) and graphics controller in a single chip directly coupled to one or more differential signal channels to convey digital video display information, including HDMI and DisplayPort channels;

(c) the ASUS S340MF Tower has various LVDS channels with at least two pairs of unidirectional, differential signal lanes to transmit data in opposite directions, including USB 3.x channels; and

(d) the ASUS S340MF Tower has a variety of connectors configured to couple to a console, including USB 3.x connectors which transmit USB protocol data through the USB 3.x connectors to a console.

205. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 18 of the '739 patent, and additional infringed claims will be identified through infringement contentions and discovery.

206. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '739 patent and the infringement alleged herein.

207. ASUS's actions as alleged herein, including those alleged in paragraphs 119-132, constitute indirect infringement of the '739 patent pursuant to 35 U.S.C. § 271(b) and (c).

208. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

209. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

210. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

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

211. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 210 of this Complaint in support of its third cause of action as though fully set forth herein.

212. Pursuant to 35 U.S.C. § 282, the claims of the '797 patent are presumed valid.

213. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-96 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '797 patent in violation of 35 U.S.C. § 271(g) by using one or more of the methods claimed in the '797 patent to manufacture the Accused ASUS Products and then importing, selling, offering to sell and/or using the Accused ASUS Products in the United States.

214. The Accused ASUS Products made using the methods claimed in the '797 patent are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

215. ASUS's direct infringement of the '797 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro

15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrate that to manufacture the ZenBook Pro 15 laptop, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 36 of the ’797 patent upon importation and/or sale of the ZenBook Pro 15 laptop in the United States:

(a) ASUS performs a method of improving data throughput on a motherboard when manufacturing the ZenBook Pro 15 laptop, which contains a motherboard;

(b) when manufacturing the ZenBook Pro 15 laptop, ASUS mounts an integrated CPU and interface controller as a single chip on the motherboard, because the ZenBook Pro 15 laptop uses an Intel CPU-controller;

(c) when manufacturing the ZenBook Pro 15 laptop, ASUS connects an LVDS channel directly to the integrated CPU-controller chip, which uses two unidirectional, serial channels to transmit data in opposite directions because the ZenBook Pro 15 laptop has PCIe channels directly connected to the CPU-controller chip;

(d) when manufacturing the ZenBook Pro 15 laptop, ASUS increases data throughput in the serial channels by providing each channel with multiple differential signal line pairs, because the PCIe channels have multiple pairs of differential signal lanes;

(e) when manufacturing the ZenBook Pro 15 laptop, ASUS configures the interface controller to adapt to different numbers of differential signal line pairs to convey encoded address and data bits of a PCI bus transaction in serial form, because the CPU-controllers ASUS uses are configured to convey PCIe data signals through PCIe channels having multiple differential signal line pairs; and

(f) when manufacturing the ZenBook Pro 15 laptop, ASUS couples the CPU-controller to a peripheral device such as a graphics card, which is attached to the motherboard through a PCIe channel.

216. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 36 of the '797 patent, and additional infringed claims will be identified through infringement contentions and discovery.

217. ASUS's direct infringement of the '797 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrate that to manufacture the ASUS S340MF Tower, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 36 of the '797 patent upon importation and/or sale of the ASUS S340MF Tower in the United States:

(a) ASUS performs a method of improving data throughput on a motherboard when manufacturing the ASUS S340MF Tower, which contains a motherboard;

(b) when manufacturing the ASUS S340MF Tower, ASUS mounts an integrated CPU and interface controller as a single chip on the motherboard, because the ASUS S340MF Tower uses an Intel CPU-controller;

(c) when manufacturing the ASUS S340MF Tower, ASUS connects an LVDS channel directly to the integrated CPU-controller chip, which uses two unidirectional, serial channels to transmit data in opposite directions because the ASUS S340MF Tower has PCIe channels and a DMI interface directly connected to the CPU-controller chip;

(d) when manufacturing the ASUS S340MF Tower, ASUS increases data throughput in the serial channels by providing each channel with multiple differential signal line pairs, because the PCIe and DMI channels have multiple pairs of differential signal lanes;

(e) when manufacturing the ASUS S340MF Tower, ASUS configures the interface controller to adapt to different numbers of differential signal line pairs to convey encoded address and data bits of a PCI bus transaction in serial form, because the CPU-controllers ASUS

uses are configured to convey PCIe data signals through PCIe channels having multiple differential signal line pairs; and

(f) when manufacturing the ASUS S340MF Tower, ASUS couples the CPU-controller to a peripheral device such as a graphics card, which is attached to the motherboard through a PCIe channel.

218. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 36 of the'797 patent, and additional infringed claims will be identified through infringement contentions and discovery.

219. ASUS's direct infringement of the '797 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Servers is shown by way of the exemplary ESC8000 G4 server as set forth in paragraphs 31-37 and 82-96 above, which demonstrate that to manufacture the ESC8000 G4, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 36 of the '797 patent upon importation and/or sale of the ESC8000 G4 in the United States:

(a) ASUS performs a method of improving data throughput on a motherboard when manufacturing the ESC8000 G4, which contains a motherboard;

(b) when manufacturing the ESC8000 G4, ASUS mounts an integrated CPU and interface controller as a single chip on the motherboard, because the ESC8000 G4 uses an Intel CPU-controller;

(c) when manufacturing the ESC8000 G4, ASUS connects an LVDS channel directly to the integrated CPU-controller chip, which uses two unidirectional, serial channels to transmit data in opposite directions because the ESC8000 G4 has PCIe channels and a DMI interface directly connected to the CPU-controller chip;

(d) when manufacturing the ESC8000 G4, ASUS increases data throughput in the serial channels by providing each channel with multiple differential signal line pairs, because the PCIe and DMI channels have multiple pairs of differential signal lanes;

(e) when manufacturing the ESC8000 G4, ASUS configures the interface controller to adapt to different numbers of differential signal line pairs to convey encoded address and data bits of a PCI bus transaction in serial form, because the CPU-controllers ASUS uses are configured to convey PCIe data signals through PCIe channels having multiple differential signal line pairs; and

(f) when manufacturing the ESC8000 G4, ASUS couples the CPU-controller to a peripheral device such as a graphics processor, which is attached to the motherboard through a PCIe channel.

220. ACQIS' infringement allegations against the Accused Servers are not limited to claim 36 of the '797 patent, and additional infringed claims will be identified through infringement contentions and discovery.

221. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '797 patent and the infringement alleged herein.

222. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

223. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

224. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the

amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 9,529,769

225. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 224 of this Complaint in support of its third cause of action as though fully set forth herein.

226. Pursuant to 35 U.S.C. § 282, the claims of the '769 patent are presumed valid.

227. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-81 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '769 patent in violation of 35 U.S.C. § 271(g) by using one or more of the methods claimed in the '769 patent to manufacture the Accused Laptops and Accused Desktops and then importing, selling, offering to sell and/or using the Accused Laptops and Accused Desktops in the United States.

228. ASUS's Accused Laptops and Accused Desktops that are made using the methods claimed in the '769 patent are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

229. ASUS's direct infringement of the '769 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrate that to manufacture the ZenBook Pro 15 laptop, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 19 of the '769 patent upon importation and/or sale of the ZenBook Pro 15 laptop in the United States:

(a) ASUS performs a method of improving external peripheral data communication in a computer when manufacturing the ZenBook Pro 15 laptop;

(b) when manufacturing the ZenBook Pro 15 laptop, ASUS obtains an integrated CPU and graphics controller as a single chip, because the ZenBook Pro 15 laptop uses an Intel core CPU;

(c) when manufacturing the ZenBook Pro 15 laptop, ASUS connects a unidirectional signal channel directly to the integrated CPU-graphics chip to output digital video data, because the ZenBook Pro 15 laptop has HDMI and DisplayPort channels connected to the CPU;

(d) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a connector for external peripheral data communication, because the ZenBook Pro 15 laptop has a variety of connectors for external peripherals, including HDMI, Thunderbolt, USB 3.x, and PCIe connectors;

(e) when manufacturing the ZenBook Pro 15 laptop, ASUS provides an LVDS channel to convey USB protocol data through a connector that uses two unidirectional, serial bit channels that transmit data in opposite directions, because the ZenBook Pro 15 laptop has Thunderbolt connectors that convey USB 3.x data; and

(f) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a second LVDS channel to convey digital video data through a connector, because the ZenBook Pro 15 laptop has Thunderbolt connectors that convey both USB 3.x and DisplayPort signals.

230. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 19 of the '769 patent, and additional infringed claims will be identified through infringement contentions and discovery.

231. ASUS's direct infringement of the '769 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrate that to manufacture the ASUS S340MF Tower, ASUS necessarily performs the following actions, which

results in direct infringement of at least claim 19 of the '769 patent upon importation and/or sale of the ASUS S340MF Tower in the United States:

(a) ASUS performs a method of improving external peripheral data communication in a computer when manufacturing the ASUS S340MF Tower;

(b) when manufacturing the ASUS S340MF Tower, ASUS obtains an integrated CPU and graphics controller as a single chip, because the ASUS S340MF Tower uses an Intel core CPU;

(c) when manufacturing the ASUS S340MF Tower, ASUS connects a unidirectional signal channel directly to the integrated CPU-graphics chip to output digital video data, because the ASUS S340MF Tower has HDMI and DisplayPort channels connected to the CPU;

(d) when manufacturing the ASUS S340MF Tower, ASUS provides a connector for external peripheral data communication, because the ASUS S340MF Tower has a variety of connectors for external peripherals, including HDMI, USB 3.1 Type C, and PCIe connectors;

(e) when manufacturing the ASUS S340MF Tower, ASUS provides an LVDS channel to convey USB protocol data through a connector that uses two unidirectional, serial bit channels that transmit data in opposite directions, because the ASUS S340MF Tower has a USB 3.1 Type C connector that conveys USB 3.x data; and

(f) when manufacturing the ASUS S340MF Tower, ASUS provides a second LVDS channel to convey digital video data through a connector, because the ASUS S340MF Tower has a USB 3.1 Type C port that can convey/output both USB 3.x and digital video data signals.

232. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 19 of the '769 patent, and additional infringed claims will be identified through infringement contentions and discovery.

233. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '769 patent and the infringement alleged herein.

234. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

235. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

236. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT VIII
INFRINGEMENT OF U.S. PATENT NO. RE45,140

237. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 236 of this Complaint in support of its third cause of action as though fully set forth herein.

238. Pursuant to 35 U.S.C. § 282, the claims of the '140 patent are presumed valid.

239. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-81 above, ASUS has directly infringed and continues to directly infringe one or more claims of the '140 patent in violation of 35 U.S.C. § 271(g) by using one or more of the methods claimed in the '140 patent to manufacture the Accused Laptops and Accused Desktops and then importing, selling, offering to sell and/or using the Accused Laptops and Accused Desktops in the United States.

240. ASUS's Accused Laptops and Accused Desktops that are made using the methods claimed in the '140 patent are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

241. ASUS's direct infringement of the '140 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrate that to manufacture the ZenBook Pro 15 laptop, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 35 of the '140 patent upon importation and/or sale of the ZenBook Pro 15 laptop in the United States:

(a) ASUS performs a method of improving performance of a computer when manufacturing the ZenBook Pro 15 laptop;

(b) when manufacturing the ZenBook Pro 15 laptop, ASUS obtains an integrated CPU and graphics controller as a single chip, because the ZenBook Pro 15 laptop uses an Intel core CPU;

(c) when manufacturing the ZenBook Pro 15 laptop, ASUS connects an LVDS channel directly to the CPU-graphics chip that uses two unidirectional, serial bit channels to transmit data in opposite directions, because the ZenBook Pro 15 laptop has PCIe and DMI channels connected directly to the CPU;

(d) when manufacturing the ZenBook Pro 15 laptop, ASUS connects a differential signal channel directly to the integrated CPU-graphics chip to output digital video data, because the ZenBook Pro 15 laptop has HDMI and DisplayPort channels connected to the CPU;

(e) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a connector for external peripheral data communication, because the ZenBook Pro 15 laptop has a variety of connectors for external peripherals, including HDMI, Thunderbolt, USB 3.x, and PCIe connectors; and

(f) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a second LVDS channel using two unidirectional, serial bit channels to transmit data in opposite directions through

the connector, because the ZenBook Pro 15 laptop has Thunderbolt connectors and USB 3.x connectors.

242. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 35 of the '140 patent, and additional infringed claims will be identified through infringement contentions and discovery.

243. ASUS's direct infringement of the '140 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrate that to manufacture the ASUS S340MF Tower, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 35 of the '140 patent upon importation and/or sale of the ASUS S340MF Tower in the United States:

(a) ASUS performs a method of improving performance of a computer when manufacturing the ASUS S340MF Tower;

(b) when manufacturing the ASUS S340MF Tower, ASUS obtains an integrated CPU and graphics controller as a single chip, because the ASUS S340MF Tower uses an Intel core CPU;

(c) when manufacturing the ASUS S340MF Tower, ASUS connects an LVDS channel directly to the CPU-graphics chip that uses two unidirectional, serial bit channels to transmit data in opposite directions, because the ASUS S340MF Tower has PCIe and DMI channels connected directly to the CPU;

(d) when manufacturing the ASUS S340MF Tower, ASUS connects a differential signal channel directly to the integrated CPU-graphics chip to output digital video data, because the ASUS S340MF Tower has DisplayPort channels connected to the CPU;

(e) when manufacturing the ASUS S340MF Tower, ASUS provides a connector for external peripheral data communication, because the ASUS S340MF Tower has a variety of connectors for external peripherals, including DisplayPort, USB 3.x, and PCIe connectors; and

(f) when manufacturing the ASUS S340MF Tower, ASUS provides a second LVDS channel using two unidirectional, serial bit channels to transmit data in opposite directions through the connector, because the ASUS S340MF Tower has USB 3.x connectors.

244. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 35 of the '140 patent, and additional infringed claims will be identified through infringement contentions and discovery.

245. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '140 patent and the infringement alleged herein.

246. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

247. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

248. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

COUNT IX
INFRINGEMENT OF U.S. PATENT NO. RE44,654

249. ACQIS incorporates by this reference the allegations set forth in paragraphs 1 through 248 of this Complaint in support of its third cause of action as though fully set forth herein.

250. Pursuant to 35 U.S.C. § 282, the claims of the ’654 patent are presumed valid.

251. In view of the foregoing facts and allegations, including paragraphs 31-37 and 43-96 above, ASUS has directly infringed and continues to directly infringe one or more claims of the ’654 patent in violation of 35 U.S.C. § 271(g) by using one or more of the methods claimed in the ’654 patent to manufacture the Accused ASUS Products and then importing, selling, offering to sell and/or using the Accused ASUS Products in the United States.

252. The Accused ASUS Products made using the methods claimed in the ’654 patent are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

253. ASUS’s direct infringement of the ’654 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Laptops is shown by way of the exemplary ZenBook Pro 15 laptop as set forth in paragraphs 31-37 and 54-67 above, which demonstrate that to manufacture the ZenBook Pro 15 laptop, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 23 of the ’654 patent upon importation and/or sale of the ZenBook Pro 15 laptop in the United States:

(a) ASUS performs a method of increasing data communication speed of a computer when manufacturing the ZenBook Pro 15 laptop;

(b) when manufacturing the ZenBook Pro 15 laptop, ASUS connects a CPU directly to a peripheral bridge on a printed circuit board, because the ZenBook Pro 15 laptop uses an Intel core CPU directly connected to the Intel PCH via a DMI connection;

(c) when manufacturing the ZenBook Pro 15 laptop, ASUS connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the ZenBook Pro 15 laptop has PCIe channels and USB 3.x channels directly connected to the Intel PCH;

(d) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a connector to connect the computer to a console, because the ZenBook Pro 15 laptop has a variety of connector ports such as DisplayPort and USB 3.x;

(e) when manufacturing the ZenBook Pro 15 laptop, ASUS provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the ZenBook Pro 15 laptop has USB 3.x ports; and

(f) when manufacturing the ZenBook Pro 15 laptop, ASUS enables the transmission of USB protocol data through the second LVDS channel via a USB 3.x port and channel.

254. ACQIS' infringement allegations against the Accused Laptops are not limited to claim 23 of the '654 patent, and additional infringed claims will be identified through infringement contentions and discovery.

255. ASUS's direct infringement of the '654 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Desktops is shown by way of the exemplary ASUS S340MF Tower as set forth in paragraphs 31-37 and 68-81 above, which demonstrate that to manufacture the ASUS S340MF Tower, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 23 of the '654 patent upon importation and/or sale of the ASUS S340MF Tower in the United States:

(a) ASUS performs a method of increasing data communication speed of a computer when manufacturing the ASUS S340MF Tower;

(b) when manufacturing the ASUS S340MF Tower, ASUS connects a CPU directly to a peripheral bridge on a printed circuit board, because the ASUS S340MF Tower uses an Intel core CPU directly connected to the Intel PCH via a DMI connection;

(c) when manufacturing the ASUS S340MF Tower, ASUS connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the ASUS S340MF Tower has PCIe channels and USB 3.x channels directly connected to the Intel PCH;

(d) when manufacturing the ASUS S340MF Tower, ASUS provides a connector to connect the computer to a console, because the ASUS S340MF Tower has a variety of connector ports such as DisplayPort and USB 3.x;

(e) when manufacturing the ASUS S340MF Tower, ASUS provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the ASUS S340MF Tower has USB 3.x ports; and

(f) when manufacturing the ASUS S340MF Tower, ASUS enables the transmission of USB protocol data through the second LVDS channel via a USB 3.x port and channel.

256. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 23 of the '654 patent, and additional infringed claims will be identified through infringement contentions and discovery.

257. ASUS's direct infringement of the '654 patent through its manufacture, use, offers to sell, sales, and importation of the Accused Servers is shown by way of the exemplary ESC8000 G4 server as set forth in paragraphs 31-37 and 82-96 above, which demonstrate that to manufacture the ESC8000 G4, ASUS necessarily performs the following actions, which results in direct infringement of at least claim 23 of the '654 patent upon importation and/or sale of the ESC8000 G4 in the United States:

(a) ASUS performs a method of increasing data communication speed of a computer when manufacturing the ESC8000 G4;

(b) when manufacturing the ESC8000 G4, ASUS connects a CPU directly to a peripheral bridge on a printed circuit board, because the ESC8000 G4 uses an Intel core CPU directly connected to the Intel PCH via a DMI connection;

(c) when manufacturing the ESC8000 G4, ASUS connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the ESC8000 G4 has PCIe channels and a DMI channel directly connected to the Intel PCH;

(d) when manufacturing the ESC8000 G4, ASUS provides a connector to connect the computer to a console, because the ESC8000 G4 has a variety of connector ports such as USB 3.x;

(e) when manufacturing the ESC8000 G4, ASUS provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the ESC8000 G4 has USB 3.x ports; and

(f) when manufacturing the ESC8000 G4, ASUS enables the transmission of USB protocol data through the second LVDS channel via a USB 3.x port and channel.

258. ACQIS' infringement allegations against the Accused Servers are not limited to claim 23 of the '654 patent, and additional infringed claims will be identified through infringement contentions and discovery.

259. As early as around May 15, 2018, and at least as of the filing of this Complaint, ASUS had actual notice of the '654 patent and the infringement alleged herein.

260. The above-described acts of direct and indirect infringement committed by ASUS have caused injury and damage to ACQIS and ACQIS' licensees, and will continue to cause damages and irreparable harm to ACQIS unless enjoined.

261. ACQIS is entitled to recover all damages sustained as a result of ASUS's wrongful acts of infringement, but in no event less than a reasonable royalty pursuant to 35 U.S.C. § 284.

262. ASUS's infringement as described herein has been and continues to be willful and exceptional. Accordingly, ACQIS is entitled to recover enhanced damages up to three times the amount found or assessed at trial pursuant to 35 U.S.C. § 284, as well as its attorneys' fees pursuant to 35 U.S.C. § 285.

JURY TRIAL DEMANDED

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

PRAYER FOR RELIEF

WHEREFORE, Plaintiff ACQIS LLC respectfully requests that this Court grant the following relief to ACQIS LLC:

A. enter judgment that ASUS has infringed, both directly and indirectly, one or more claims of each of the ACQIS Patents and continues to infringe those claims through: (1) the manufacture, use, offering to sale, and/or sale in the United States, and/or the importation into the United States, of infringing computer products; (2) the practice of claimed methods of the ACQIS Patents by using and/or testing computer products in the United States; (3) the importation into the United States of computer products made abroad using ACQIS's patented processes; (4) the inducement of third parties to engage in the activity described above with knowledge of the ACQIS Patents and of the third parties' infringing actions; and (5) contributing to the direct infringement of third parties by importing motherboards with instructing to install CPUs, memory and other peripherals in the motherboards to create a

functioning and infringing device knowing that the motherboards are a material part of an infringing printed circuit board and do not have substantial non-infringing uses;

B. enter judgment that such infringement is willful;

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

D. enter an order that ASUS pay to ACQIS ongoing royalties in an amount to be determined for any infringement occurring after the date that judgment is entered;

E. enter an order, pursuant to 35 U.S.C. § 285, declaring this an exceptional case and awarding to ACQIS its reasonable attorneys' fees; and

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

Dated: October 15, 2020.

Respectfully submitted,

By: */s/ Paige Arnette Amstutz*

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