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

ACQIS LLC, a Texas limited liability company, Plaintiff, v. MICRO-STAR INTERNATIONAL CO., LTD., a Taiwanese corporation; MSI COMPUTER (SHENZHEN) CO., LTD., a Chinese corporation; and MSI ELECTRONICS (KUNGSHAN) CO., LTD., a Chinese corporation, Defendants.	Civil Action No. 6:23-cv-00883 JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff ACQIS LLC ("Plaintiff" or "ACQIS"), by its attorneys, hereby alleges patent infringement against Defendants Micro-Star International Co., LTD. ("Micro-Star"); MSI Computer (Shenzhen) Co., LTD. ("MSI Shenzhen"); and MSI Electronics (Kungshan) Co., LTD. ("MSI Kunshan") (collectively, "Defendants" or "MSI"), 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. MSI has infringed the following patents owned by ACQIS: U.S. Patent Nos. 9,703,750 ("'750 patent"), 8,977,797 ("'797 patent"), 9,529,769 ("'769 patent"), RE45,140 ("'140 patent"), RE44,654 ("'654 patent; (collectively, the "ACQIS Patents")). Copies of the ACQIS Patents are attached to this Complaint as Exhibits 1-5.

3. Specifically, MSI has directly infringed the ACQIS Patents through the importation into the United States of computer products made abroad using ACQIS's patented processes for sale to domestic customers.

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

THE PARTIES AND RELATED ENTITIES

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. On information and belief, Micro-Star is a public corporation organized and existing under the laws of Taiwan with its principal place of business at No. 69, Lide St., Zhonghe Dist., New Taipei City 235, Taiwan. MSI directly or through subsidiaries it controls has manufactured

[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.

and then sold infringing laptops, desktop computers, and servers to related MSI entities and to third parties in the United States, and has shipped infringing laptops, desktop computers, and servers to the United States that were made abroad according to methods patented by ACQIS.

7. On information and belief, MSI Shenzhen is a wholly-owned subsidiary of Micro-Star organized and existing under the laws of China with its principal place of business at 37 Tangtou Avenue, Tangtou Community Shiyan Street, Baoan District Shenzhen City, Guangdong Province, China. On information and belief, MSI Shenzhen is directed by Micro-Star to manufacture infringing laptops, desktop computers, and servers, whereupon MSI Shenzhen ships infringing laptops, desktop computers, and servers to related MSI entities and to third parties in the United States, and has shipped infringing laptops, desktop computers, and servers to the United States.

8. On information and belief, MSI Kunshan is a wholly-owned subsidiary of Micro-Star organized and existing under the laws of China with its principal place of business at No. 88 East Qianjin Road, Kunshan City, China. On information and belief, MSI Kunshan is directed by Micro-Star to manufacture infringing laptops, desktop computers, and servers, whereupon MSI Kunshan ships infringing laptops, desktop computers, and servers to related MSI entities and to third parties in the United States, and has shipped infringing laptops, desktop computers, and servers to the United States.

9. MSI Computer Corporation is a California Corporation and a wholly-owned subsidiary of MSI.[2] MSI Computer Corp. is described as being responsible for "[s]ales and maintenance of [MSI] computers and electronic components" including in the United States.[3]

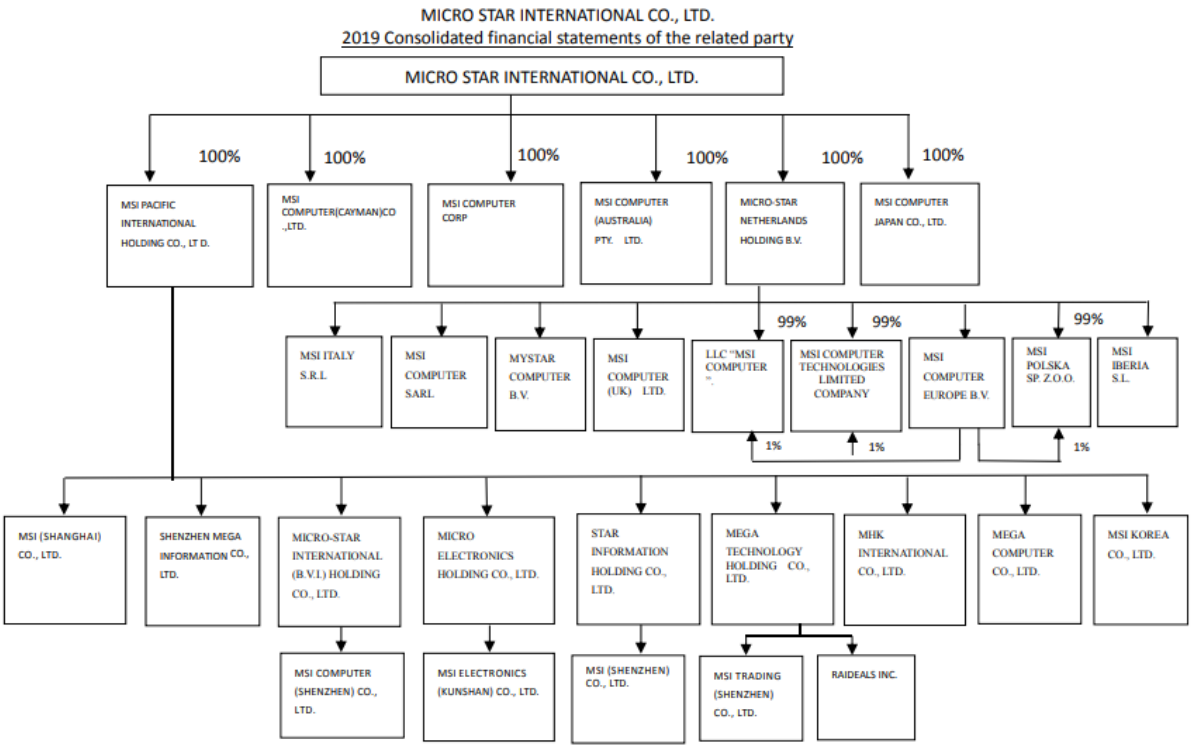
10. Micro-Star is the parent company of a multinational conglomerate that operates under the brand name "MSI." According to its 2019 Annual Report, MSI is "one of the heavyweight PC

[2] Micro-Star 2019 Annual Report at 99.
[3] *See id*.

manufacturers in the world, with product lines including motherboards, display cards, desktop computers, laptops, and other commercial products."[4] "MSI has a wide-ranging global presence spanning over 120 countries. Its comprehensive lineup of laptops, graphics cards, monitors, motherboards, desktops . . . are globally acclaimed."[5] MSI claims more than 60 Billion New Taiwanese dollars in export sales to its "America" sales region in 2019 and 2018.[6] Micro-Star states that it "mainly manufactures and sells computers, motherboards, and interface cards."[7]

11. MSI's 2019 Annual Report discloses the ownership and structure of Micro-Star and its wholly-owned subsidiary companies. As shown below, Micro-Star directly or through its wholly owned subsidiaries owns 100% of each of MSI Shenzhen, MSI Kunshan, and MSI Computer Corp.[8]

[4] Micro-Star 2019 Annual Report at 66.
[5] https://us.msi.com/about.
[6] Micro-Star 2019 Annual Report at 66.
[7] Micro-Star 2019 Annual Report at 69.
[8] Micro-Star 2019 Annual Report at 46, 98.



12. MSI Shenzhen and MSI Kunshan are the only entities disclosed in Micro-Star's Annual Report as being responsible for manufacture of MSI's products.[9] Micro-Star describes the following arrangement for manufacture of its products with MSI Shenzhen and MSI Kunshan: "Second-tier Subsidiary: MSI ELECTRONICS (KUNSHAN) [and] MSI COMPUTER (SHENZHEN)[.] The Company [Micro-Star] subcontracts manufacturing to a second-tier subsidiary through first tier subsidiaries. The transaction model is that the Company provides raw materials, mutually agreed with the second-tier subsidiary to process the products based on quantities, amounts and lead time of orders. The accounts payable would be paid depending on the cash flow situation of the Company . . . . Starting July 1, 2019, the Company agreed on manufacturing items with the second-tier subsidiary directly."[10]

[9] Micro-Star 2019 Annual Report at 99-100.
[10] Micro-Star 2019 Annual Report at 220.

13. As of December 31, 2019, Micro-Star had more than five billion New Taiwanese dollars of accounts receivable outstanding "mainly aris[ing] from sales" to MSI Computer Corp.[11]

14. Micro-Star shares common control and a close relationship with the related entities identified above. As described in Micro-Star's 2019 annual report:

a. Micro-Star Vice Chairman, Chin-Ching Wong (or Huang) is also Director of MSI Computer Corp. and Executive Director and President of MSI Kunshan.[12]

b. Micro-Star Director, Mr. Hsien-Neng Yu, is also a Director of MSI Computer Corp. and the Executive Director and President of MSI Shenzhen.[13]

c. Ti-Chun Tung is the Vice President of Corp. Sales & Marketing for Micro-star, as well as the Director and President of MSI Computer Corp.[14]

d. Pao-You Hung is listed as the Vice President of Finance for Micro-Star as well as the Supervisor of MSI Shenzhen.[15]

e. Chu-Hao Liu is the Assistant Vice President of Auditing at Micro-Star as well as the Supervisor of MSI Kunshan.[16]

15. Micro-Star reports on the revenue, costs, net worth, and liabilities of each of its foregoing subsidiaries as part of a Micro-Star's Annual Reports.[17] MSI Computer Corp. accounted for more of MSI's revenue in 2019 than any other MSI subsidiary.[18]

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[11] Micro-Star 2019 Annual Report at 220.
[12] Micro-Star 2019 Annual Report at 11.
[13] Micro-Star 2019 Annual Report at 11.
[14] Micro-Star 2019 Annual Report at 14.
[15] Micro-Star 2019 Annual Report at 15.
[16] Micro-Star 2019 Annual Report at 15.
[17] *See, e.g.*, Micro-Star 2019 Annual Report at 105-06.
[18] Micro-Star 2019 Annual Report at 105-06.

16. On information and belief, domestic purchasers of MSI products (e.g., computer retailers, IT professionals, and end users) place orders for MSI products with Micro-Star and/or MSI Computer Corp., whereupon Micro-Star directs MSI Shenzhen and/or MSI Kunshan to manufacture those products. Micro-Star then takes title to these products and ships them to Microstar Computer Corp. to act as the nominal importer and to fulfill those orders.

17. Notwithstanding that MSI Computer Corp. acts as the nominal importer of the accused products, the act of importation is properly imputed to Micro-Star and/or MSI Shenzhen and MSI Kunshan because MSI Computer Corp acts as the alter ego and/or agent of MSI and Micro-Star for at least the reasons just discussed and at least those below.

a. As discussed elsewhere in this Complaint, Micro-Star claims MSI Computer Corp.'s revenue as its own in consolidated financial reporting.

b. As discussed elsewhere in this Complaint, Micro-Star and MSI Computer Corp. have multiple overlapping executives (together with many overlapping executives at other MSI entities).

c. MSI Computer Corp.'s operations are entirely in support of its sole owner—Micro-Star. On information and belief, and as an example, Microstar Computer Corp. does not sell computer products of competitors to Micro-Star, nor does it enjoy the freedom to do so.

d. Micro-Star and MSI Computer Corp. present themselves to the domestic public as a monolith because, on information and belief, that is how they operate. For example, Micro-Star claims copyright to the content on https://us.msi.com/, where it directs domestic purchasers to retailers carrying MSI infringing products, and where it makes no attempt to

differentiate itself from MSI Computer Corp. or to educate the consuming public about MSI Computer Corp. Further demonstrating the wholesale entwinement of MSI Computer Corp. and Micro-Star to domestic users, the Privacy Policy[19] at https://us.msi.com/ is set forth nominally by MSI Computer Corp., but the Terms of Service[20] of https://us.msi.com/ are set forth nominally by Micro-Star.

e. Micro-Star controls the actions of MSI Computer Corp., and advertises this fact publicly. "All subsidiaries are included in the Group's [i.e. Micro-Star's] consolidated financial statements. Subsidiaries are all entities (including structured entities) controlled by the Group. The Group controls any entity when the Group is exposed, or has rights, to variable returns from its involvement with the entity and has the ability to affect those returns though its poser over the entity."[21]

f. On information and belief, MSI Computer Corp. was formed by Micro-Star to further Micro-Star's domestic sales of accused infringing products, and is controlled today by Micro-Star to ensure that result.

18. Following manufacture of infringing laptops, desktop computers, and servers by MSI Shenzhen and MSI Kunshan, Micro-Star takes these products and ships them to the United States to Microstar Computer Corp. for delivery to domestic purchasers of the MSI infringing laptops, desktop, and server products.

[19] *See* https://us.msi.com/page/privacy-policy.
[20] *See* https://us.msi.com/page/website-terms-of-use
[21] Micro-Star 2021 Annual Report at 127.

19. For example, based on public information, on March 19, 2018, Micro-Star made a shipment totaling over 24,288 pounds of hardware to MSI Computer Corp. described as consisting of "NOTEBOOK COMPUTER[S]. . ."[22] Upon information and belief, this shipment included infringing MSI laptop products. More than 100,000 pounds of similarly-labeled "NOTEBOOK COMPUTER" shipments from Micro-Star to MSI Computer Corp. occurred throughout the spring of 2018.[23]

20. For example, based on public information, on June 24, 2018, Micro-Star made a 13,332-pound shipment to MSI Computer Corp., the shipment labeled "DESKTOP-BAREBONE . . ."[24] Upon information and belief, MSI connotes its infringing desktop products as "barebone(s)" when they are sold without peripherals like monitors, keyboards, and mice.[25] Upon information and belief, this shipment contained infringing MSI desktop computers. Tens of thousands more pounds of "DESKTOP" shipments have taken place from Micro-Star to MSI Computer Corp. between 2019 and 2021.[26]

21. For example, based upon public records, on July 10, 2019, Micro-Star sent MSI Computer Corp. more than 31,000 pounds of goods labeled "SERVER BAREBONE...".[27] Upon information and belief, these shipments included MSI infringing servers. Micro-Star shipped more than 50,000 pounds of similarly-labeled "SERVER BAREBONE…" hardware shipments to MSI Computer Corp. in 2018.[28]

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[22] U.S. Import Bill of Lading No. EGLV142852835924.
[23] *See* U.S. Import Bill of Lading Nos. EGLV14285283548; EGLV142852835924; EGLV142852836289; EGLV146800129568; EGLV142852839687; EGLV142852841215; and EGLV142852840537.
[24] U.S. Import Bills of Lading DMAL1SX538657.
[25] *See, e.g.*, https://www.msi.com/Barebone/Nightblade-MI2-Barebone/Specification.
[26] *See* U.S. Import Bills of Lading Nos. EGLV010100743622, DMALSZXA31996, and DMALSZXA26898.
[27] U.S. Import Bills of Lading No. EGLV010900628020.
[28] *See, e.g.,* U.S. Import Bills of Lading Nos. EGLV010801132000; EGLV146800083614;

JURISDICTION AND VENUE

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

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

24. This Court has personal jurisdiction over the Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute.

25. On information and belief, MSI has purposefully manufactured and/or sold and offered for sale 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.

26. Publicly available import data indicates that Micro-Star sells and imports servers, laptops, and desktop computers manufactured by MSI Shenzhen and MSI Kunshan into the United States. Data from Import Genius indicates that, between 2017 and 2023, Micro-Star has acted as supplier for 3,843 shipments imported into the United States, totaling over 111,217,350 pounds of materials.[29] More than 3,000 of these shipments were directed to MSI Computer Corp.

27. Publicly available import data indicates that MSI has utilized businesses residing in this judicial district to facilitate the importation of infringing goods. For example, shipments labeled as containing "DESKTOP BAREBONES" list "Expeditors International" as the party to be notified, and "1865 Northwestern Dr. El Paso" Texas as the notification address for the

EGLV010801351488.

[29] U.S. Import Records, available from Import Genius.

shipments.[30] These shipments occurred in 2018 and 2019, and totaled nearly 75,000 pounds in goods.

28. Upon information and belief, some or all of these imports relate to accused products.

29. Further, Defendants have (itself and/or through the activities of subsidiaries, affiliates, or intermediaries) committed acts of patent infringement in the United States, State of Texas and this District, including by importing, offering to sell, and/or selling infringing computer products in the United States, State of Texas and this District made abroad using ACQIS's patented processes.

30. Defendant Micro-Star is the parent corporation for a production and distribution chain (together with other Micro-Star subsidiaries, affiliates, and intermediaries) with respect to the manufacture, use, offering to sell, and/or sale of infringing computer products and with respect to the importation into the United States of infringing computer products and of computer products made abroad using patented processes claimed in the ACQIS Patents.

31. Accordingly, MSI has established minimum contacts within Texas and purposefully availed itself of the benefits of Texas, and the exercise of personal jurisdiction over MSI would not offend traditional notions of fair play and substantial justice. In addition, or in the alternative, this Court has personal jurisdiction over MSI pursuant to Federal Rule of Civil Procedure 4(k)(2). *See, e.g., ACQIS LLC v. Lenovo Group Ltd. et al.*, 572 F. Supp. 3d 291, 302-307 (W.D. Tex. Nov. 16, 2021) (denying motion to dismiss for lack of personal jurisdiction as to served defendants).

[30] *See, e.g.*, US. Import Bills of Lading Nos. DMALSZXA01908; DMALSZXA02386; DMALSZXA02390; DMALSZXA07685; DMALSZXA20417; DMALSZXA20421; DMALSZXA21380; DMALSZXA21375; DMALSZXA22842; DMALSZXA26898; DMALSZXA29441; DMALSZXA31996.

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

33. Venue is also appropriate because the patents asserted in this case have been previously asserted in cases before this Court. *See ACQIS LLC v. MiTac Computing Tech. Corp.*, No. W-20-cv-00962-ADA, 2021 U.S. Dist. LEXIS 197938, 2021 WL 4805431 (W.D. Tex., Oct. 14, 2021) (describing four pending cases and denying motion to transfer venue).

FACTUAL BACKGROUND

Dr. Chu and the ACQIS Patents

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

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

36. 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 1987. In 1988, Verticom was acquired by Western Digital Imaging, Inc.

37. 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.

38. 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.

39. 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.

40. 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.

41. After several decades in the industry, Dr. Chu is now a named inventor of over forty U.S. Patents.

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

43. The '750 patent, entitled "Computer System Including CPU or Peripheral Bridge Directly Connected to a Low Voltage Differential Signal Channel that Communicates Serial Bits of a Peripheral Component Interconnect Bus Transaction in Opposite Directions," was duly and legally issued on July 11, 2017, from a patent application filed October 9, 2014, with William W.Y. Chu as the sole named inventor. The '750 patent claims priority to U.S. Provisional Patent Application No. 60/134,122, filed on May 14, 1999.

44. 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.

45. 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.

46. 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,

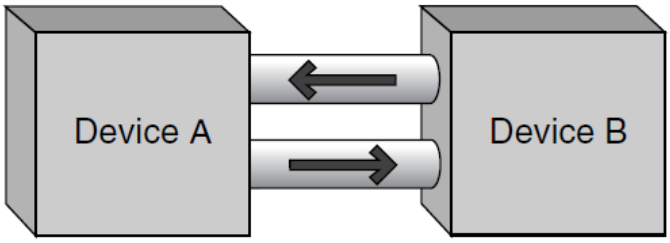
2013, with William W.Y. Chu as the sole named inventor. The '140 patent is a reissue of U.S. Patent No. 6,643,777, which issued on November 4, 2003, from a patent application filed May 14, 1999. The '140 patent claims priority to U.S. Patent Application No. 09/312,199, filed on May 14, 1999.

47. 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.

48. 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.

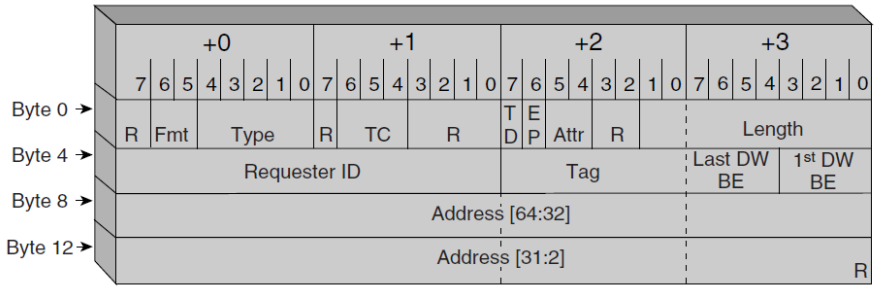
49. The claims in the ACQIS Patents generally relate to computers and computer systems that employ CPUs coupled to LVDS channels that convey various types of data (*e.g.*, PCI bus transactions, USB 3.x data, and/or digital video data) in a serial bit stream using pairs of unidirectional channels to convey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

50. 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.").

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



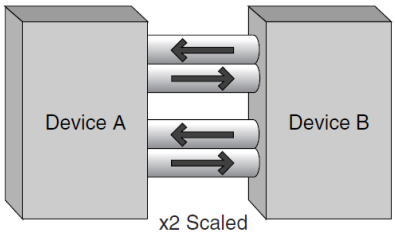
Id. at 93-114.

52. PCI Express "establishes a unique divergence from historical PCI evolutions through a layered architecture improving serviceability and scalability as well as easing software transitions through backward compatibility."[31] The compatibility of PCI Express with PCI can be further explained as follows: "PCI Express employs the same usage model and load-store communication model as PCI and PCI-X. It supports familiar transactions such as memory

[31] Adam H. Wilen, Justin P. Schade, Ron Thornburg. INTRODUCTION TO PCI EXPRESS - A HARDWARE AND SOFTWARE DEVELOPER'S GUIDE, Intel Press, 2003, pages 51-52.

read/write, IO read/write and configuration read/write transactions. The memory, IO, and configuration address space model is the same as PCI and PCI-X address spaces. By maintaining the address space model, existing OS and driver software will run in a PCI Express system without any modifications. In other words, PCI Express is software backward compatible with PCI and PCI-X systems. In fact a PCI Express system will boot an existing OS with no changes to current drivers and application programs. Even PCI/ACPI power management software will still run."[32]

53. 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[.]"



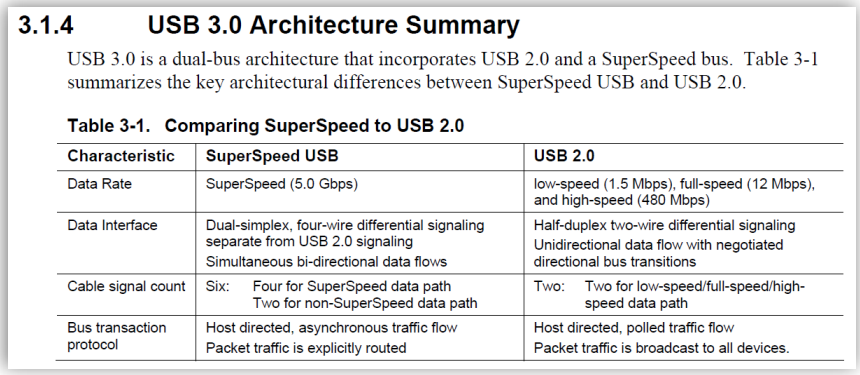
	Value Proposition	Benefits
I/O Simplification	• Scalable width and frequency • Higher bandwidth	• Superior performance • Enable evolving applications
High Performance	• Consolidate system I/O • Unity proliferated segments	• Standard I/O modules • Improve TTM and reduce TCO
Layered Architecture	• Layered Architecture .. Longevity • Reliability, Availability, Serviceability • Advanced Power Management • Works in existing PCI Environment	• Reduced returns • Improved service and support • Smooth software changes
Next Gen Multimedia	• Virtual channels • QoS and Isochrony	• Improved multimedia • "Glitch less" audio and video
Ease of Use	• New Form Factors • Innovative Designs • Hot Plug / Hot Swap	• SImple to Install / upgrade • Increased miniaturization

Figure 4.1 PCI Express Benefits

Id. at 3, 50.

[32] Ravi Budruk, et al., PCI EXPRESS SYSTEM ARCHITECTURE, 400, (MindShare Inc., 2004) at 11.

54. 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. USB 3.x ports operate in conformance with all USB protocols, including USB 2.0 protocols and USB 3.0 or later protocols, which are backward compatible with the USB 2.0 protocol. In sum, USB 3.x connections are LVDS channels using two unidirectional, differential signal pairs that transmit USB protocol data packets in opposite directions.

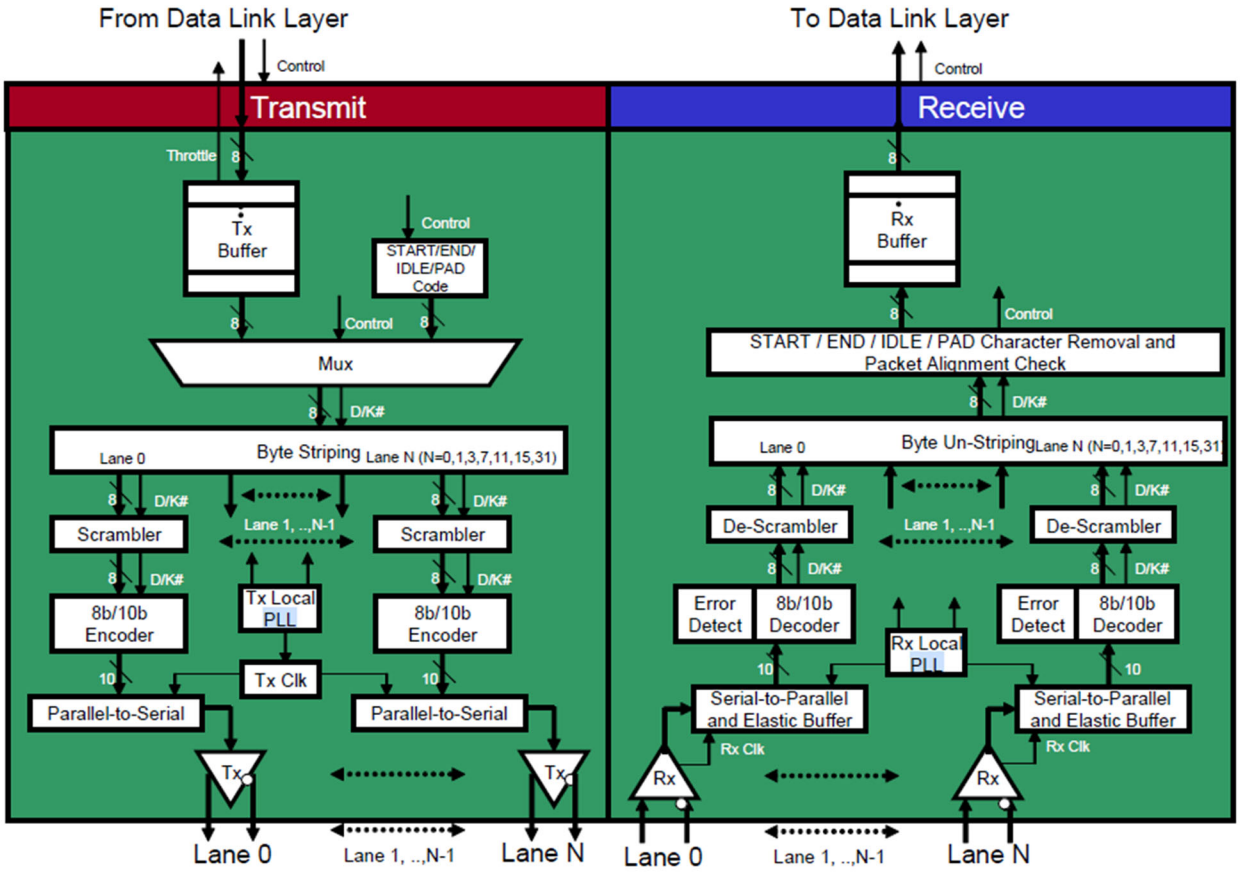
55. The Direct Media Interface ("DMI") is similar to PCIe and implements at least four serial lanes that all use differential signaling constituting 2 transmit lanes and 2 receive lanes and, therefore, transmitting data in opposite directions. *See* https://www.intel.com/content/dam/www/public/us/en/documents/white-papers/ia-introduction-basics-paper.pdf; *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.").

56. Additional interfaces that employ LVDS channels include, but are not limited to, DisplayPort[33], Embedded DisplayPort ("eDP")[34], Serial-Attached SCSI ("SAS")[35], and Serial ATA or Serial AT Attachment ("SATA")[36]. Other protocols that use LVDS channels are USB4, Thunderbolt 3, and Thunderbolt 4. Since USB4, Thunderbolt 3, and Thunderbolt 4 use USB-Type C connectors, at least two low voltage differential signaling pairs in opposite directions are used to transfer PCI Express, DisplayPort, and/or USB packets.[37] Moreover, Thunderbolt controllers use PCI Express.[38] USB4 offers display, data, and load/store functionality over a single USB Type-C connector and retains compatibility with the existing ecosystem of USB and Thunderbolt products.[39] USB4 (formerly known as Thunderbolt 3 protocol) can tunnel USB 3/x, PCIe, and

[33] Tektonix, THE BASICS OF SERIAL DATA COMPLIANCE AND VALIDATION MEASUREMENTS – PRIMER, page 9.
[34] eDP is a display panel interface standard that defines the signaling interface between CPUs/GPUs and integrated displays. It is based on the existing DisplayPort standard. Essentially, it is an embedded version of the DisplayPort standard oriented toward applications, such as notebooks and All-In-One PCs. Like DisplayPort, it consists of the Main Link, Auxiliary channel, and an optional Hot-Plug Detect signal. *See* https://edc.intel.com/content/www/us/en/design/ipla/software-development-platforms/client/platforms/alder-lake-desktop/12th-generation-intel-core-processors-datasheet-volume-1-of-2/003/embedded-displayport-edp/.
[35] HP. *Serial ATA and Serial Attached SCSI technologies*. TECHNOLOGY BRIEF, 2003, page 5. Available at http://h10032.www1.hp.com/ctg/Manual/c00256909.pdf.
[36] HP. *Serial ATA and Serial Attached SCSI technologies*. TECHNOLOGY BRIEF, 2003, page 5. Available at http://h10032.www1.hp.com/ctg/Manual/c00256909.pdf; Tektonix, THE BASICS OF SERIAL DATA COMPLIANCE AND VALIDATION MEASUREMENTS – PRIMER, page 9.
[37] Brad Saunders. USB Type-C System Overview: Enabling connections for data, display, and power. USB Developer Days 2019 – Taipei, Taiwan, November 19, 2019, page 37. Available at https://www.usb.org/sites/default/files/D1T1-2%20-%20USB%20Type-C%20System%20Overview.pdf.
[38] *See* Intel. Thunderbolt Technology: The Transformational PC I/O. Technology Brief, page 3. Available at http://www.123seminarsonly.com/Seminar-Reports/008/51703485-intel-thunderbolt-technology.pdf.
See also Jeff Bake, Dinesh Jain, and Jacob Ontiveros. Thunderbolt™ 3 Technology and USB-C. Intel Developer Forum (IDF15), page 27. Available at https://www.thunderbolttechnology.net/sites/default/files/Thunderbolt3USBC-IDFf.pdf
[39] Universal Serial Bus 4 (USB4) Specification, Version 1.0, August 2019, page 1.

DisplayPort protocols. It uses up to two lanes, each consisting of two differential signal pairs (Tx/Rx), and is used for tunneled protocol and control traffic.[40]

57. The physical layer of PCI Express includes PLL circuitry. *See* PCI Express Base Specification Revision 3.0, Section 1.5.3, page 49 (physical Layer "includes all circuitry for interface operation, including driver and input buffers, parallel-to-serial and serial-to-parallel conversion, PLL(s), impedance matching circuitry" as well as "logical functions related to interface initialization and maintenance"). The figure below also shows the use of PLL circuitry:



Ravi Budruk, *et al.*, PCI EXPRESS SYSTEM ARCHITECTURE, 454, (MindShare Inc., 2004), page 401.

[40] https://www.usb.org/sites/default/files/D1T1-3%20-%20USB4%20System%20Overview.pdf at 14.

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

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

MSI's Infringing Products

60. MSI is a global leader in the personal, gaming, and business computer markets. MSI makes and sells a variety of laptop computers, desktop computers, and computer servers. MSI imports or directs the importation of infringing laptop computers, desktop computers, and computer servers, as well as laptop computers, desktop computers, and computer servers made abroad using infringing processes, into the United States and into this judicial District, through established distribution channels with the expectation that those products would be sold in the United States, State of Texas and this District.

61. On information and belief, MSI's sale of laptops, desktops, and servers in the United States generates billions of dollars in revenue every year.

62. MSI has directly infringed one or more claims of each of the ACQIS Patents under at least 35 U.S.C. §§ 271 (g), by importing and offering to sell and/or selling within the United States computer products that were made abroad using patented processes claimed in the ACQIS Patents and then imported into the United States.

63. MSI makes, uses, imports, sells, and/or offers to sell 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, and/or using, offering to sell, and/or selling in, 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 Titan, Stealth, Raider,

Vector, Crosshair / Pulse, Sword / Katana, Cyborg / Thin, Delta, Alpha, Bravo, Creator, CreatorPro, Workstation, Summit, Prestige, Modern, and Commercial series laptops. These products are collectively referred to as the "**Accused Laptops**."

64. MSI makes, uses, imports, sells, and/or offers to sell 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, and/or using, offering to sell, and/or selling in, 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 Aegis, Infinite, Trident, Codes, Creator, Prestige, Cubi, and PRO series desktops, together with at least the Modern and PRO series all-in-one computers. These products are collectively referred to as the "**Accused Desktops**."

65. MSI makes, uses, imports, sells, and/or offers to sell 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, and/or using, offering to sell, and/or selling in, the United States computer server products that were made abroad using patented processes claimed in the ACQIS Patents including, without limitation, edge and rack servers sold under the brand names DP, UP, GPGPU, Hybrid, Edge, unbranded server motherboard products, in addition to "network appliance" products.[41] These products are collectively referred to as the "**Accused Servers**."

66. The Accused Laptops, Accused Desktops, and Accused Servers are collectively referred to herein as the "**Accused MSI Products**."

[41] *See, e.g.*, https://eps.msi.com/product/101/56151.

67. On information and belief, MSI manufactures and tests at least certain of the Accused MSI Products abroad and offers to sell, and/or sells such products in the United States after importing such products into the United States.

68. On information and belief, at least certain of the Accused MSI Products that MSI imports into the United States are manufactured outside of the United States using one or more processes claimed in the ACQIS Patents.

69. The Accused MSI 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.

The Accused Laptops

70. On information and belief, all of the Accused Laptops are configured and operate in substantially the same way as explained below using the MSI GT75 TITAN 4K-247 (hereinafter, the "MSI GT75") as an example for illustrative purposes.

71. The MSI GT75 is a computer system that runs the Windows operating system.

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification.

72. The MSI GT75 uses an Intel Core i9 processor, which is mounted on a motherboard.

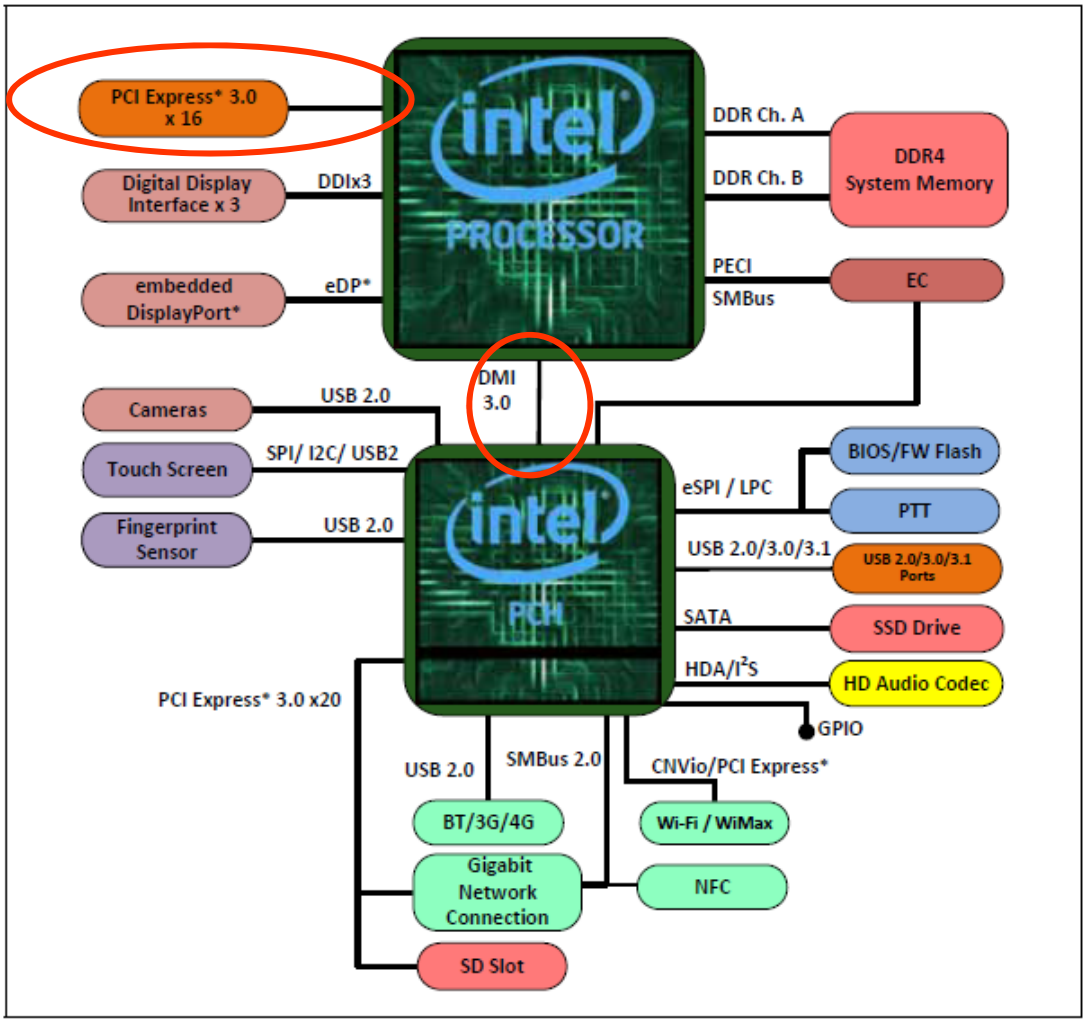
https://us.msi.com/Laptop/GT75-Titan-9SX/Specification.

73. These processors are also known as the "Coffee Lake" family of processors, Intel's 9th Generation Intel® Core™ i9 Processors. *See, e.g.*, https://www.intel.com/content/www/us/en/products/sku/192990/intel-core-i99980hk-processor-16m-cache-up-to-5-00-ghz/specifications.html

74. The 9th Generation Intel® Core™ i9-9980HK processors integrate the central processing unit (CPU) with a graphics subsystem and an interface controller on a single chip. On

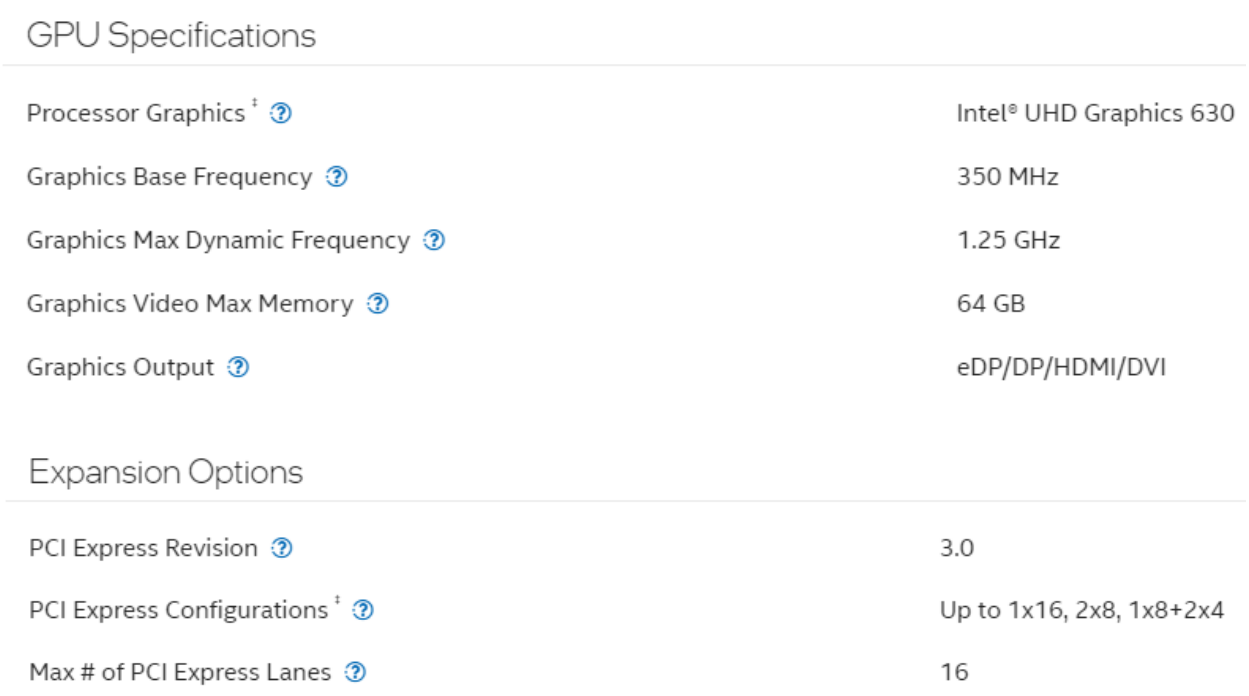
information and belief, the Intel Core processors integrate one or more integrated interface controllers, such as to drive the PCIe channels connected to the processor.[42]

Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

[42] Intel's DMI is a lightly-modified version of PCIe, and its differences from PCIe are immaterial to the allegations of this Complaint.



GPU Specifications

Processor Graphics ‡	Intel® UHD Graphics 630
Graphics Base Frequency	350 MHz
Graphics Max Dynamic Frequency	1.25 GHz
Graphics Video Max Memory	64 GB
Graphics Output	eDP/DP/HDMI/DVI

Expansion Options

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

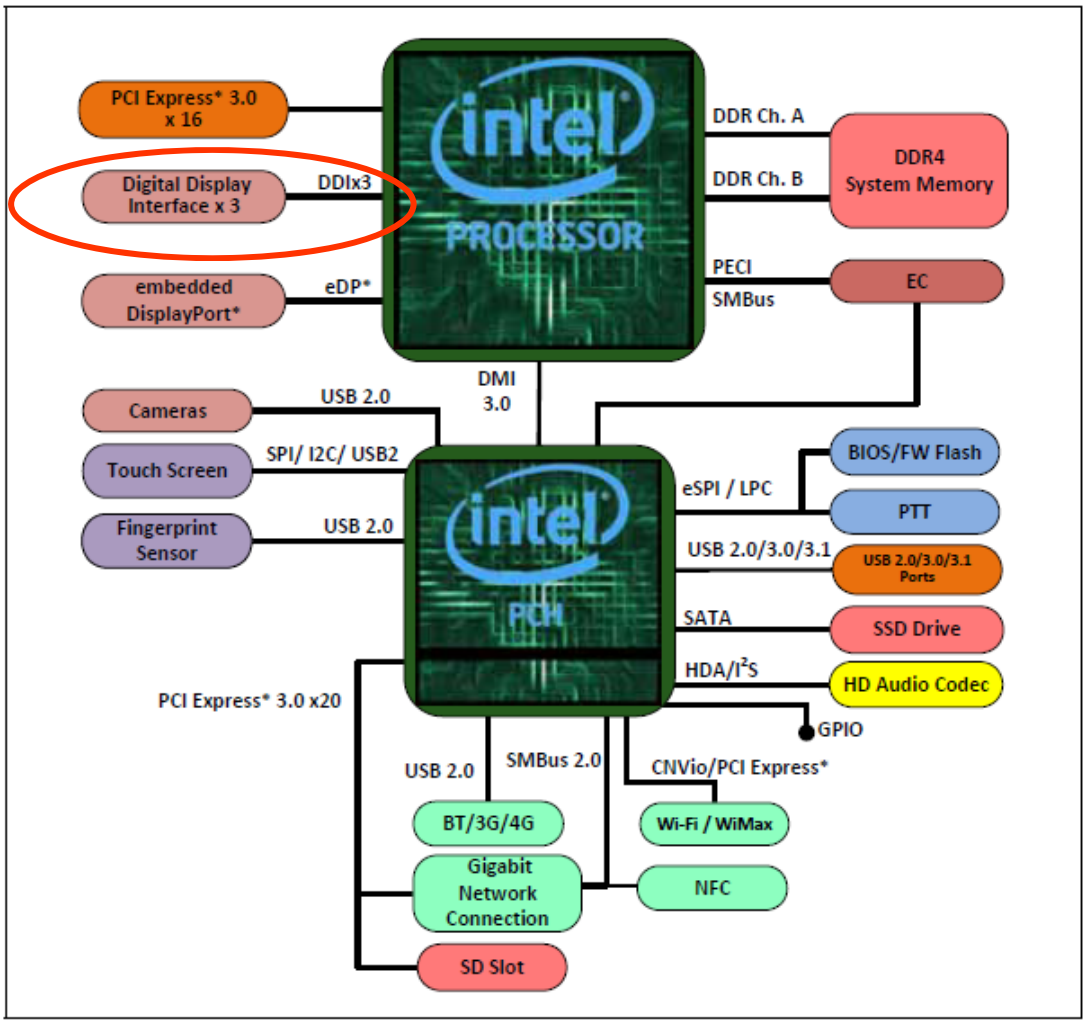
https://www.intel.com/content/www/us/en/products/sku/192990/intel-core-i99980hk-processor-16m-cache-up-to-5-00-ghz/specifications.html

75. The MSI GT75 comprises a chassis or enclosure which houses one or more connectors that can couple to components of other computer systems and consoles, including through use of the computer's USB 3.2 and Thunderbolt ports[43].

[43] Both of these ports are capable of conveying video including DisplayPort video. *See* https://www.zdnet.com/article/do-you-know-the-difference-between-thunderbolt-3-usb-c-3-1-gen-2-and-usb-c-3-1-gen-1/; https://www.tomshardware.com/news/usb-3-2-explained.

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification.

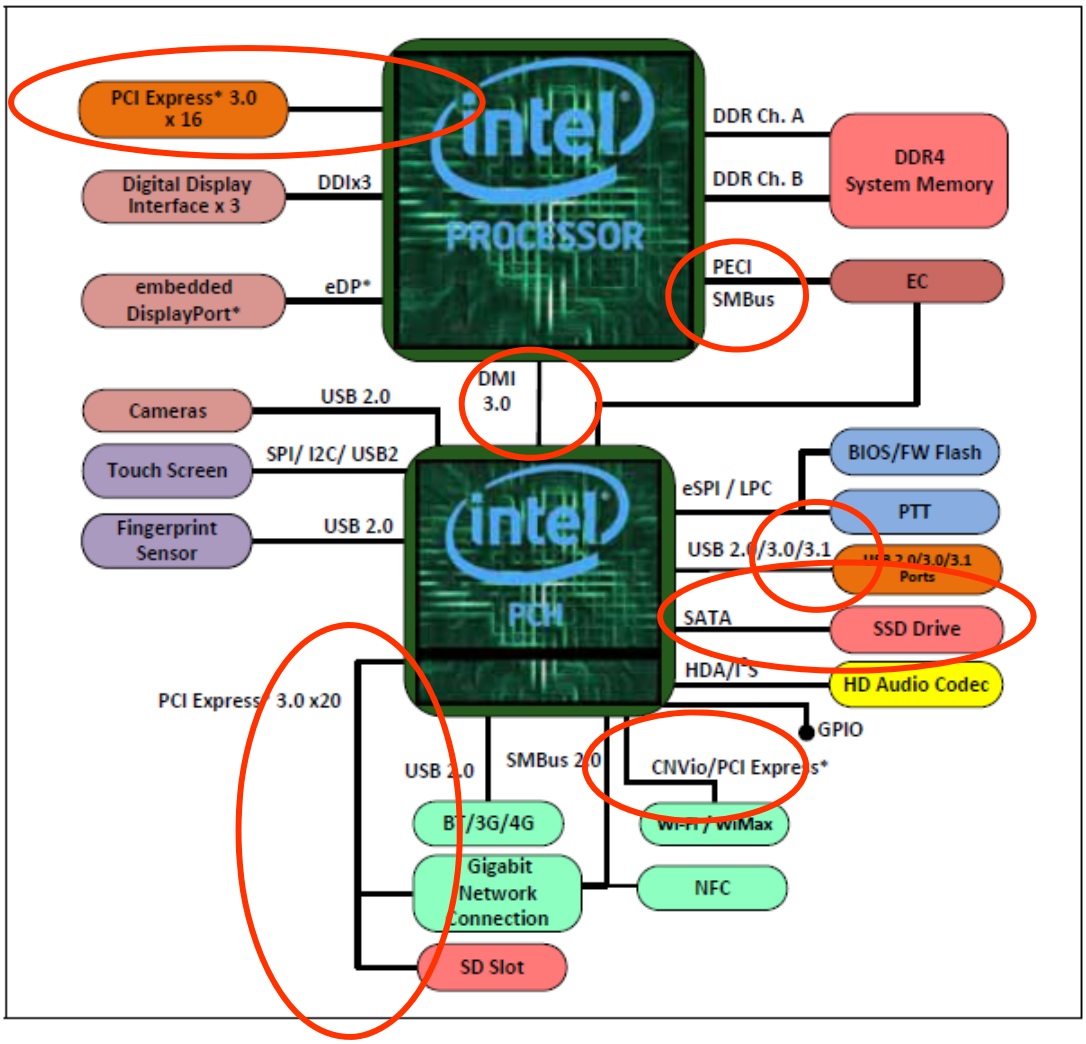
Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11 (identifying DDI, USB 3.x, and eDP channels extending from the SoC); *id.* at 16 (explaining that the DDI channels can be configured as DisplayPort, HDMI, or DVI).

76. The Intel processors employed in the MSI GT75 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 directions, including SATA, PCIe, and Intel's DMI, and the connected LVDS channels connect the CPU to a mass storage device.

Figure 1-1. S/H-Processor Line Platforms



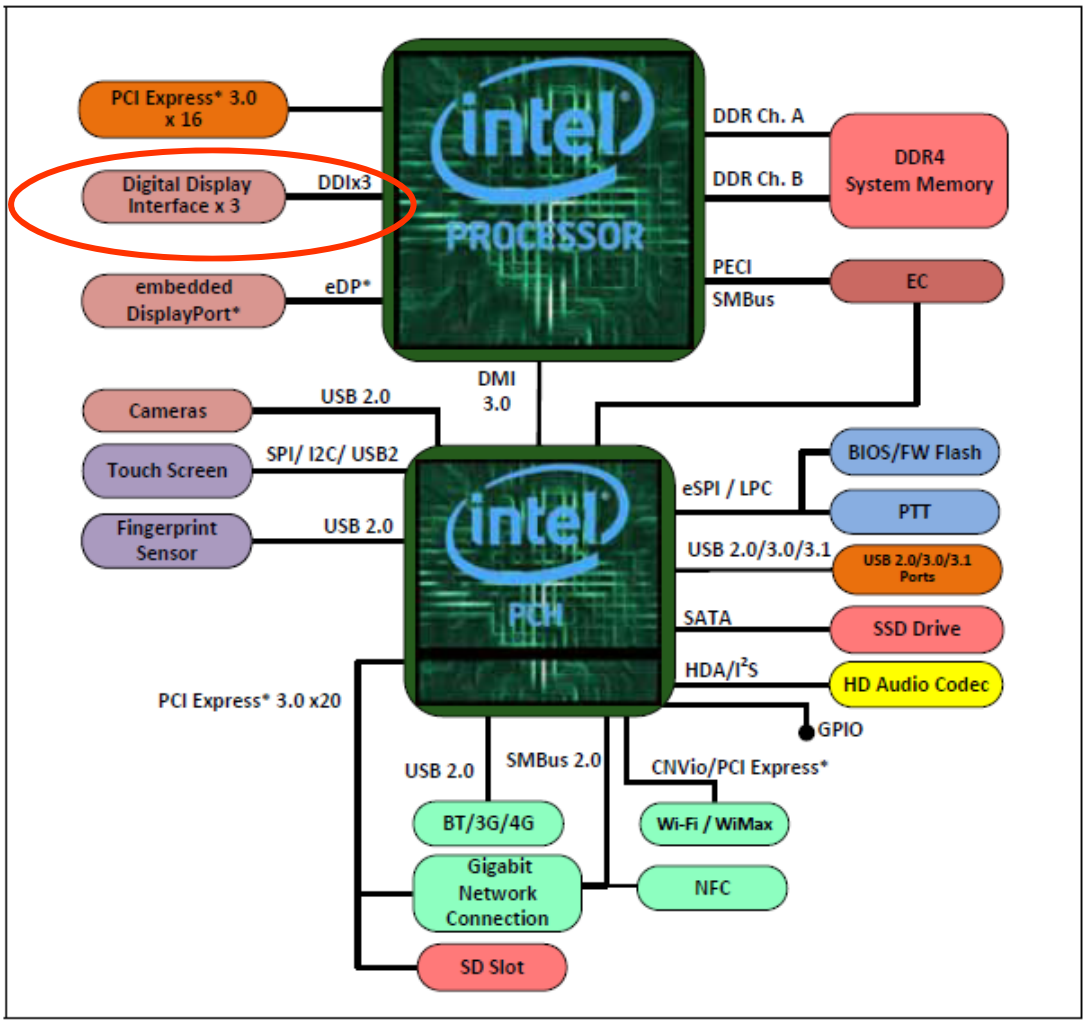
https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11

77. The Intel processors employed in the MSI GT75 also connect directly to a variety of differential signal channels that output digital video signals through a connector, including Thunderbolt, USB 3.2 Gen 2, and HDMI ports.

USB	USB 3.2 Gen2*5
TYPE-C PORT	Thunderbolt 3*1
KEYBOARD	Steel Series per-Key RGB Mechanical KB with Anti-Ghost key
VIDEO PORT	HDMI™ (supports 4K @ 60Hz), mDP v1.2*1

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification.

Figure 1-1. S/H-Processor Line Platforms

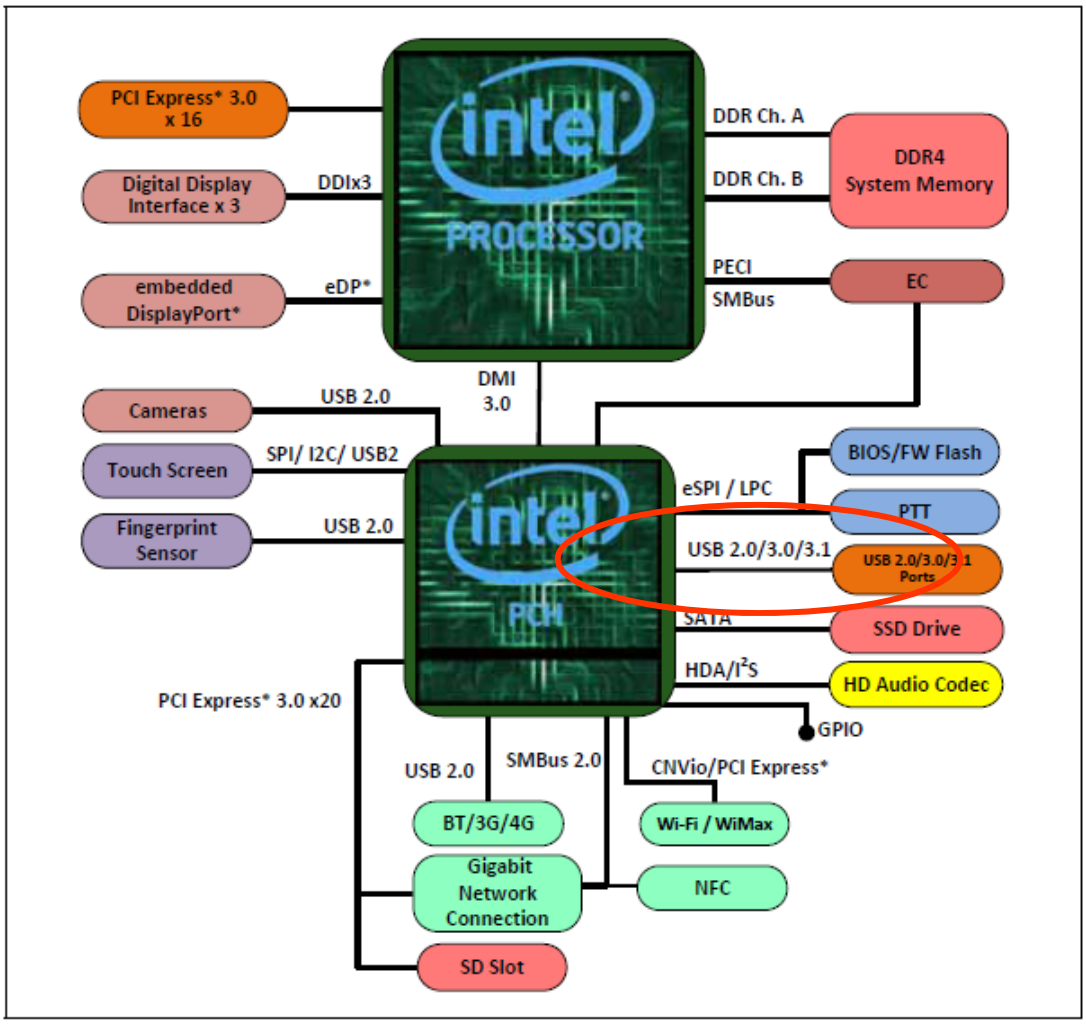


https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-

2.html, at 11 (identifying DDI, USB 3.x, and eDP channels extending from the SoC); *id.* at 16 (explaining that the DDI channels can be configured as DisplayPort, HDMI, or DVI).

78. The Intel processors employed in the MSI GT75 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 1-1. S/H-Processor Line Platforms

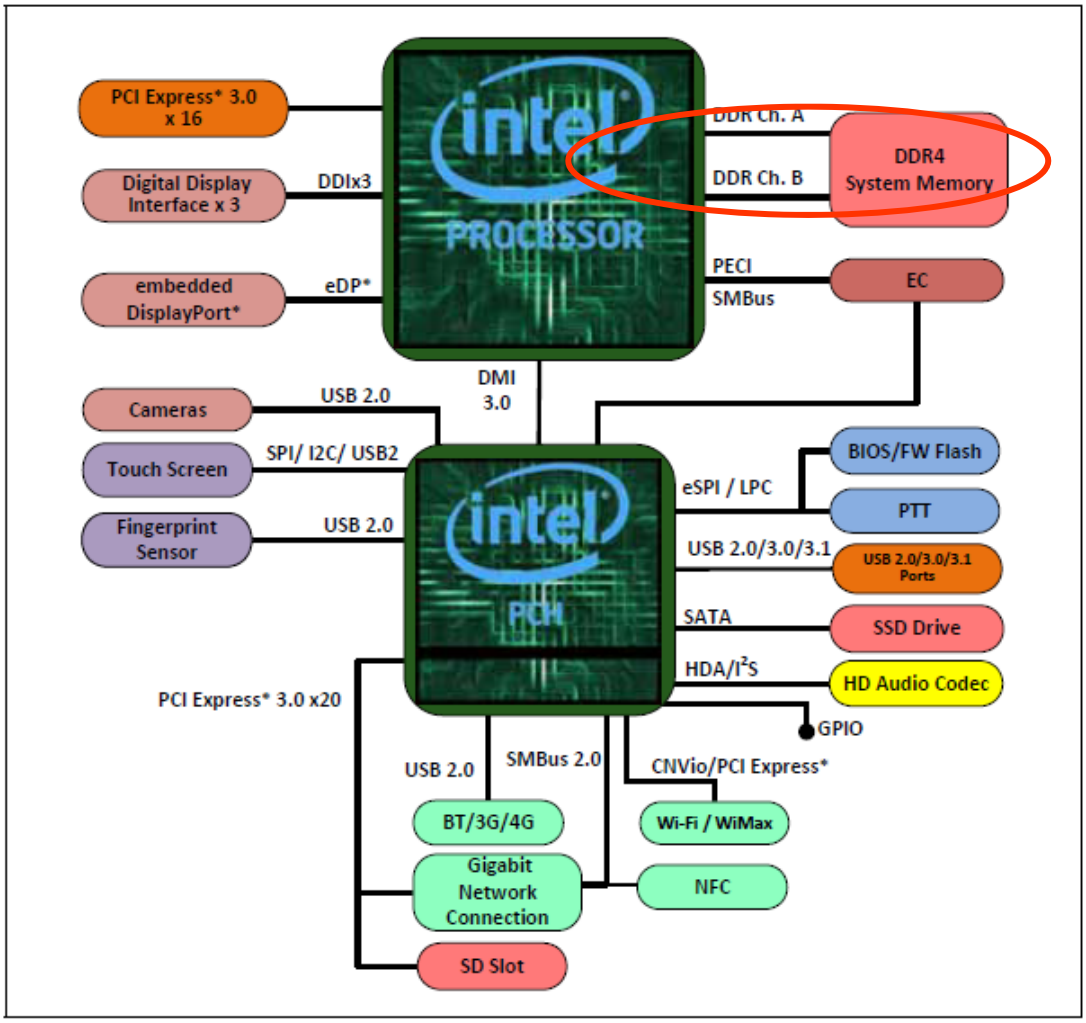


https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

79. The MSI GT75 has DDR4 system memory connected directly to the CPU.

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification

Figure 1-1. S/H-Processor Line Platforms



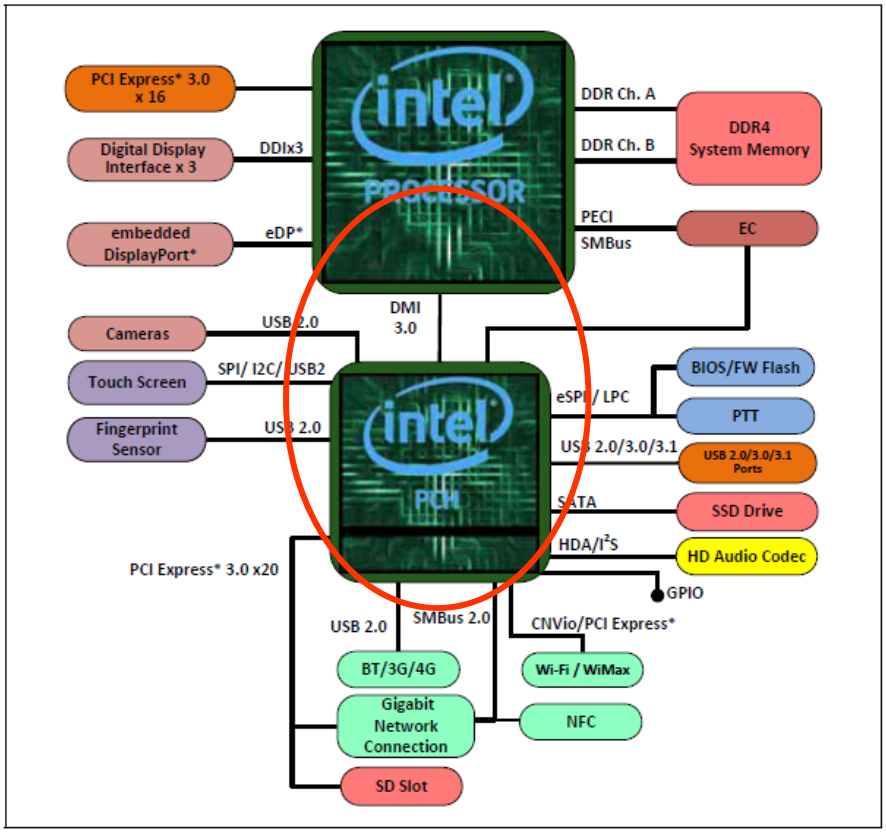
https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

80. The MSI GT75 has a mass storage SSD and HDD coupled to the CPU using NVME, a type of multi-lane LVDS technology.

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification.

81. The Intel processors used in the MSI GT75 have a peripheral bridge called the Platform Controller Hub (PCH) connected to the CPU module using DMI.[44]

Figure 1-1. S/H-Processor Line Platforms



[44] When Intel connects the processor to a chipset on the same platform as a SoC, it connects these components via OPI interface. *See* https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake#Sockets.2FPlatform (disclosing OPI connection between dies on SoC of the Kaby Lake U series processors).

https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

https://us.msi.com/Laptop/GT75-Titan-9SX/Specification

82. Because the PCH is coupled to PCIe, DMI, USB 3.x, and other interface connections, they necessarily have integrated interface controllers to control data transmission through those interfaces.

83. The Intel CPU and PCH used in the MSI GT75 have 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. *See, e.g.*, https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html at 132:

7 Electrical Specifications

7.1 Processor Power Rails

Table 7-1. Processor Power Rails

Power Rail	Description	Control	Availability
V_{CC}	Processor IA Cores Power Rail	SVID	All Processor Lines
Vcc_{GT}	Processor Graphics Power Rails	SVID	All Processor Lines
Vcc_{SA}	System Agent Power Rail	SVID/Fixed (SKU dependent)	All Processor Lines
Vcc_{IO}	IO Power Rail	Fixed	All Processor Lines
Vcc_{ST}	Sustain Power Rail	Fixed	All Processor Lines
Vcc_{STG} [4]	Sustain Gated Power Rail	Fixed	U/H-Processor Lines
Vcc_{PLL} [5]	Processor PLLs power Rail	Fixed	All Processor Lines
Vcc_{PLL_OC} [3]	Processor PLLs OC power Rail	Fixed	All Processor Lines
V_{DDQ}	Integrated Memory Controller Power Rail	Fixed (Memory technology	All Processor Lines

84. Because the Intel processors used in the MSI GT75 have memory, DMI, display, and/or PCIe connections, and can send and receive data on those connections, they necessarily have integrated interface controllers to control data transmission through those interfaces.

see also id. at 54-55, 165, 167,183; Ravi Budruk, et al., PCI EXPRESS SYSTEM ARCHITECTURE, 454, (MindShare Inc., 2004), page 401.

85. In view of the foregoing facts concerning the technical features and functionalities of the Accused Laptops, when MSI or another party abroad 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, for example, 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; (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 address, data, and/or byte enable bits of 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.

86. On information and belief, MSI or another party performs the foregoing manufacturing steps outside the United States to make at least certain of the Accused Laptops, and MSI then imports those Accused Laptops into the United States to be marketed and sold.

The Accused Desktops

87. On information and belief, all of the Accused Desktops are configured and operate in substantially the same way as explained below using the MSI Trident X 9th as an example for illustrative purposes.

88. The MSI Trident X 9th is a computer system that runs the Windows® operating system.

https://www.msi.com/Desktop/Trident-X-9th/Specification

89. The MSI Trident X 9th uses an Intel® Core processor, such as an Intel Core i9 processor, which is mounted on a motherboard.

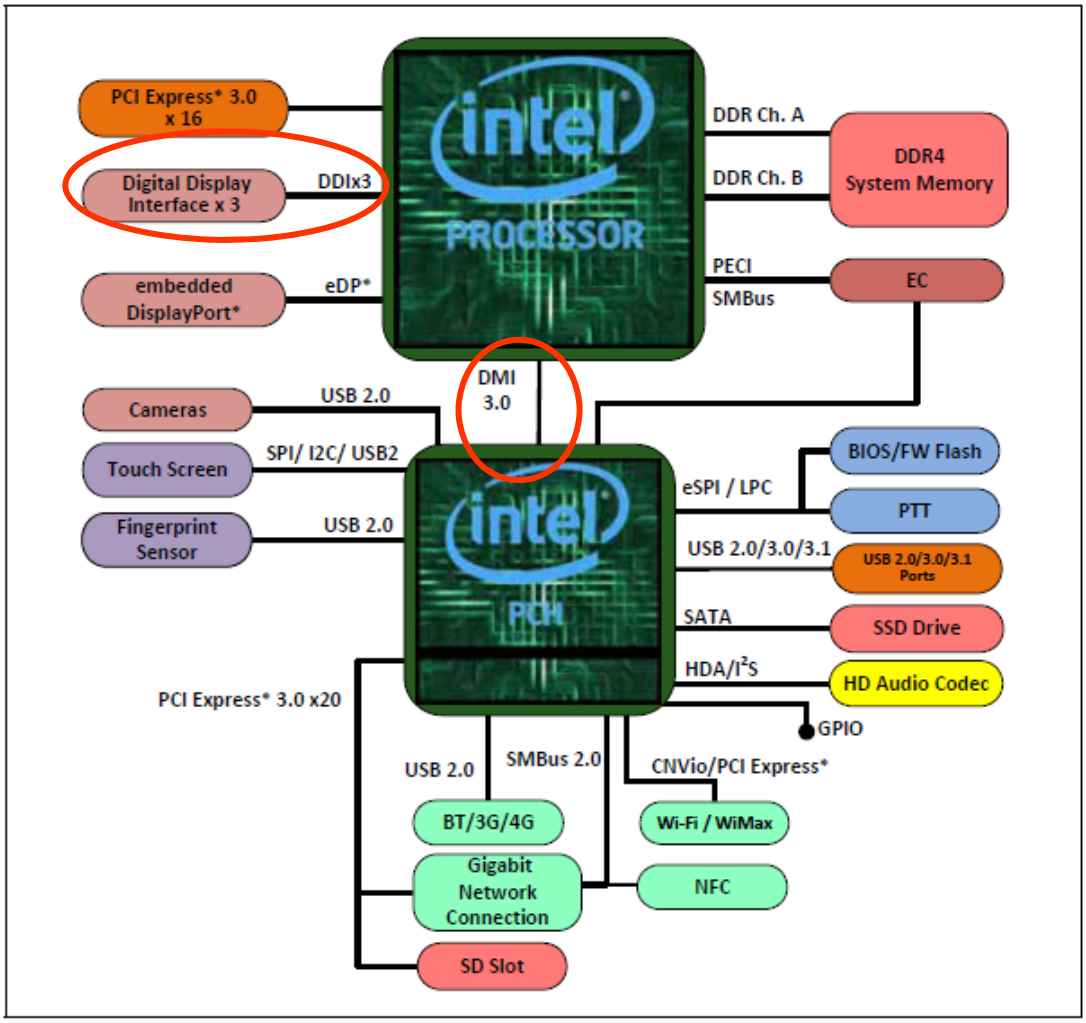
CPU	Up to Intel® Core™ i9-9900 K Processor

https://www.msi.com/Desktop/Trident-X-9th/Specification.

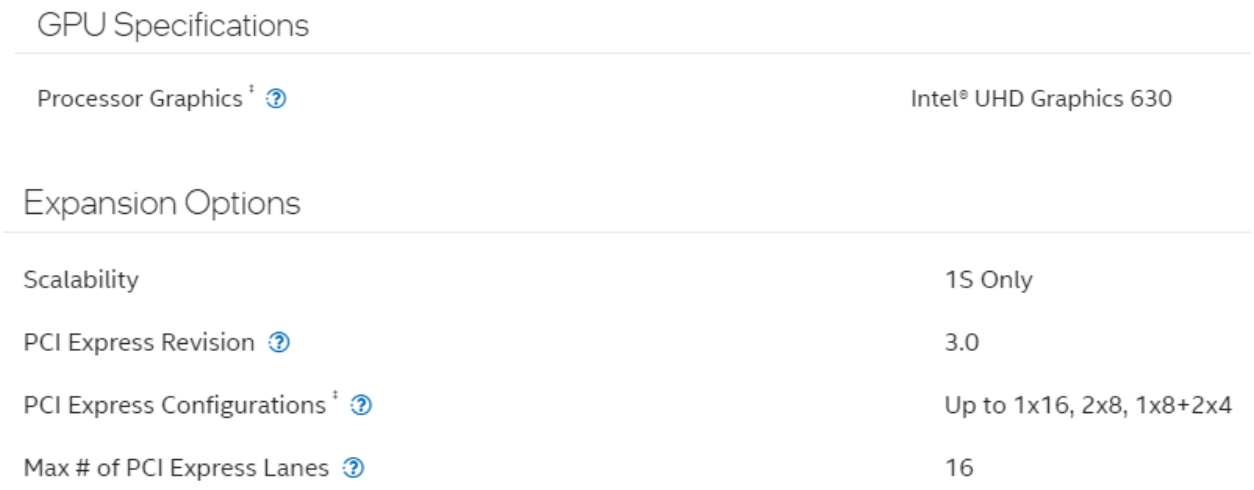
90. These processors are also known as the "Coffee Lake" family of processors. *See, e.g.*, https://www.intel.com/content/www/us/en/products/sku/186605/intel-core-i99900k-processor-16m-cache-up-to-5-00-ghz/specifications.html.

91. The 9th Generation Intel® Core™ i9-9900k processors integrate 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 integrated interface controllers, such as to drive the PCIe channels connected to the processor.

Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.



https://www.intel.com/content/www/us/en/products/sku/186605/intel-core-i99900k-processor-16m-cache-up-to-5-00-ghz/specifications.html

92. The MSI Trident X 9th comprises a chassis or enclosure which houses one or more connectors that can couple to components of other computer systems and consoles, including the USB 3 ports.

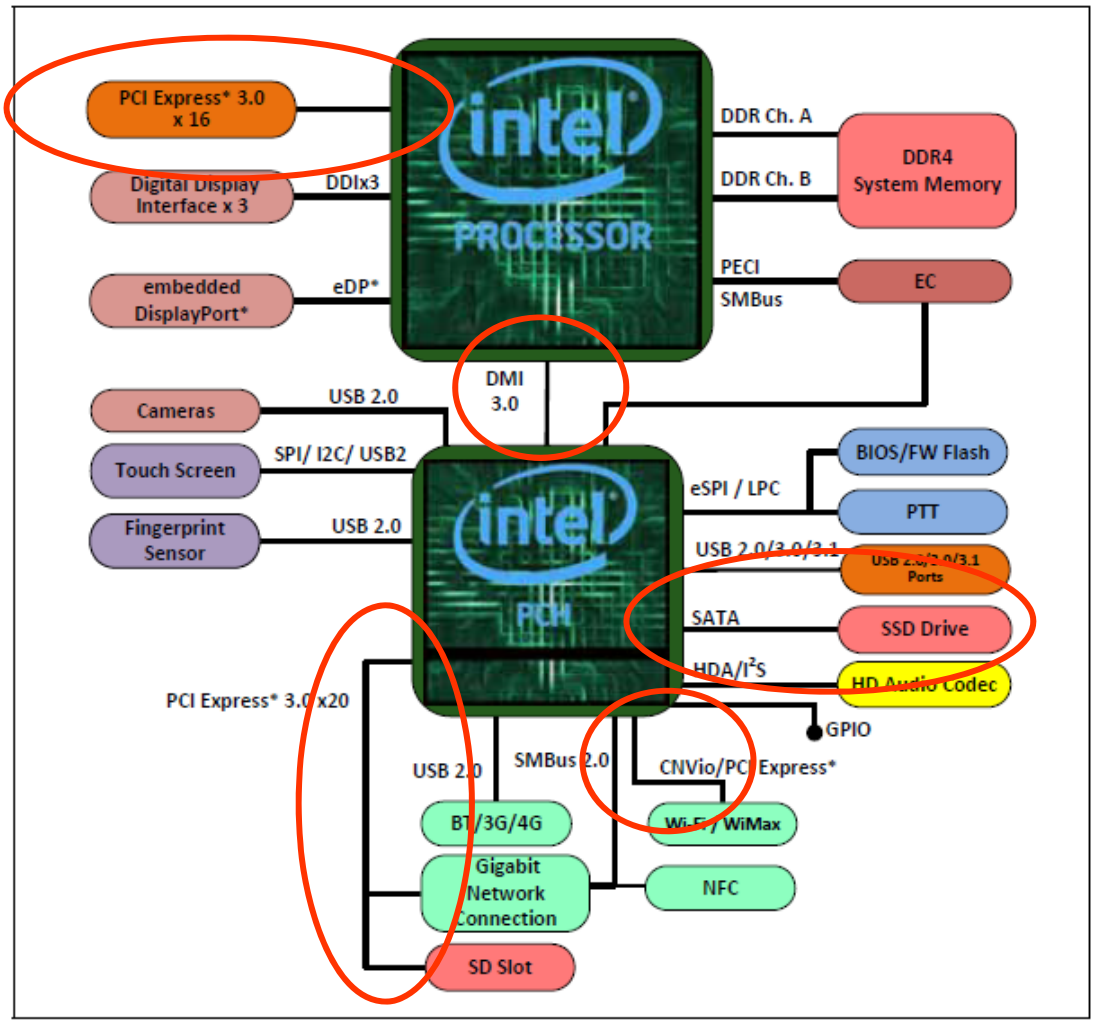
https://www.msi.com/Desktop/Trident-X-9th/Specification.

I/O (REAR)	1x PS/2 Combo Port 2x USB 2.0 1x DP out (1.2) 1x HDMI™ out (1.4) 1x USB 3.1 Gen2 Type A 1x USB 3.1 Gen2 Type C 2x USB 3.1 Gen1 Type A 1x RJ45 5x Audio jacks 1x Optical S/PDIF out
I/O (FRONT)	1x USB 3.1 Gen1 Type C 1x USB 2.0 Type A 1x USB 3.1 Gen1 Type A 1x Mic-in 1x Headphone-out

https://www.msi.com/Desktop/Trident-X-9th/Specification.

93. The Intel processors employed in the MSI Trident X 9th 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 directions, including SATA, PCIe and Intel's DMI and channels, and the directly-connected LVDS channels connect the CPU to a mass storage device.

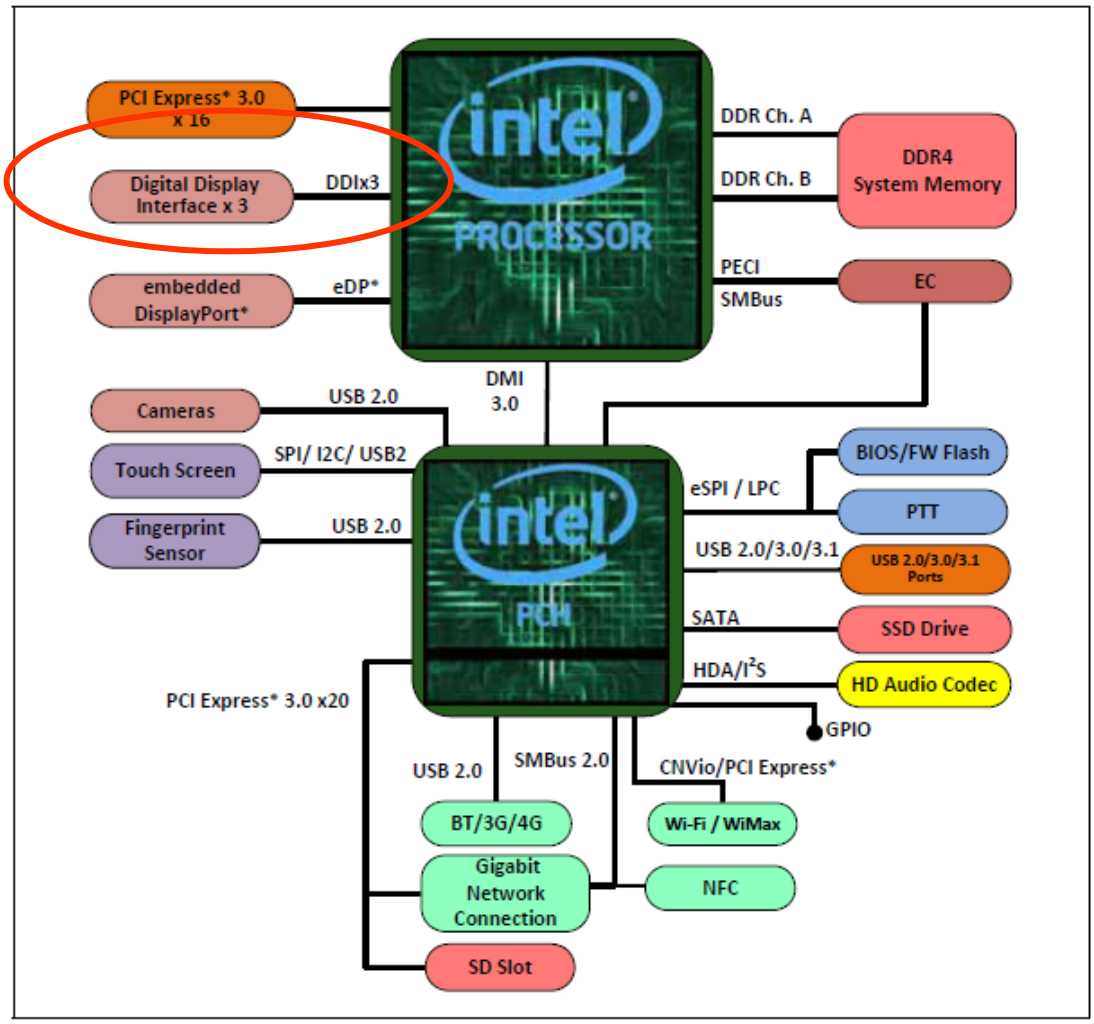
Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

94. The Intel processors employed in the MSI Trident X 9th also connect directly to a variety of differential signal channels that output digital video signals through a connector, including DisplayPort signals through USB-C ports.

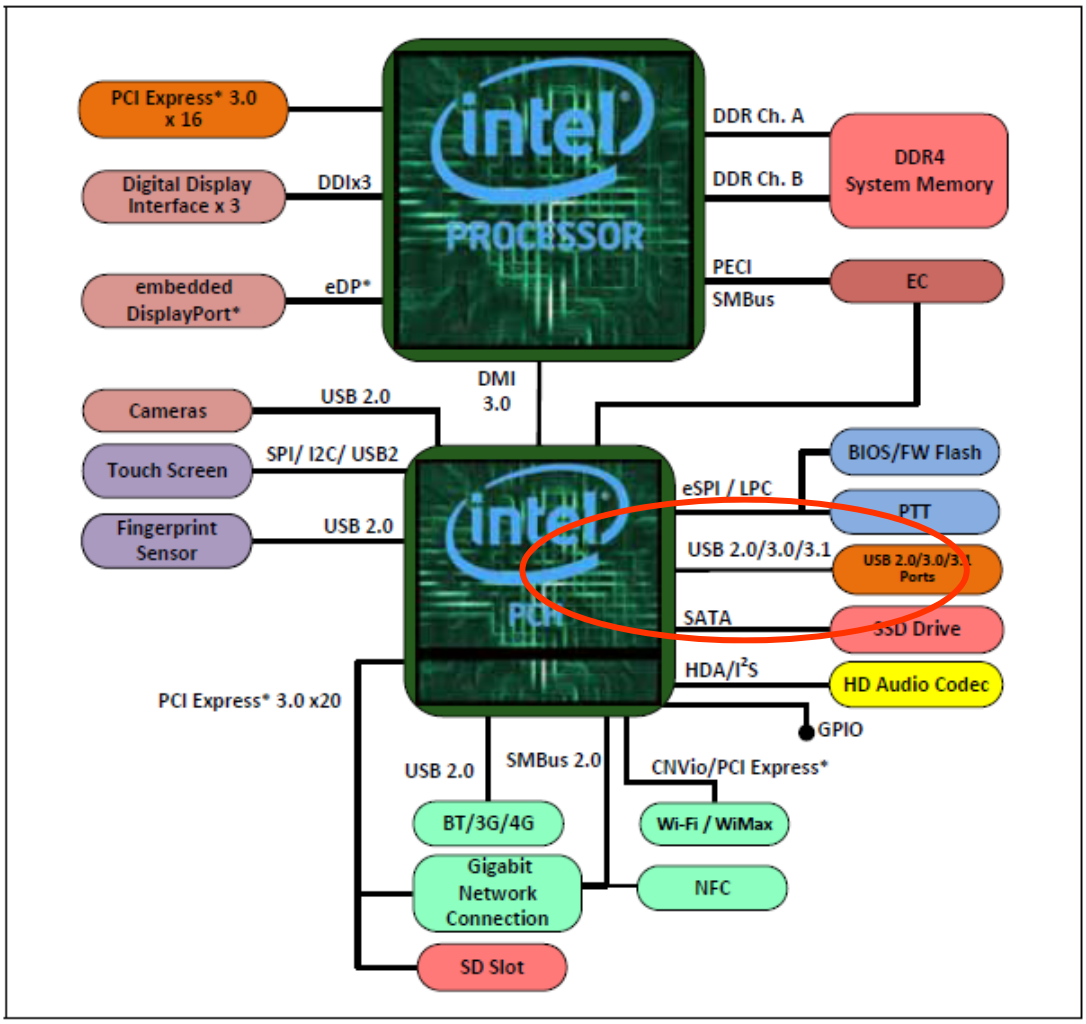
Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11; *id.* at 16 (explaining that the DDI channels can be configured as DisplayPort, HDMI, or DVI).

95. The Intel processors employed in the MSI Trident X 9th 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 1-1. S/H-Processor Line Platforms



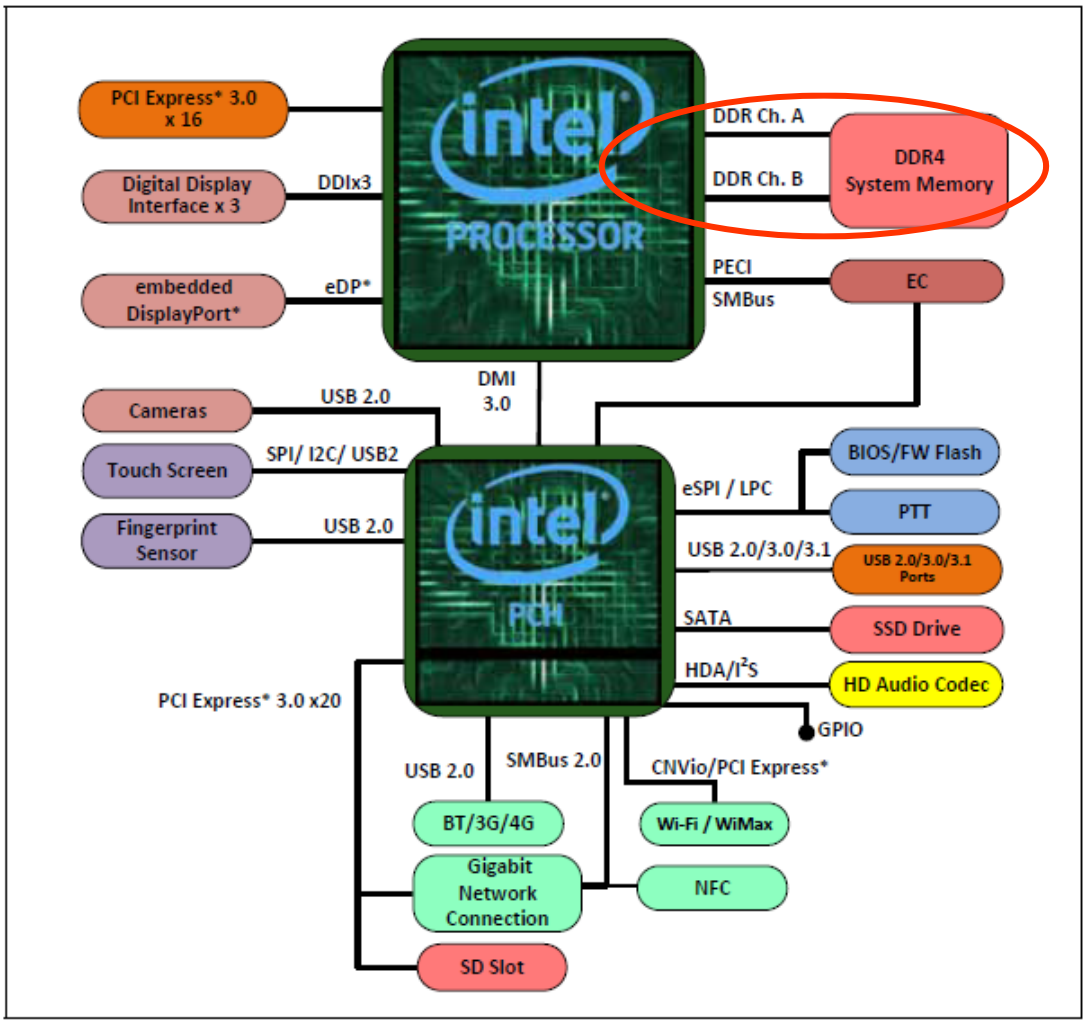
https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

96. The MSI Trident X 9th has DDR4 system memory connected directly to the CPU.

MEMORY	2 x DDR4 2666MHz Long-DIMMs, up to 64GB

https://www.msi.com/Desktop/Trident-X-9th/Specification.

Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

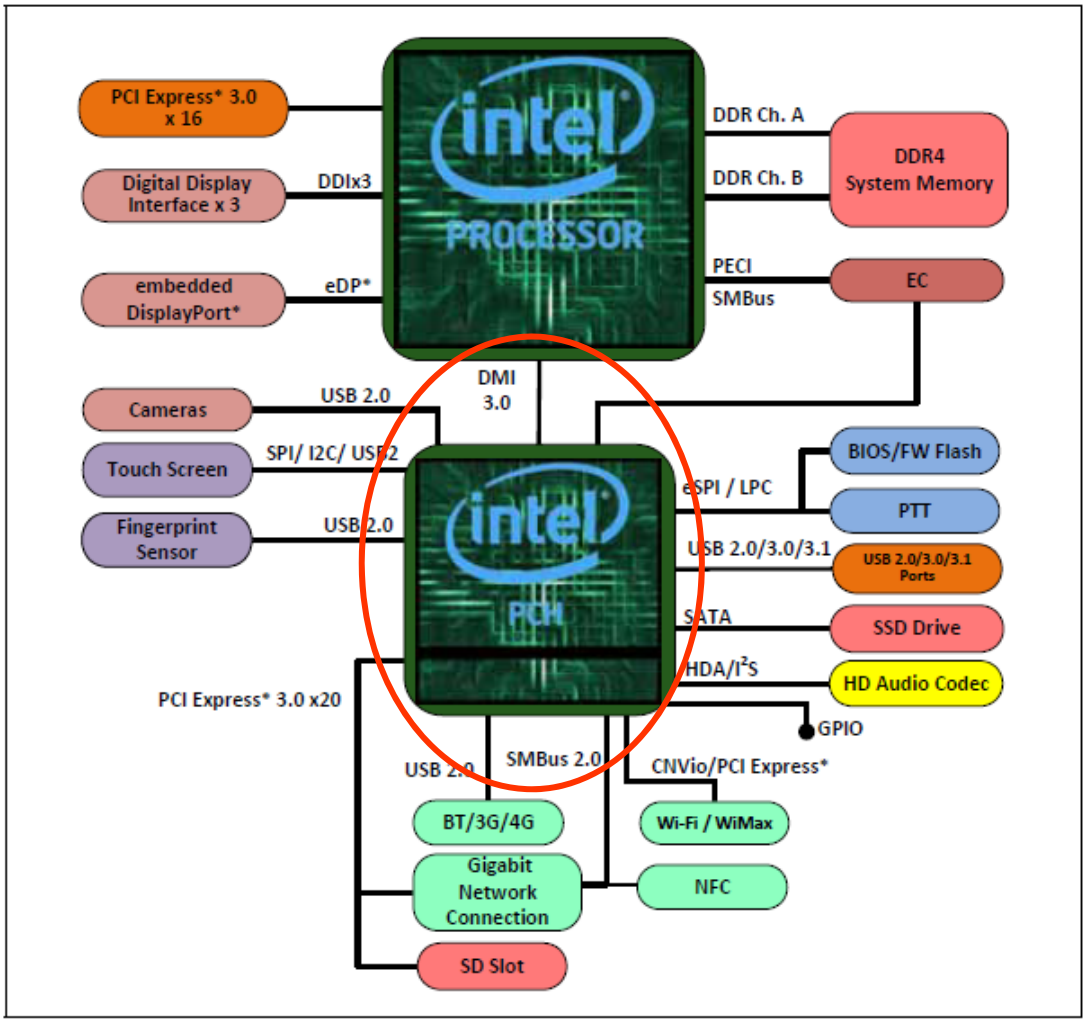
97. The MSI Trident X 9th has a mass storage hard drive / SSD coupled to the CPU using PCIe.

STORAGE	1 x M.2 SSD (SATA/PCIe Auto switch) 2 x 2.5" HDD

https://www.msi.com/Desktop/Trident-X-9th/Specification.

98. The Intel processors used in the MSI Trident X 9th have a peripheral bridge called the PCH connected to the CPU via Intel's DMI. Because the PCH is coupled to PCIe, USB 3.x, and other interface connections, they necessarily have integrated interface controllers to control data transmission through those interfaces.

Figure 1-1. S/H-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html, at 11.

99. The Intel CPU / PCH used in the MSI Trident X 9th have Integrated Clock Controllers (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. Because the Intel processors used in the MSI Trident X 9th have memory, DMI, display, and/or PCIe connections, and can send and receive data on those connections, they necessarily have integrated interface controllers to control data transmission through those interfaces.

7 Electrical Specifications

7.1 Processor Power Rails

Table 7-1. Processor Power Rails

Power Rail	Description	Control	Availability
V_{CC}	Processor IA Cores Power Rail	SVID	All Processor Lines
Vcc_{GT}	Processor Graphics Power Rails	SVID	All Processor Lines
Vcc_{SA}	System Agent Power Rail	SVID/Fixed (SKU dependent)	All Processor Lines
Vcc_{IO}	IO Power Rail	Fixed	All Processor Lines
Vcc_{ST}	Sustain Power Rail	Fixed	All Processor Lines
Vcc_{STG} [4]	Sustain Gated Power Rail	Fixed	U/H-Processor Lines
Vcc_{PLL} [5]	Processor PLLs power Rail	Fixed	All Processor Lines
Vcc_{PLL_OC} [3]	Processor PLLs OC power Rail	Fixed	All Processor Lines
V_{DDQ}	Integrated Memory Controller Power Rail	Fixed (Memory technology	All Processor Lines

https://www.intel.com/content/www/us/en/content-details/337344/8th-and-9th-generation-intel-core-processor-families-and-intel-xeon-e-processor-families-datasheet-volume-1-of-2.html at 132; Ravi Budruk, et al., PCI EXPRESS SYSTEM ARCHITECTURE, 454, (MindShare Inc., 2004), page 401.

100. In view of the foregoing facts concerning the technical features and functionalities of the Accused Desktops, when MSI or another party 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, for example, 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; (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 address, data, and/or byte enable bits of 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.

101. On information and belief, MSI or another party performs the foregoing manufacturing steps outside the United States to make at least certain of the Accused Desktops, and MSI then imports those Accused Desktops into the United States to be marketed and sold.

The Accused Servers

102. On information and belief, all of the Accused Servers are configured and operate in substantially the same way as explained below using the MSI N3030[45] Network Appliance as an example of the Server Products for illustrative purposes.

103. The MSI N3030 is a computer.

[45] It may be the case that this product was exclusively manufactured and sold outside of the damages period for the Asserted Patents. Analysis of this product is nevertheless offered on a representative basis for those server products manufactured, sold, offered for sale used, and/or imported during the enforceable life of the Asserted Patents, as they are not materially different vis-à-vis the hardware found in the MSI N3030 product and the limitations of the asserted claims.

https://eps.msi.com/product-overview/N3030.

104. The MSI N3030 uses a single 7th-gen Intel Core processor, which has integrated interface controllers on a single chip, such as to drive the PCIe channels connected to the processor.

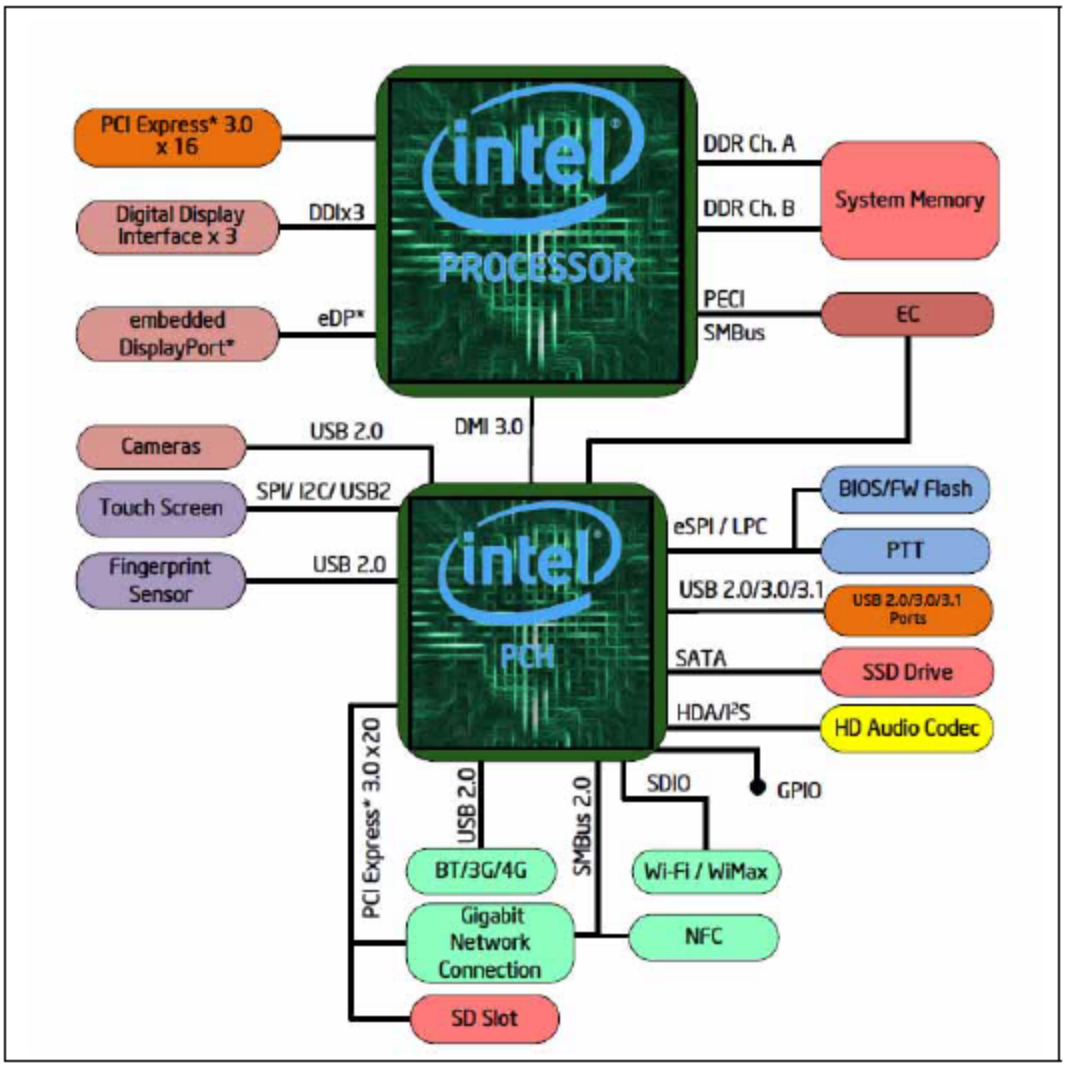
System Specifications

Model	N3030
Form Factor	1U
Dimensions	17.2" W (438mm) x 1.7" H (44mm) x 16.5" D (420mm)
Color	Black
CPU	Single Intel® 6th/7th Gen Core™ i3/i5/i7, Pentium®, Celeron® product families
Chipset	Intel® H110
Memory	▪ 2 x DIMM slots, 2 channel DDR4, up to 2400MHz ▪ ECC/non-ECC UDIMM up to 32GB
Storage	▪ 1 x Internal 2.5" HDD (Optional) ▪ 1 x SATA DOM (Optional) ▪ 1 x CF Card (Optional) ▪ 1 x mSATA (Optional)
Expansion Slot	▪ 1x PCIe3 x8 slot (x8/x4 signal)
I/O	**Front** ▪ 1 x LCM Module w/ 3 buttons ▪ LAN Modules: 1 x LAN tray max up to 8 x LAN ports via Network Adapters ▪ 1 x Serial port (RJ45) ▪ 2 x USB3.0 ports ▪ 6 x GbE RJ45 ports **Rear** ▪ 1 x VGA port ▪ 1 x Power button
Security	▪ TPM Header
Power Supply	350W single PSU
Server Management	Aspeed AST2400 IPMI 2.0 with iKVM support
Accessory	▪ 1 x set Ears
Compatible NIC Module	NIC-100, NIC-101, NIC-102 NIC-103, NIC-104, NIC-200 NIC-400
Environment	▪ Operating Temperature: 0°C ~ 40°C ▪ Operating Humidity: 0% ~ 85% (non-condensing)
Certification	CE, FCC (Class A)

N3030 Network System Manual; *available at*

https://eps.msi.com/document?type=101&tag=56151&id=13160.

Figure 1-1. S-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/335195/7th-generation-intel-processor-families-for-s-platforms-and-intel-core-x-series-processor-family-datasheet-volume-1-of-2.html at 12.

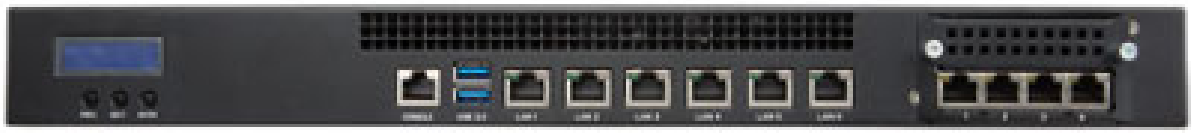
105. The MSI N3030 includes a variety of connectors that can couple the CPU to a variety of consoles, including USB 3.x.

System Specifications

Model	N3030
Form Factor	1U
Dimensions	17.2" W (438mm) x 1.7" H (44mm) x 16.5" D (420mm)
Color	Black
CPU	Single Intel® 6th/7th Gen Core™ i3/i5/i7, Pentium®, Celeron® product families
Chipset	Intel® H110
Memory	▪ 2 x DIMM slots, 2 channel DDR4, up to 2400MHz ▪ ECC/non-ECC UDIMM up to 32GB
Storage	▪ 1 x Internal 2.5" HDD (Optional) ▪ 1 x SATA DOM (Optional) ▪ 1 x CF Card (Optional) ▪ 1 x mSATA (Optional)
Expansion Slot	▪ 1x PCIe3 x8 slot (x8/x4 signal)
I/O	Front ▪ 1 x LCM Module w/ 3 buttons ▪ LAN Modules: 1 x LAN tray max up to 8 x LAN ports via Network Adapters ▪ 1 x Serial port (RJ45) ▪ 2 x USB3.0 ports ▪ 6 x GbE RJ45 ports Rear ▪ 1 x VGA port ▪ 1 x Power button
Security	▪ TPM Header
Power Supply	350W single PSU
Server Management	Aspeed AST2400 IPMI 2.0 with iKVM support
Accessory	▪ 1 x set Ears
Compatible NIC Module	NIC-100, NIC-101, NIC-102 NIC-103, NIC-104, NIC-200 NIC-400
Environment	▪ Operating Temperature: 0°C ~ 40°C ▪ Operating Humidity: 0% ~ 85% (non-condensing)
Certification	CE, FCC (Class A)

N3030 Network System Manual; *available at*

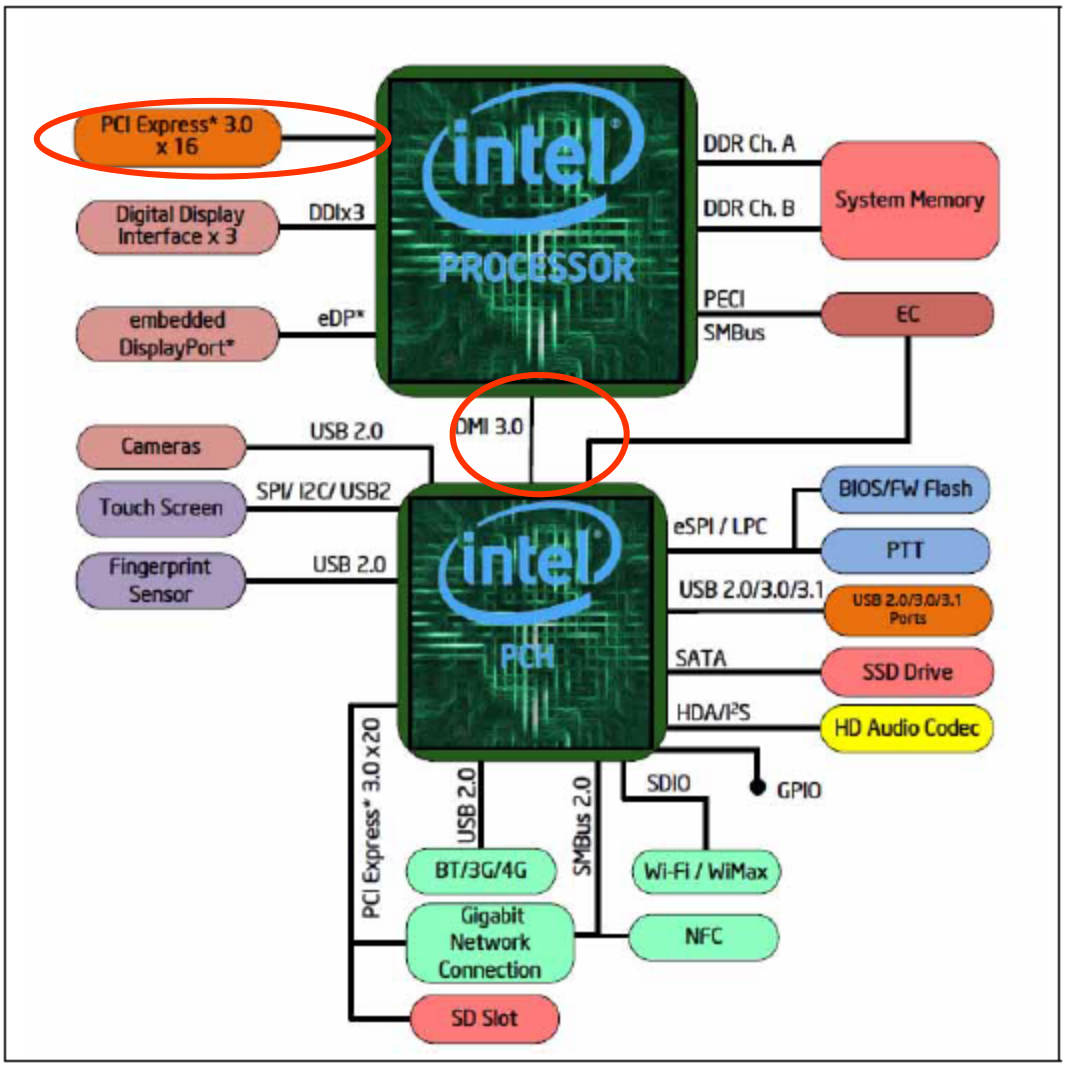
https://eps.msi.com/document?type=101&tag=56151&id=13160.



https://eps.msi.com/product-overview/N3030.

106. The Intel processors employed in the MSI N3030 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 to the CPU and integrated graphics processor.

Figure 1-1. S-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/335195/7th-generation-intel-processor-families-for-s-platforms-and-intel-core-x-series-processor-family-datasheet-volume-1-of-2.html at 12.

107. The Intel processors employed in the MSI N3030 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 id.*

System Specifications

Model	N3030
Form Factor	1U
Dimensions	17.2" W (438mm) x 1.7" H (44mm) x 16.5" D (420mm)
Color	Black
CPU	Single Intel® 6th/7th Gen Core™ i3/i5/i7, Pentium®, Celeron® product families
Chipset	Intel® H110
Memory	▪ 2 x DIMM slots, 2 channel DDR4, up to 2400MHz ▪ ECC/non-ECC UDIMM up to 32GB
Storage	▪ 1 x Internal 2.5" HDD (Optional) ▪ 1 x SATA DOM (Optional) ▪ 1 x CF Card (Optional) ▪ 1 x mSATA (Optional)
Expansion Slot	▪ 1x PCIe3 x8 slot (x8/x4 signal)
I/O	Front ▪ 1 x LCM Module w/ 3 buttons ▪ LAN Modules: 1 x LAN tray max up to 8 x LAN ports via Network Adapters ▪ 1 x Serial port (RJ45) ▪ 2 x USB3.0 ports ▪ 6 x GbE RJ45 ports Rear ▪ 1 x VGA port ▪ 1 x Power button
Security	▪ TPM Header
Power Supply	350W single PSU
Server Management	Aspeed AST2400 IPMI 2.0 with iKVM support
Accessory	▪ 1 x set Ears
Compatible NIC Module	NIC-100, NIC-101, NIC-102 NIC-103, NIC-104, NIC-200 NIC-400
Environment	▪ Operating Temperature: 0°C ~ 40°C ▪ Operating Humidity: 0% ~ 85% (non-condensing)
Certification	CE, FCC (Class A)

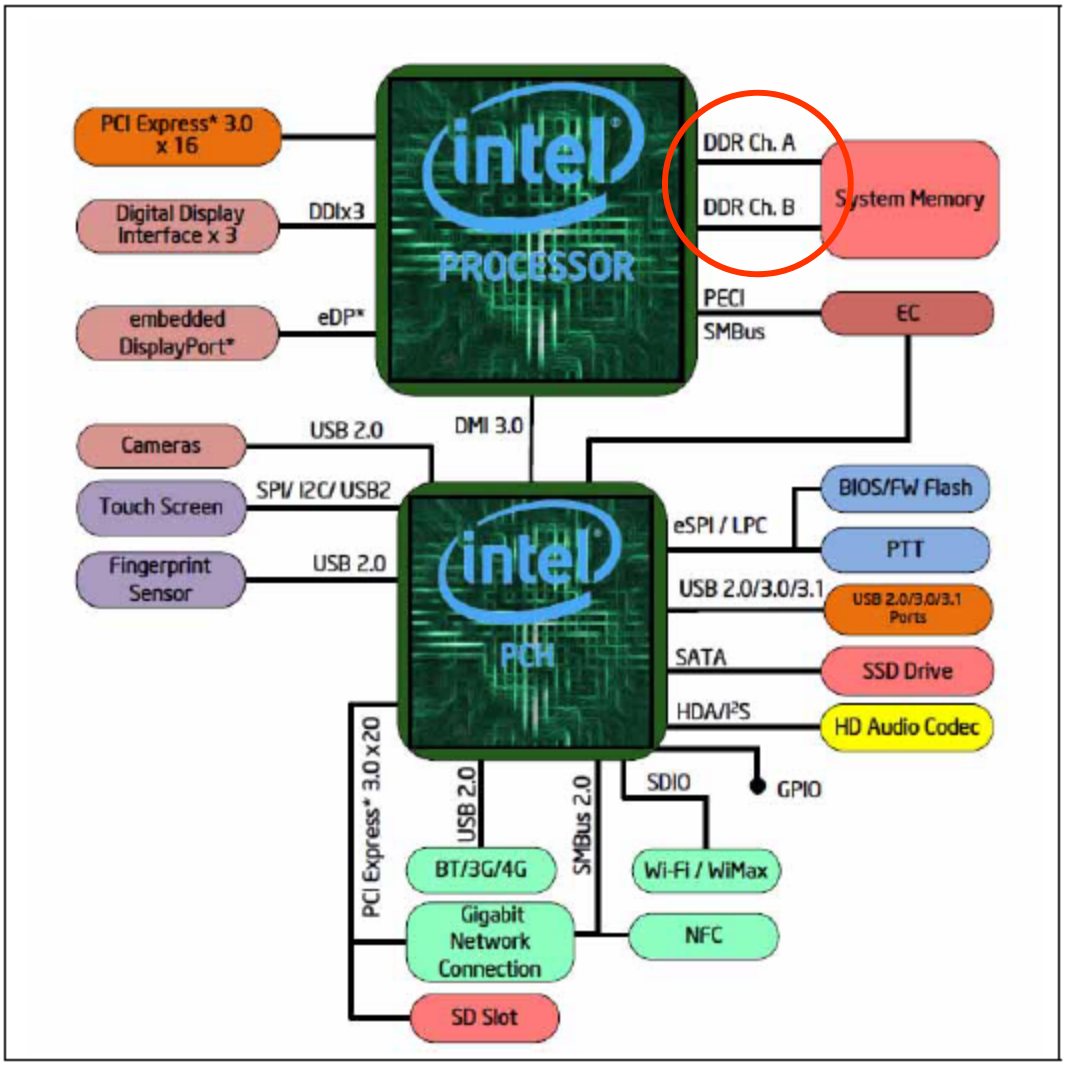
N3030 Network System Manual; *available at* https://eps.msi.com/document?type=101&tag=56151&id=13160

108. The MSI N3030 has DDR4 system memory connected directly to the CPU.

Memory	▪ 2 x DIMM slots, 2 channel DDR4, up to 2400MHz ▪ ECC/non-ECC UDIMM up to 32GB

N3030 Network System Manual; *available at* https://eps.msi.com/document?type=101&tag=56151&id=13160

Figure 1-1. S-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/335195/7th-generation-intel-processor-families-for-s-platforms-and-intel-core-x-series-processor-family-datasheet-volume-1-of-2.html at 12

109. The MSI N3030 has a mass storage coupled to the CPU through mSATA, SATA, and/or PCIe slots, each of which constitutes LVDS channels.

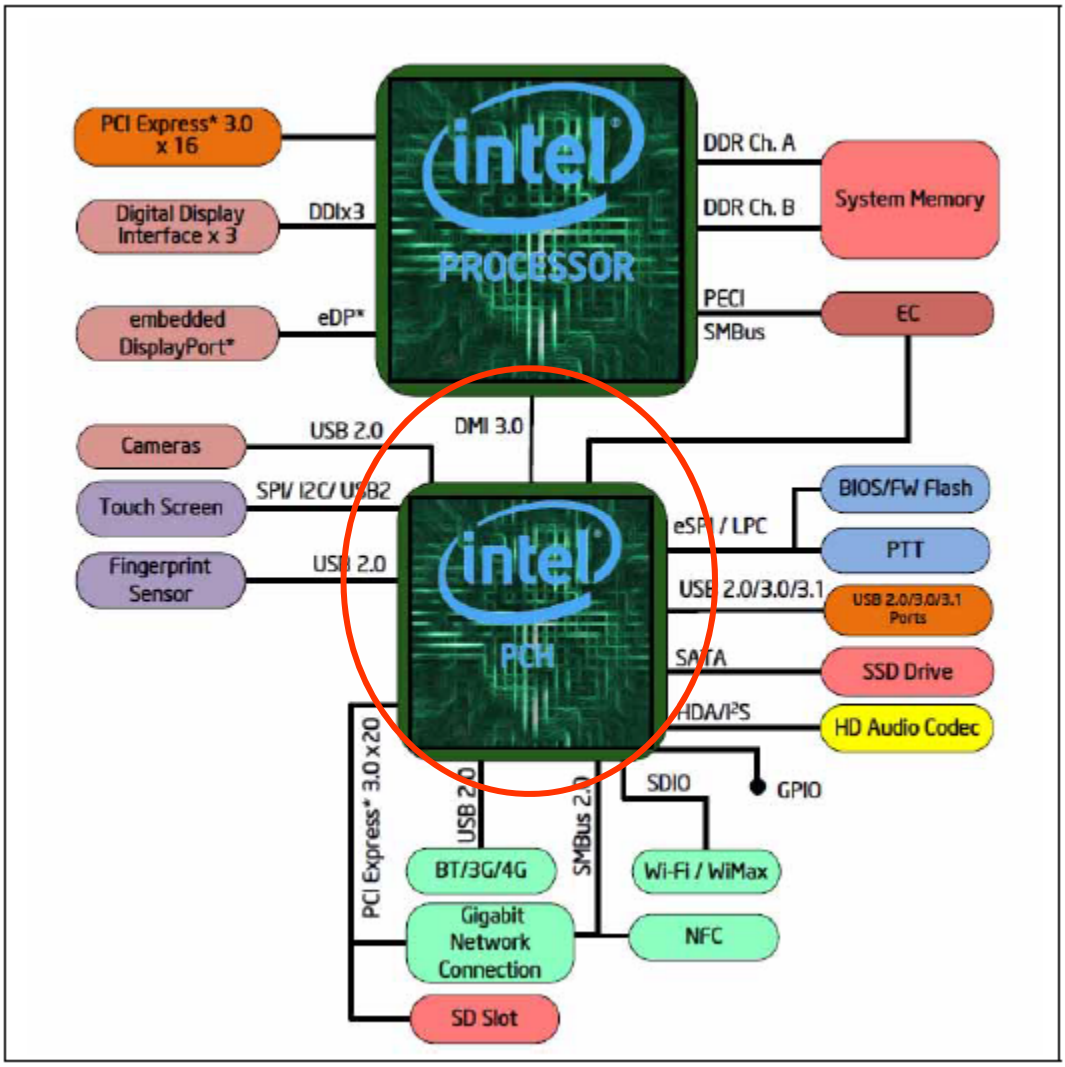
System Specifications

Model	N3030
Form Factor	1U
Dimensions	17.2" W (438mm) x 1.7" H (44mm) x 16.5" D (420mm)
Color	Black
CPU	Single Intel® 6th/7th Gen Core™ i3/i5/i7, Pentium®, Celeron® product families
Chipset	Intel® H110
Memory	▪ 2 x DIMM slots, 2 channel DDR4, up to 2400MHz ▪ ECC/non-ECC UDIMM up to 32GB
Storage	▪ 1 x Internal 2.5" HDD (Optional) ▪ 1 x SATA DOM (Optional) ▪ 1 x CF Card (Optional) ▪ 1 x mSATA (Optional)
Expansion Slot	▪ 1x PCIe3 x8 slot (x8/x4 signal)
I/O	Front ▪ 1 x LCM Module w/ 3 buttons ▪ LAN Modules: 1 x LAN tray max up to 8 x LAN ports via Network Adapters ▪ 1 x Serial port (RJ45) ▪ 2 x USB3.0 ports ▪ 6 x GbE RJ45 ports Rear ▪ 1 x VGA port ▪ 1 x Power button
Security	▪ TPM Header
Power Supply	350W single PSU
Server Management	Aspeed AST2400 IPMI 2.0 with iKVM support
Accessory	▪ 1 x set Ears
Compatible NIC Module	NIC-100, NIC-101, NIC-102 NIC-103, NIC-104, NIC-200 NIC-400
Environment	▪ Operating Temperature: 0°C ~ 40°C ▪ Operating Humidity: 0% ~ 85% (non-condensing)
Certification	CE, FCC (Class A)

N3030 Network System Manual; *available at* https://eps.msi.com/document?type=101&tag=56151&id=13160

110. The Intel processors used in the MSI N3030 have a peripheral bridge called the Intel H110 series chipset PCH connected to the CPU via the DMI, which has an integrated controller. *See id.*

Figure 1-1. S-Processor Line Platforms



https://www.intel.com/content/www/us/en/content-details/335195/7th-generation-intel-processor-families-for-s-platforms-and-intel-core-x-series-processor-family-datasheet-volume-1-of-2.html at 12.

111. The CPU and PCH used in the MSI N3030 have 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.

7 Electrical Specifications

7.1 Processor Power Rails

Table 7-1. Processor Power Rails

Power Rail	Description	Control	Availability
V_{CC}	Processor IA Cores Power Rail	SVID	All Processor Lines
V_{CCGT}	Processor Graphics Power Rails	SVID	All Processor Lines
V_{CCSA}	System Agent Power Rail	SVID/Fixed (SKU dependent)	All Processor Lines
V_{CCIO}	IO Power Rail	Fixed	All Processor Lines
V_{CCST}	Sustain Power Rail	Fixed	All Processor Lines
V_{CCPLL}	Processor PLLs power Rail	Fixed	All Processor Lines
V_{CCPLL_OC} [4]	Processor PLLs OC power Rail	Fixed	All Processor Lines
V_{DDQ}	Integrated Memory Controller Power Rail	Fixed (Memory technology dependent)	All Processor Lines

Notes:
1. N/A
2. N/A
3. N/A
4. V_{CCPLL_OC} power rail should be sourced from the VDDQ VR. The connection can be direct or through a load switch, depending desired power optimization. In case of direct connection (V_{CCPLL_OC} is shorted to V_{DDQ}, no load switch), platform should ensure that V_{CCST} is ON (high) while V_{CCPLL_OC} is ON (high).
5. N/A
6. N/A

https://www.intel.com/content/www/us/en/content-details/335195/7th-generation-intel-processor-families-for-s-platforms-and-intel-core-x-series-processor-family-datasheet-volume-1-of-2.html at 115

112. In view of the foregoing facts concerning the technical features and functionalities of the Accused Servers, when MSI or another party 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, for example, 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.

113. On information and belief, MSI or another party performs the foregoing manufacturing steps outside the United States to make at least certain of the Accused Servers, and MSI then imports those Accused Servers into the United States to be marketed and sold.

114. Through importing into the United States and selling the Accused MSI Products with the features and functionalities alleged above, MSI has infringed one or more of the claims in each of the ACQIS Patents.

115. MSI's infringing conduct has caused injury and damage to ACQIS and ACQIS' licensees.

ACQIS Provided MSI Actual Notice of its Infringement

116. On or around May October 20, 2020, ACQIS notified MSI, pursuant to 35 U.S.C. § 287(a), of ACQIS's patents and MSI's infringement thereof based on the Accused MSI Products. Specifically, ACQIS' letter identified explicitly the '750, '769, '797, '654, and '140 patents asserted herein and described the applicability of the ACQIS Patents at least to MSI's "Laptop computer product series - GT Titan, GS Stealth, GE Raider, GP & GL Leopard, GF Thin, Alpha and Bravo. - Desktop computer product series - Aegis, Nightblade, Infinite, Trident, Codex, Meta, Creator, Prestige, Cubi and All-in-One Pro. Motherboard product series - MEG, MPG, MAG, and PRO.- ODM & Enterprise Platform Solutions series - Server S, Network Appliance N, and lloT WL & loT." 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.

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

118. MSI did not respond to ACQIS's letter and continued to make, import, and sell the Accused MSI Products identified in ACQIS's letter.

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

119. ACQIS incorporates by this reference the allegations set forth every preceding paragraph of this Complaint in support of its first cause of action as though fully set forth herein.

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

121. In view of the foregoing facts and allegations, including paragraphs 70-115 above, MSI has directly infringed one or more claims of the '750 patent in violation of 35 U.S.C. § 271 (g) by importing into, selling, offering to sell in the United States the Accused MSI Products that were manufactured abroad by one or more of the methods claimed in the '750 patent.

122. The Accused MSI Products are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

123. MSI's infringement of the '750 patent through its importation offers to sell, and/or sales in the United States of the **Accused Laptops** is shown by way of the exemplary MSI GT75 laptop as set forth in paragraphs 70-86 above, which demonstrates infringement of at least claim 50 of the '750 patent by showing:

(a) the MSI GT75 is a computer;

(b) the MSI GT75 has an integrated central processing unit (CPU) and graphics controller in a single chip, because the MSI GT75 uses a 9th Generation Intel® Core™ i9 ("Coffee Lake") Processor, which includes integrated graphics as a single chip; MSI

installs this chip into the motherboard of this product during manufacture;

(c) MSI connects a first unidirectional, differential signal pair channel directly to the integrated CPU and graphics controller to output digital video data—this includes at least the DDI channels discussed *supra* and/or any PCIe channels used to connect to discrete graphics;

(d) MSI provides a connector for external peripheral data communication of the computer—this includes various of the ports of the MSI GT75 identified *supra*

(e) MSI provides a Low Voltage Differential Signal (LVDS) channel to convey Universal Serial Bus (USB) protocol through the connector, the first LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions—this includes each of the USB 3.x channels of the MSI GT 75 identified *supra*.

124. On information and belief, the Accused Laptops are in relevant part substantially similar to the exemplary MSI GT75, in particular with regard to the manner in which the Accused Laptops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the ’750 patent as to each of the Accused Laptops.

125. ACQIS’ infringement allegations against the Accused Laptops are not limited to claim 50 of the ’750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

126. MSI’s infringement of the ’750 patent through its manufacture, offers to sell, and/or sales in the United States of the **Accused Desktops** is shown by way of the exemplary MSI Trident X 9th as set forth in paragraphs 87-101 above, which demonstrates infringement of at least claim 50 of the ’750 patent by showing:

(f) the MSI Trident X 9th is a computer;

(g) the MSI Trident X 9th has an integrated central processing unit (CPU) and graphics controller in a single chip, because the MSI GT75 uses a 9th Generation Intel® Core™ i9 ("Coffee Lake") Processor, which includes integrated graphics as a single chip; MSI installs this chip into the motherboard of this product during manufacture;

(h) MSI connects a first unidirectional, differential signal pair channel directly to the integrated CPU and graphics controller to output digital video data—this includes at least the DDI channels discussed *supra* and/or any PCIe channels used to connect to discrete graphics;

(i) MSI provides a connector for external peripheral data communication of the computer—this includes various of the ports of the MSI Trident X 9th identified *supra*

(a) MSI provides a Low Voltage Differential Signal (LVDS) channel to convey Universal Serial Bus (USB) protocol through the connector, the first LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions—this includes each of the USB 3.x channels of the MSI Trident X 9th identified *supra*.

127. On information and belief, the Accused Desktops are in relevant part substantially similar to the exemplary MSI Trident X 9th, in particular with regard to the manner in which the Accused Desktops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the '750 patent as to each of the Accused Desktops.

128. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 50 of the '750 patent, and additional infringed claims will be identified through infringement contentions and discovery.

129. The above-described acts of infringement committed by MSI have caused injury and damage to ACQIS and ACQIS' licensees.

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

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

131. ACQIS incorporates by this reference the allegations set forth in all foregoing paragraphs of this Complaint in support of its second cause of action as though fully set forth herein.

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

133. In view of the foregoing facts and allegations, including paragraphs 70-115 above, MSI has directly infringed one or more claims of the '797 patent in violation of 35 U.S.C. § 271 (g) by importing into, selling, offering to sell in the United States the Accused MSI Products that were manufactured abroad by one or more of the methods claimed in the '797 patent.

134. The Accused MSI Products are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

135. MSI's infringement of the '797 patent through its importation into, offers to sell, or sales in the United States of the **Accused Laptops** is shown by way of the exemplary MSI GT75 laptop as set forth in paragraphs 70-86 above. These paragraphs demonstrate that the MSI GT75 laptop was necessarily manufactured according to at least claim 36 of the '797 patent:

(a) MSI or another party performs a method of improving data throughput on a motherboard when manufacturing the MSI GT75, which contains a motherboard;

(b) when manufacturing the MSI GT75, MSI or another party mounts an integrated CPU and interface controller as a single chip on the motherboard, because the Intel

processor employed in the MSI GT75 includes interface controllers (*e.g.*, to drive/control DMI/PCIe channels) and the CPU integrated as a single chip;

(c) when manufacturing the MSI GT75, MSI or another party connects an LVDS channel directly to an interface controller integrated with the CPU, which LVDS channel uses two unidirectional, serial channels to transmit data in opposite directions because the MSI GT75 has PCIe channels and an DMI interface directly connected to the interface controller;

(d) when manufacturing the MSI GT75, MSI or another party 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 MSI GT75, MSI or another party 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 interface controller integrated with the CPU are configured to convey PCIe data signals through PCIe channels having differential signal line pairs; and

(f) when manufacturing the MSI GT75, MSI or another party couples the integrated CPU and interface device to a peripheral device such as a mass storage device, which is attached to the motherboard through a PCIe or other LVDS channel.

136. On information and belief, the Accused Laptops are in relevant part substantially similar to the exemplary MSI GT75, in particular with regard to the manner in which the Accused Laptops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the ’797 patent as to each of the Accused Laptops.

137. 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.

138. MSI's infringement of the '797 patent through its importation into, offers to sell, or sales in the United States of the **Accused Desktops** is shown by way of the exemplary MSI Trident X 9th desktop as set forth in paragraphs 87-101 above. These paragraphs demonstrate that the MSI Trident X 9th desktop was necessarily manufactured abroad according to at least claim 36 of the '797 patent:

(a) MSI or another party performs a method of improving data throughput on a motherboard when manufacturing the MSI Trident X 9th, which contains a motherboard;

(b) when manufacturing the MSI Trident X 9th, MSI or another party mounts an integrated CPU and interface controller as a single chip on the motherboard, because the Intel processor employed in the MSI Trident X 9th includes interface controllers (*e.g.*, to drive/control PCIe/DMI channels) and the CPU integrated as a single chip;

(c) when manufacturing the MSI Trident X 9th, MSI or another party connects an LVDS channel directly to an interface controller integrated with the CPU, which LVDS channel uses two unidirectional, serial channels to transmit data in opposite directions because the MSI Trident X 9th has PCIe channels and a DMI interface directly connected to the interface controller;

(d) when manufacturing the MSI Trident X 9th, MSI or another party 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 MSI Trident X 9th, MSI or another party 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 interface controller integrated with the CPU are configured to convey PCIe data signals through PCIe/DMI channels having differential signal line pairs; and

(f) when manufacturing the MSI Trident X 9th, MSI or another party couples the integrated CPU and interface device to a peripheral device such as a mass storage device, which is attached to the motherboard through a PCIe or other LVDS channels.

139. On information and belief, the Accused Desktops are in relevant part substantially similar to the exemplary MSI Trident X 9th, in particular with regard to the manner in which the Accused Desktops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the ’797 patent as to each of the Accused Desktops.

140. 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.

141. MSI’s infringement of the ’797 patent through its importation into, and/or use, offers to sell, or sales in, the United States of the **Accused Servers** is shown by way of the exemplary MSI N3030 server as set forth in paragraphs 102-115 above. These paragraphs demonstrate that the MSI N3030 server was necessarily manufactured abroad according to at least claim 36 of the ’797 patent:

(a) MSI or another party performs a method of improving data throughput on a motherboard when manufacturing the MSI N3030, which contains a motherboard;

(b) when manufacturing the MSI N3030, MSI or another party mounts an integrated CPU and interface controller as a single chip on the motherboard, because the Intel processor employed in the MSI N3030 includes interface controllers (*e.g.*, to drive/control PCIe/DMI channels) and the CPU integrated as a single chip;

(c) when manufacturing the MSI N3030, MSI or another party connects an LVDS channel directly to an interface controller integrated with the CPU, which LVDS channel uses two unidirectional, serial channels to transmit data in opposite directions because the MSI N3030 has PCIe channels and a DMI interface directly connected to the interface controller;

(d) when manufacturing the MSI N3030, MSI or another party 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 MSI N3030, MSI or another party 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 interface controllers integrated with the CPU are configured to convey PCIe data signals through PCIe/CMI channels having differential signal line pairs; and

(f) when manufacturing the MSI N3030, MSI or another party couples the integrated CPU and interface device to a peripheral device such as a mass storage or a device connected to the included PCIe slot, which is attached to the motherboard through a

PCIe channel.

142. 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.

143. The above-described acts of infringement committed by MSI have caused injury and damage to ACQIS and ACQIS' licensees.

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

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

145. ACQIS incorporates by this reference the allegations set forth in all foregoing paragraphs of this Complaint in support of its third cause of action as though fully set forth herein.

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

147. In view of the foregoing facts and allegations, including paragraphs 70-115 above, MSI has directly infringed one or more claims of the '769 patent in violation of 35 U.S.C. § 271 (g) by importing into, or selling, offering to sell in the United States the Accused MSI Products that were manufactured abroad by one or more of the methods claimed in the '769 patent.

148. The Accused MSI Products are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

149. MSI's infringement of the '769 patent through its importation into, offers to sell, or sales in, the United States of the **Accused Laptops** is shown by way of the exemplary MSI GT75 laptop as set forth in paragraphs 70-86 above. These paragraphs demonstrate that the MSI GT75 laptop was necessarily manufactured abroad according to at least claim 19 of the '769 patent:

(a) MSI or another party performs a method of improving external peripheral data communication in a computer when manufacturing the MSI GT75;

(b) when manufacturing the MSI GT75, MSI or another party obtains an integrated CPU and graphics controller as a single chip, because the MSI GT75 uses a 9th Generation Intel® Core™ Processor;

(c) when manufacturing the MSI GT75, MSI or another party connects a unidirectional signal channel directly to the integrated CPU and graphics controller to output digital video data, because the 9th Generation Intel® Core™ Processors employed in the MSI GT75 directly connect to DDI channels and or PCIe channels connected to discrete graphics;

(d) when manufacturing the MSI GT75, MSI or another party provides a connector for external peripheral data communication, because the MSI GT75 has a variety of connectors for external peripherals, including USB 3.x connectors;

(e) when manufacturing the MSI GT75, MSI or another party 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 MSI GT75 has a USB connectors that convey USB 3.x data; and

(f) when manufacturing the MSI GT75, MSI or another party provides a second LVDS channel to convey digital video data through a connector, because the MSI GT75 has a Thunderbolt and USB 3.2 Gen 2 ports that can convey/output DisplayPort and Thunderbolt digital video data signals.

150. On information and belief, the Accused Laptops are in relevant part substantially similar to the exemplary MSI GT75, in particular with regard to the manner in which the Accused

Laptops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the '769 patent as to each of the Accused Laptops.

151. 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.

152. MSI's infringement of the '769 patent through its importation, offers to sell, or sales in the United States of the **Accused Desktops** is shown by way of the exemplary MSI Trident X 9th desktop as set forth in paragraphs 87-101 above. These paragraphs demonstrate that the MSI Trident X 9th desktop was necessarily manufactured according to at least claim 19 of the '769 patent:

(a) MSI or another party performs a method of improving external peripheral data communication in a computer when manufacturing the MSI Trident X 9th;

(b) when manufacturing the MSI Trident X 9th, MSI or another party obtains an integrated CPU and graphics controller as a single chip, because the MSI Trident X 9th uses a 9th Generation Intel® Core™ Processor;

(c) when manufacturing the MSI Trident X 9th, MSI or another party connects a unidirectional signal channel directly to the integrated CPU and graphics controller to output digital video data, because the 9th Generation Intel® Core™ Processors employed in the MSI Trident X 9th connect directly to DDI and/or PCIe channels connected to discrete graphics;

(d) when manufacturing the MSI Trident X 9th, MSI or another party provides a connector for external peripheral data communication, because the MSI Trident X 9th has a variety of connectors for external peripherals, including UEB 3.x ports;

(e) when manufacturing the MSI Trident X 9th, MSI or another party 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 MSI Trident X 9th has a USB 3.x ports to convey USB 3.x data; and

(f) when manufacturing the MSI Trident X 9th, MSI or another party provides a second LVDS channel to convey digital video data through a connector, because the MSI Trident X 9th has a USB 3.1 Gen 2 and DisplayPort output ports that can convey/output DisplayPort digital video data signals.

153. On information and belief, the Accused Desktops are in relevant part substantially similar to the exemplary MSI Trident X 9th, in particular with regard to the manner in which the Accused Desktops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the '769 patent as to each of the Accused Desktops. ACQIS' infringement allegations against the Accused Desktops are not limited to claim 19.

154. The above-described acts of infringement committed by MSI have caused injury and damage to ACQIS and ACQIS' licensees.

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

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

156. ACQIS incorporates by this reference the allegations set forth in paragraphs 1-**Error! Reference source not found.** of this Complaint in support of its fourth cause of action as though fully set forth herein.

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

158. In view of the foregoing facts and allegations, including paragraphs 70-115 above, MSI has directly infringed one or more claims of the ’140 patent in violation of 35 U.S.C. § 271 (g) by importing, selling, and/or offering to sell in the United States the Accused MSI Products that were manufactured abroad by one or more of the methods claimed in the ’140 patent.

159. The Accused MSI Products are not trivial or nonessential components of other products and are not materially changed by subsequent processes.

160. MSI’s infringement of the ’140 patent through its importation into, and/or use, offers to sell, or sales in, the United States of the **Accused Laptops** is shown by way of the exemplary MSI GT75 laptop as set forth in paragraphs 70-86 above. These paragraphs demonstrate that the MSI GT75 laptop was necessarily manufactured abroad according to at least claim 35 of the ’140 patent:

(a) MSI or another party performs a method of improving performance of a computer when manufacturing the MSI GT75;

(b) when manufacturing the MSI GT75, MSI or another party obtains an integrated CPU and graphics controller as a single chip, because the MSI GT75 uses a 9th Generation Intel® Core™ Processor;

(c) when manufacturing the MSI GT75, MSI or another party connects an LVDS channel directly to the integrated CPU and graphics controller that uses two unidirectional, serial bit channels to transmit data in opposite directions, because the 9th Generation Intel® Core™ Processors employed in the MSI GT75 directly connect to PCIe and DMI channels;

(d) when manufacturing the MSI GT75, MSI or another party connects a differential signal channel directly to the integrated CPU and graphics controller to output digital

video data, because the 9th Generation Intel® Core™ Processors employed in the MSI GT75 connect to DDI and/or PCIe channels connected to discrete graphics;

(e) when manufacturing the MSI GT75, MSI or another party provides a connector for external peripheral data communication, because the MSI GT75 has a variety of connectors for external peripherals; and

(f) when manufacturing the MSI GT75, MSI or another party provides a second LVDS channel using two unidirectional, serial bit channels to transmit data in opposite directions through the connector, because the MSI GT75 has Thunderbolt and USB 3.x connectors capable of supporting USB3.x and Thunderbolt.

161. On information and belief, the Accused Laptops are in relevant part substantially similar to the exemplary MSI GT75, in particular with regard to the manner in which the Accused Laptops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the ’140 patent as to each of the Accused Laptops.

162. 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.

163. MSI’s infringement of the ’140 patent through its importation, offers to sell, or sales in the United States of the **Accused Desktops** is shown by way of the exemplary MSI Trident X 9th desktop as set forth in paragraphs 87-101 above. These paragraphs demonstrate that the MSI Trident X 9th desktop was necessarily manufactured abroad according to at least claim 35 of the ’140 patent:

(a) MSI or another party performs a method of improving performance of a computer when manufacturing the MSI Trident X 9th;

(b) when manufacturing the MSI Trident X 9th, MSI or another party obtains an integrated CPU and graphics controller as a single chip, because the MSI Trident X 9th uses a 9th Generation Intel® Core™ Processor;

(c) when manufacturing the MSI Trident X 9th, MSI or another party connects an LVDS channel directly to the integrated CPU and graphics controller that uses two unidirectional, serial bit channels to transmit data in opposite directions, because the 9th Generation Intel® Core Processors employed in the MSI Trident X 9th directly connect to PCIe and DMI channels;

(d) when manufacturing the MSI Trident X 9th, MSI or another party connects a differential signal channel directly to the integrated CPU and graphics controller to output digital video data, because the 9th Generation Intel® Core™ Processors employed in the MSI Trident X 9th connect to DDI and/or PCI channels that are connected to discrete graphics;

(e) when manufacturing the MSI Trident X 9th, MSI or another party provides a connector for external peripheral data communication, because the MSI Trident X 9th has a variety of connectors for external peripherals, including USB 3.x ports; and

(f) when manufacturing the MSI Trident X 9th, MSI or another party provides a second LVDS channel using two unidirectional, serial bit channels to transmit data in opposite directions through the connector, because the MSI Trident X 9th has other USB 3.x ports.

164. On information and belief, the Accused Desktops are in relevant part substantially similar to the exemplary MSI Trident X 9th, in particular with regard to the manner in which the Accused Desktops include and utilize PCIe and/or USB 3.x functionality. This Section is thus

illustrative of the manner in which MSI infringes the claims of the ’140 patent as to each of the Accused Desktops.

165. 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.

166. The above-described acts of infringement committed by MSI have caused injury and damage to ACQIS and ACQIS’ licensees.

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

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

168. ACQIS incorporates by this reference the allegations set forth all foregoing paragraphs of this Complaint in support of its fifth cause of action as though fully set forth herein.

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

170. In view of the foregoing facts and allegations, including paragraphs 70-115 above, MSI has directly infringed 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 MSI Products and then importing, selling, offering to sell and/or using the Accused MSI Products in the United States.

171. The Accused MSI 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.

172. MSI’s infringement of the ’654 patent through its importation and sale in the United States of the **Accused Laptops** is shown by way of the exemplary MSI GT75 laptop as set forth

in paragraphs 70-86 above. These paragraphs demonstrate that the MSI GT75 laptop was necessarily manufactured according to at least claim 23 of the '654 patent:

(a) MSI or another party performs a method of increasing data communication speed of a computer when manufacturing the MSI GT75;

(b) when manufacturing the MSI GT75, MSI or another party connects a CPU directly to a peripheral bridge on a printed circuit board, because the MSI GT75 uses an Intel core CPU directly connected to the Intel PCH via a DMI connection;

(c) when manufacturing the MSI GT75, MSI or another party connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the MSI GT75 has PCIe channels and DMI channels directly connected to the Intel PCH;

(d) when manufacturing the MSI GT75, MSI or another party provides a connector to connect the computer to a console, because the MSI GT75 has a variety of connector ports including USB 3.x and Thunderbolt ports;

(e) when manufacturing the MSI GT75, MSI or another party provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the MSI GT75 has USB 3.x and Thunderbolt ports capable of supporting USB 3.x and Thunderbolt; and

(f) when manufacturing the MSI GT75, MSI or another party enables the transmission of USB protocol data through the second LVDS channel via a Thunderbolt and USB 3.x channels and ports.

173. On information and belief, the Accused Laptops are in relevant part substantially similar to the exemplary MSI GT75, in particular with regard to the manner in which the Accused

Laptops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the '654 patent as to each of the Accused Laptops.

174. 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.

175. MSI's infringement of the '654 patent through its importation into, and/or use, offers to sell, or sales in, the United States of the **Accused Desktops** is shown by way of the exemplary MSI Trident X 9th desktop as set forth in paragraphs 87-101 above. These paragraphs demonstrate that the MSI Trident X 9th desktop was necessarily manufactured abroad according to at least claim 23 of the '654 patent:

(a) MSI or another party performs a method of increasing data communication speed of a computer when manufacturing the MSI Trident X 9th;

(b) when manufacturing the MSI Trident X 9th, MSI or another party connects a CPU directly to a peripheral bridge on a printed circuit board, because the MSI Trident X 9th uses an Intel core CPU directly connected to the Intel PCH via an DMI connection;

(c) when manufacturing the MSI Trident X 9th, MSI or another party connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the MSI Trident X 9th has PCIe channels and DMI channels directly connected to the Intel PCH;

(d) when manufacturing the MSI Trident X 9th, MSI or another party provides a connector to connect the computer to a console, because the MSI Trident X 9th has a variety of connector ports such as USB 3.x ports;

(e) when manufacturing the MSI Trident X 9th, MSI or another party provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the MSI Trident X 9th has USB 3.x ports to convey USB 3.x data carried on LVDS channels; and

(f) when manufacturing the MSI Trident X 9th, MSI or another party enables the transmission of USB protocol data through the second LVDS channel via a USB 3.x channel and USB 3.x ports.

176. On information and belief, the Accused Desktops are in relevant part substantially similar to the exemplary MSI Trident X 9th, in particular with regard to the manner in which the Accused Desktops include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the '654 patent as to each of the Accused Desktops.

177. 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.

178. MSI's infringement of the '654 patent through its importation into, and/or use, offers to sell, or sales in, the United States of the **Accused Servers** is shown by way of the exemplary MSI N3030 server as set forth in paragraphs 102-115 above. These paragraphs demonstrate that the MSI N3030 server was necessarily manufactured according to at least claim 23 of the '654 patent:

(a) MSI or another party performs a method of increasing data communication speed of a computer when manufacturing the MSI N3030;

(b) when manufacturing the MSI N3030, MSI or another party connects a CPU directly to a peripheral bridge on a printed circuit board, because the MSI N3030 uses an Intel core CPU directly connected to the Intel PCH via a DMI connection;

(c) when manufacturing the MSI N3030, MSI or another party connects an LVDS channel directly to the peripheral bridge (PCH), which uses two unidirectional, serial channels to transmit data in opposite directions, because the MSI N3030 has PCIe channels and a DMI channel directly connected to the Intel PCH;

(d) when manufacturing the MSI N3030, MSI or another party provides a connector to connect the computer to a console, because the MSI N3030 has a variety of connector ports such as USB 3.x;

(e) when manufacturing the MSI N3030, MSI or another party provides a second LVDS channel using two unidirectional, serial channels to transmit data in opposite directions through the connector to the console, because the MSI N3030 has USB 3.x ports; and

(f) when manufacturing the MSI N3030, MSI or another party enables the transmission of USB protocol data through the second LVDS channel via a USB 3.x port and channel.

179. On information and belief, the Accused Servers are in relevant part substantially similar to the exemplary MSI N3030 products, in particular with regard to the manner in which the Accused Servers include and utilize PCIe and/or USB 3.x functionality. This Section is thus illustrative of the manner in which MSI infringes the claims of the ’654 patent as to each of the Accused Servers.

180. 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.

181. The above-described acts of infringement committed by MSI have caused injury and damage to ACQIS and ACQIS' licensees.

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

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 MSI has infringed one or more claims of each of the ACQIS Patents through the importation into the United States of MSI laptop, desktop, and server products made abroad using patented processes claimed in the ACQIS Patents;

B. enter judgment awarding ACQIS monetary relief pursuant to 35 U.S.C. § 284 in an amount adequate to compensate for MSI'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;

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

D. 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: December 22, 2023. Respectfully submitted,

By: */s/ Paige Arnette Amstutz*

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