UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

ACQIS LLC, a Texas limited liability company, Plaintiff, v. MICROSOFT CORPORATION, a Washington corporation. Defendant.	Civil Action No. 6:22-cv-385 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff ACQIS LLC ("Plaintiff" or "ACQIS"), by its attorneys, hereby alleges patent infringement against Defendant Microsoft Corporation ("Microsoft" or "Defendant"), as follows:

INTRODUCTION

1. This is an action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.* ACQIS alleges that Microsoft has infringed, directly and/or indirectly, five ACQIS patents: U.S. Patent Nos. 9,529,768 ("'768 patent"), 9,703,750 ("'750 patent"), 8,977,797 ("'797 patent"), RE44,654 ("'654 patent"), and RE45,140 ("'140 patent") (collectively, the "ACQIS Patents"), copies of which are attached hereto as Exhibits 1-5, respectively.

2. The ACQIS Patents cover foundational computing technologies that utilize low voltage differential signaling (LVDS) as a physical transmission medium for serial data transfer in PCI and/or USB bus transactions, or recited portions thereof, as used in PCI Express (PCIe)

and/or USB 3.x,[1] to facilitate fast, serial data transfer while reducing power consumption and susceptibility to noise, as compared to prior art systems.

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

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

THE PARTIES

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

[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.

Chu, resides. Dr. Chu is also the Chief Executive Officer of ACQIS Technology, Inc.

6. Defendant Microsoft is a corporation organized and existing under the laws of Washington that lists its headquarters as One Microsoft Way, Redmond, Washington 98052-6399. Defendant Microsoft has corporate sales offices in the Western District of Texas at 10900 Stonelake Boulevard, Suite 225, Austin, Texas 78759, and Concord Park II, 401 East Sonterra Boulevard, Suite 300, San Antonio, Texas 78258, and data centers located in at least 5150 Rogers Road, San Antonio, Texas 78251. Defendant is registered to do business in Texas and may be served via its registered agent at Corporation Service Company, located at 211 E. 7th Street, Suite 620, Austin, Texas 78701.

7. Defendant has authorized sellers and sales representatives that offer and sell products pertinent to this Complaint throughout the State of Texas, including in this District and to consumers throughout this District, such as: Best Buy, 4627 S Jack Kultgen Expressway, Waco, Texas 76706; Office Depot, 5524 Bosque Boulevard, Waco, Texas 76710; and GameStop, 1428 Wooded Acres Drive, Suite 204, Waco, Texas 76710.

JURISDICTION AND VENUE

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

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

10. This Court has specific personal jurisdiction over the Defendant consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, Microsoft has sufficient minimum contacts with the forum because Microsoft transacts substantial business in the State of Texas and in this District.

On information and belief, Microsoft has operations throughout this District, including at its Austin and San Antonio Corporate Sales Offices and San Antonio data center, where it employs a large number of personnel working in areas such as engineering, sales, and information technology. For example, Microsoft purchased a new 95,000 square foot office building in San Antonio in 2020,[2] and LinkedIn currently lists numerous Microsoft jobs in the Austin metro area.[3] Further, on information and belief, Defendant has purposefully manufactured and/or distributed Microsoft computer products and devices 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, the State of Texas, and in this District. Further, Defendant has (itself and/or through the activities of subsidiaries, affiliates, or intermediaries) committed acts of patent infringement in the United States, the State of Texas and this District, including by making, using, offering to sell, and/or selling infringing Microsoft computer products and devices in the United States, the State of Texas, and this District; importing and/or selling infringing Microsoft computer products and devices, and/or Microsoft computer products and devices made abroad using ACQIS's patented processes, into the United States for sale in the State of Texas and this District; and/or inducing others to commit acts of patent infringement in the United States, the State of Texas, and this District. Accordingly, Microsoft has established minimum contacts within the forum and purposefully availed itself of the benefits of Texas, and the exercise of personal jurisdiction over Microsoft would not offend traditional notions of fair play and substantial justice.

[2] https://www.bizjournals.com/sanantonio/news/2020/10/30/microsoft-buys-office-building-far-west-side.html (accessed 04/13/2022).
[3]https://www.linkedin.com/jobs/microsoft-jobs-austin-texas-metropolitan-area?position=1&pageNum=0 (accessed 04/13/2022).

11. Venue is proper in this District pursuant to 28 U.S.C. §§ 1400(b) and 1391(b) and (c) because Microsoft is subject to personal jurisdiction in this District and has committed acts of patent infringement in this District. Microsoft has a regular and established place of business, including at least 10900 Stonelake Boulevard, Suite 225, Austin, Texas 78759, Concord Park II 401 East Sonterra Boulevard, Suite 300, San Antonio, Texas 78258, and 5150 Rogers Road, San Antonio, Texas 78251, located in this District. Microsoft also has numerous employees in this District. Microsoft, through its own acts, makes, uses, sells, and/or offers to sell infringing products within this District, regularly does and solicits business in this District, and has the requisite minimum contacts with the District such that this venue is a fair and reasonable one.

FACTUAL BACKGROUND

I. The ACQIS Patents

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

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

14. 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.

15. 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.

16. 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.

17. 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.

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

19. Defendant has never been authorized to practice the ACQIS Patents.

20. The inventions recited in the ACQIS Patents enabled Microsoft to offer superior computer products and devices, including faster, more efficient, and more reliable computer

products and devices.

21. The ACQIS Patents are owned by ACQIS LLC and form a part of ACQIS LLC's high-speed computing technology portfolio.

22. ACQIS's patent portfolio, and the ACQIS Patents specifically, have been the subject of numerous proceedings before the USPTO and have been asserted in litigation.

23. ACQIS's patent portfolio has been asserted in litigation against technology companies such as Samsung, IBM, Dell, HP, Sun Microsystems/Oracle, NEC, Fujitsu, Huawei, Hitachi, Ericsson, and Alcatel-Lucent.

24. As a result of ACQIS's litigation-based enforcement efforts, ACQIS's patent portfolio has been extensively licensed to some of the world's largest technology companies.

25. The ACQIS Patents have also survived numerous attacks before the USPTO. The claims of each of the ACQIS Patents have been challenged in *inter partes* review before the Patent Trial and Appeal Board (PTAB) several times by multiple petitioners, including Samsung and Intel. In each of these challenges, the PTAB denied institution of *inter partes* review, finding that none of the petitioners had demonstrated a reasonable likelihood that the ACQIS Patents are invalid.

II. The Inventor

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

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

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

then for Zilog, Inc. (1977-1982).

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

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

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

32. 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.

33. Dr. Chu founded his second company, ACQIS Technology, Inc. in 1998. His goal was to build a small, lightweight portable computer module that could be interchangeably plugged into different peripheral consoles for different use scenarios. In the course of working to develop such products, Dr. Chu worked extensively to solve interconnection problems between

computer modules and peripheral consoles. He recognized that such interconnections needed to be sufficiently versatile to connect the core computing and graphics system to different types of peripheral devices, and also needed to be low-power, high-performance, and extendable to even higher performance to accommodate future computing advancements. He also recognized the necessity of mating connectors with low pin counts. The ACQIS Patents and their underlying innovations stem from Dr. Chu's foundational product development work at ACQIS.

III. Microsoft

34. Microsoft is a global leader in the computing and video gaming industries. Microsoft makes and sells a variety of laptop and all-in-one computers and Xbox video game consoles. Microsoft designs, manufactures, uses, offers for sale, sells, and/or imports into the United States—including into the Western District of Texas—billions of dollars of computer products and devices every year.

35. On information and belief, Microsoft's More Personal Computing segment, in which Microsoft reports its sales of computer products and devices, generated approximately $54 billion in global revenue for the year ended June 30, 2021, a significant portion of which is attributable to sales in the United States.

IV. Microsoft's Direct Infringement and Accused Instrumentalities

36. Microsoft has directly infringed, pursuant to 35 U.S.C. §§ 271(a) and (g), as applicable, one or more claims of each of the ACQIS Patents (as further specified below as to each of the ACQIS Patents, in Counts I-V) by: (1) making, using, offering to sell, selling within the United States, and/or importing into the United States, computer products and devices that include infringing PCIe and/or USB 3.x functionality; (2) practicing the claimed methods of the ACQIS Patents in the United States by manufacturing and/or testing computer products and

devices that include the claimed PCIe and/or USB 3.x functionality; and (3) importing into the United States and/or selling in the United States computer products and devices made abroad using ACQIS's patented processes. The computer products and devices that ACQIS accuses of infringing the ACQIS Patents are collectively referred to herein as the "Accused Instrumentalities."

37. On information and belief, Microsoft has manufactured and/or tested Accused Instrumentalities in the United States and sold and/or imported Accused Instrumentalities into the United States. On information and belief, Microsoft has imported into the United States and/or sold in the United States products made abroad using ACQIS's patented processes.

38. The Accused Instrumentalities include computer products and devices that incorporate the claimed inventions, including infringing implementations of PCIe and/or USB 3.x as described herein.

39. The Accused Instrumentalities include products made, used, offered for sale, sold within the United States, and/or imported into the United States at least since ACQIS provided actual notice of infringement on or around May 18, 2018, as discussed herein, through expiration of the ACQIS Patents. The Accused Instrumentalities also include products used to perform the claimed methods of the ACQIS Patents within the last six years from the date of this Complaint, through expiration of the ACQIS Patents, and in the same time period, products made abroad using ACQIS's claimed processes and sold and/or imported into the United States.

40. The claims of the ACQIS Patents relate generally to, *inter alia*, the use of one or more LVDS channels for serial data transfer in PCI and/or USB bus transactions, or recited portions thereof, as used in PCIe and USB 3.x, respectively. The inventions of the ACQIS Patents "advantageously use[] an LVDS channel for the hereto unused purpose of interfacing

PCI or PCI-like buses." '768 at 6:1-3.

V. ACQIS Provided Actual Notice to Microsoft

41. ACQIS provided actual notice, pursuant to 35 U.S.C. § 287(a), of all of the ACQIS Patents and the infringement alleged herein on or around May 16, 2018, when ACQIS sent a notice letter dated May 15, 2018 to Microsoft. FedEx tracking information confirms that Microsoft received ACQIS's May 15, 2018 letter on May 18, 2018. In that letter, ACQIS identified all of the ACQIS Patents and described the applicability of the ACQIS Patents to PCI Express, USB 3.0, and other technologies, further identifying the following Microsoft products: "[Y]our branded game console product Xbox, and your branded computing product series: Surface Book, Surface Pro, Surface Laptop, Surface Studio, and Surface Hub." All of these product lines are included in the Accused Instrumentalities.

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

43. After receiving ACQIS's notice letter, Microsoft continued to make and sell the products and/or product lines identified in ACQIS's letter. Upon receiving actual notice, Microsoft chose not to cease infringement or offer to compensate ACQIS in exchange for a license to the ACQIS Patents. At the very least, Microsoft chose not to investigate ACQIS's infringement allegations and remained willfully blind to its own infringement and the infringement that it was inducing others to commit.

44. Microsoft's choice to continue making, selling, and importing infringing Accused

Instrumentalities in view of the infringement allegations set forth in ACQIS's May 15, 2018 notice letter is deliberate and egregious. Defendant has thus willfully infringed the ACQIS Patents since at least May 18, 2018.

VI. Microsoft's Indirect Infringement

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

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

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

48. Defendant knew that its customers would sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States—or deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced—and Defendant specifically intended its customers to purchase those Accused Instrumentalities from Defendant and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States.

Defendant's direct and indirect purchasers directly infringed the ACQIS Patents by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

49. Defendant has further induced others' direct infringement of the ACQIS Patents by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users used the Accused Instrumentalities and directly infringed the ACQIS Patents. Defendant had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendant and specifically intended that end users would perform such uses in the United States. Such infringing uses occurred upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendant configured the Accused Instrumentalities in such a way as to induce infringement by end users upon any use of those Accused Instrumentalities. For example, on information and belief, Defendant instructed end users regarding the powering on and use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would convey encoded address and data bits of a PCI bus transaction between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol data. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

50. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the ACQIS Patents, as set forth herein. Defendant therefore has caused its purchasers and end users to directly infringe the ACQIS Patents with knowledge of the ACQIS Patents and specific intent that the purchasers and end users would directly

infringe, or deliberately avoided learning of the infringing circumstances so as to be willfully blind to the infringement that was induced.

51. Defendant derived significant revenue by selling products, including the Accused Instrumentalities, to third parties who directly infringed one or more claims of the ACQIS Patents. Microsoft generated worldwide revenues of approximately $54 billion in its 2021 fiscal year from its More Personal Computing segment, which includes sales of computer products and devices.

52. The above-described acts of indirect infringement committed by Defendant have caused injury and damage to Plaintiff ACQIS.

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

53. The allegations set forth in paragraphs 1 through 52 of this Complaint are incorporated by reference as though fully set forth herein.

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

55. Defendant has directly infringed one or more claims of the ’768 patent in violation of 35 U.S.C. § 271.

56. The Accused Instrumentalities directly infringed at least claim 1 of the ’768 patent at least in the manner described below. Plaintiff’s allegations of infringement are not limited to claim 1, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

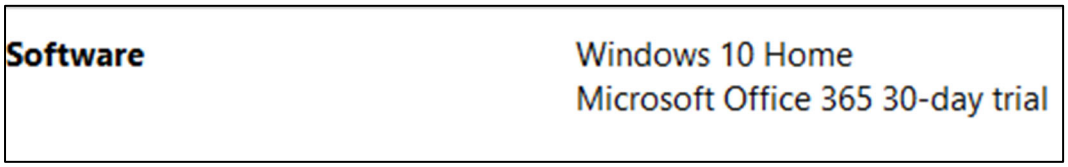
57. Paragraphs 59-71 describe the manner in which the Accused Instrumentalities infringed claim 1 of the ’768 patent, by way of the exemplary Microsoft Surface Pro 6 computer.

58. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Microsoft Surface Pro 6 computer, in particular with

regard to the manner in which the Accused Instrumentalities utilize PCIe and/or USB 3.x functionality for connecting internal components and/or providing USB 3.x ports. Paragraphs 59-71 are thus illustrative of the manner in which each of the Accused Instrumentalities infringed.

59. The Microsoft Surface Pro 6 is a computer running the Windows 10 Home operating system.

https://www.microsoft.com/en-us/surface/devices/surface-pro-6.



https://www.microsoft.com/en-us/surface/devices/surface-pro-6.

60. The Microsoft Surface Pro 6 contains an integrated central processing unit, interface controller and Phase-Locked Loop (PLL) clock circuitry in a single chip, i.e., an Intel Core i5-8250U or i7-8650U processor,[4] both of which are part of the 8th generation Intel Core

[4] By way of illustration, this Complaint addresses exemplary Microsoft Surface Pro 6 models containing the Intel Core i5-8250U processor.

Processor product collection, formerly code named “Kaby Lake R” (or “Kaby Lake Refresh”).

Processor	Intel® Core™ 8th Gen i5-8250U or i7-8650U[5]

https://www.microsoft.com/en-us/surface/devices/surface-pro-6.

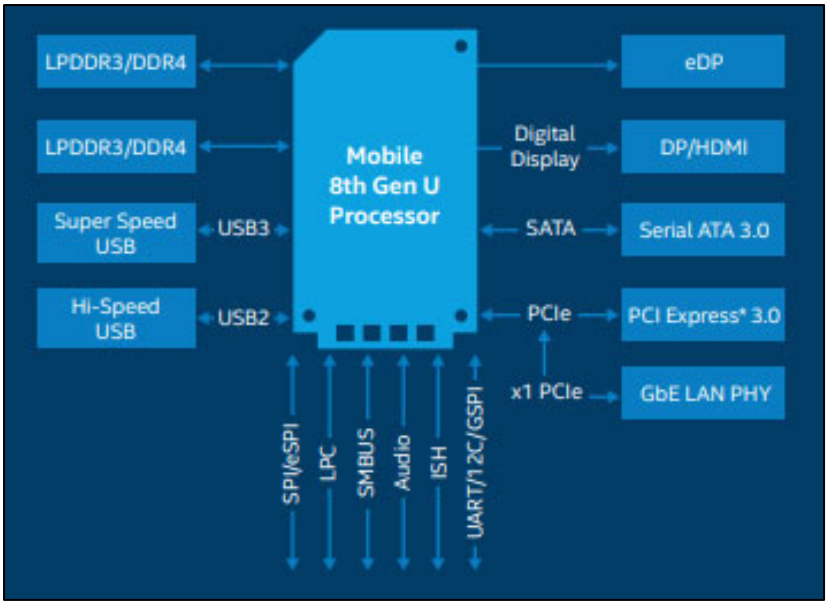
Product Collection	8th Generation Intel® Core™ i5 Processors
Code Name	Products formerly Kaby Lake R
Vertical Segment	Mobile
Processor Number	i5-8250U

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.

61. The Intel Core i5-8250U processor contains a quad-core CPU.

CPU Specifications	
Total Cores	4
Total Threads	8
Max Turbo Frequency	3.40 GHz
Intel® Turbo Boost Technology 2.0 Frequency‡	3.40 GHz
Processor Base Frequency	1.60 GHz
Cache	6 MB Intel® Smart Cache

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.

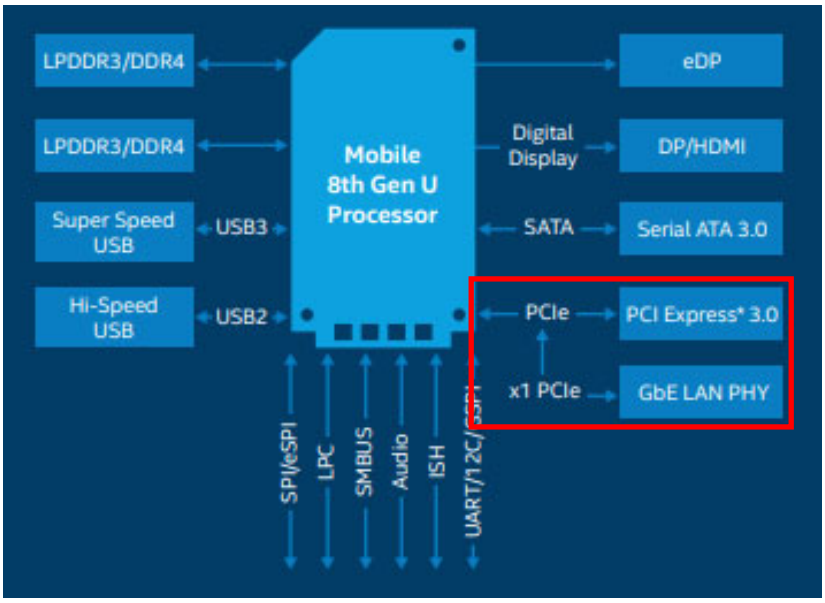


Product Brief – 8th Generation Intel Core Processors, Mobile U-Series: Peak Performance on the Go (available at https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/08/8th-gen-intel-core-product-brief.pdf), at 2.

62. The Intel Core i5-8250U processor contains an interface controller on the same chip as the CPU. As shown below, the Intel Core i5-8250U processor supports up to 12 lanes of PCIe 3.0.

Expansion Options	
PCI Express Revision ?	3.0
PCI Express Configurations ‡ ?	1x4, 2x2, 1x2+2x1 and 4x1
Max # of PCI Express Lanes ?	12

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.

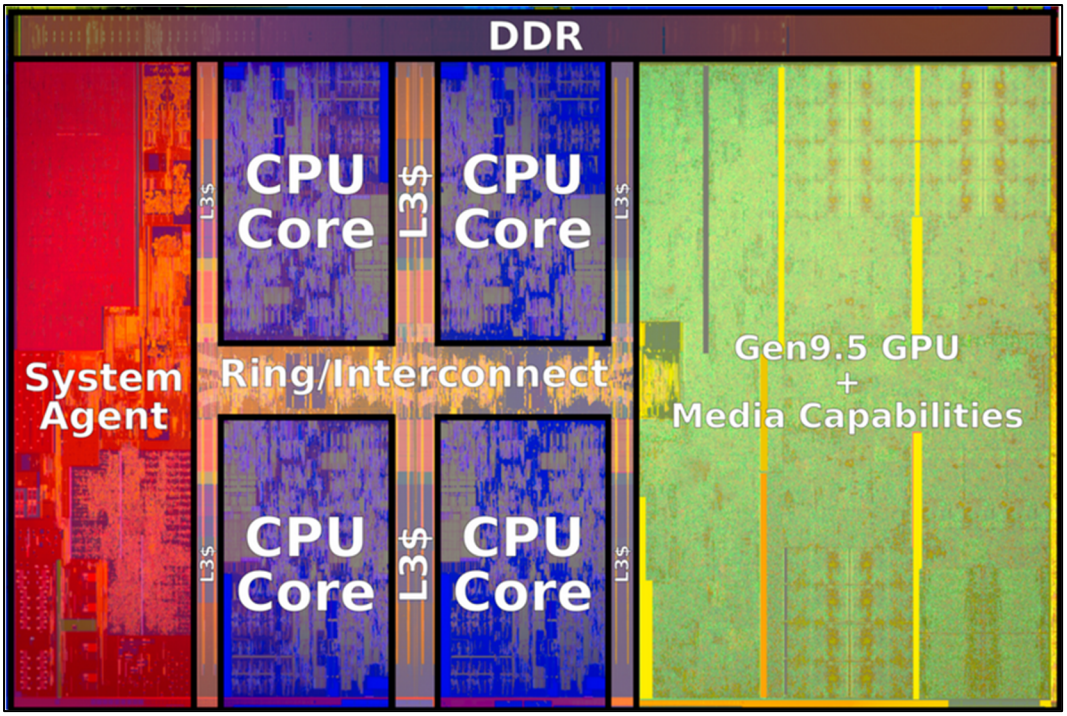


Product Brief – 8th Generation Intel Core Processors, Mobile U-Series: Peak Performance on the Go (available at https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/08/8th-gen-intel-core-product-brief.pdf), at 2 (annotations added).

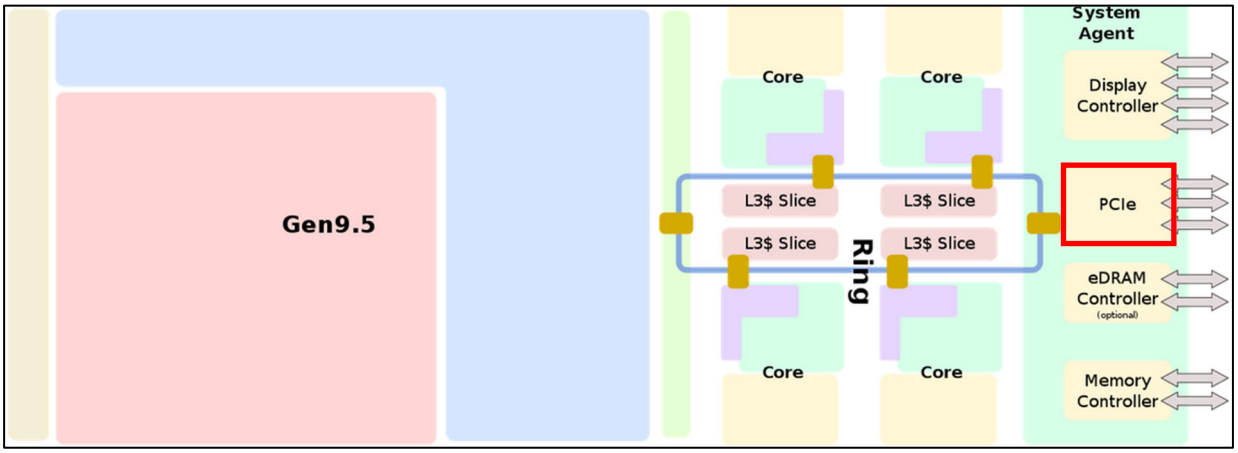
PCI Express* 3.0 Interface	Offers up to 5 GT/s for fast access to peripheral devices and networking with up to 12 lanes and 6 ports. PCI Express ports can be configured as x1, x2 and x4 depending on motherboard designs.

Id. at 4.

63. Because the Intel Core i5-8250U processor supports on-chip PCIe, it necessarily contains one or more logic blocks to implement the PCIe functionality, i.e., a PCIe controller and related circuitry found in the Physical Layer (PHY). The Intel Core i5-8250U processor also includes PLL clock circuitry, including at least in the PHY(s) associated with the PCIe controller(s). The PCIe controller and PHY logic blocks are, and/or are part of, an "interface controller." The PCIe controller is located within the "System Agent" section of the chip, shown below.



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake.



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake (annotations added).

64. The Intel Core i5-8250U processor found in the Microsoft Surface Pro 6, which includes the integrated CPU, interface controller and PLL clock circuitry, has a first LVDS channel directly extending from the interface controller.

65. For example, the Microsoft Surface Pro 6 includes a 128GB, 256GB, 512GB, or 1TB solid-state drive (SSD). The SSD is an NVMe SSD that utilizes PCIe to connect to other

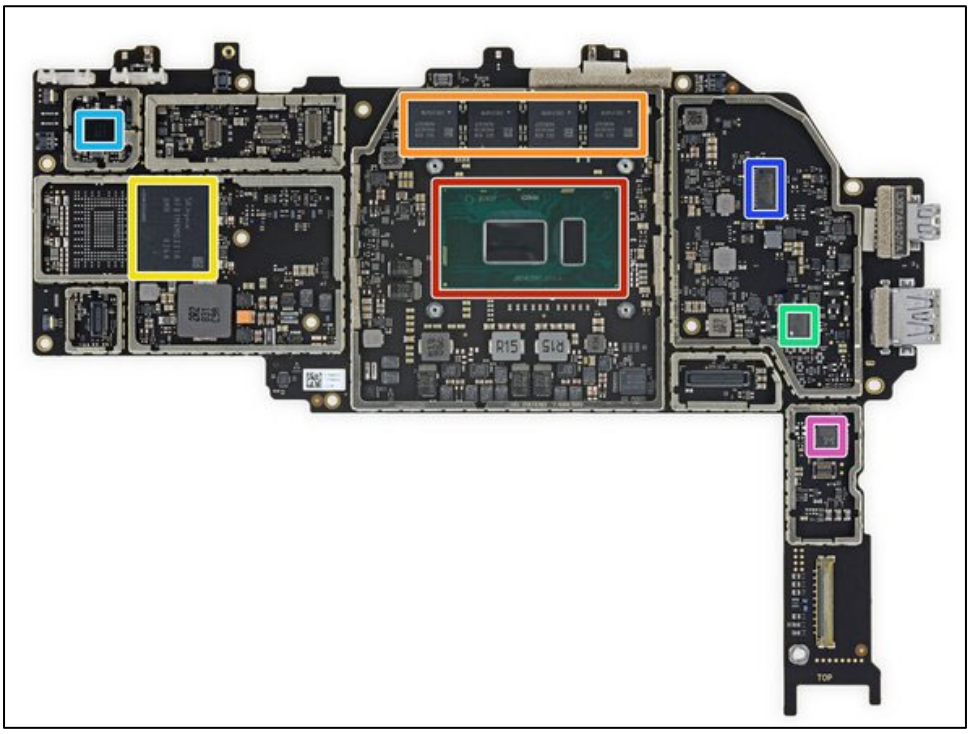
system components, e.g., the CPU.

Storage[2]	Solid-state drive (SSD) options: 128GB, 256GB, 512GB, or 1TB

https://www.microsoft.com/en-us/surface/devices/surface-pro-6.

Storage	128 GB 256 GB 512 GB 1 TB BGA PCIe SSD

https://surfacetip.com/surface-pro-6/.

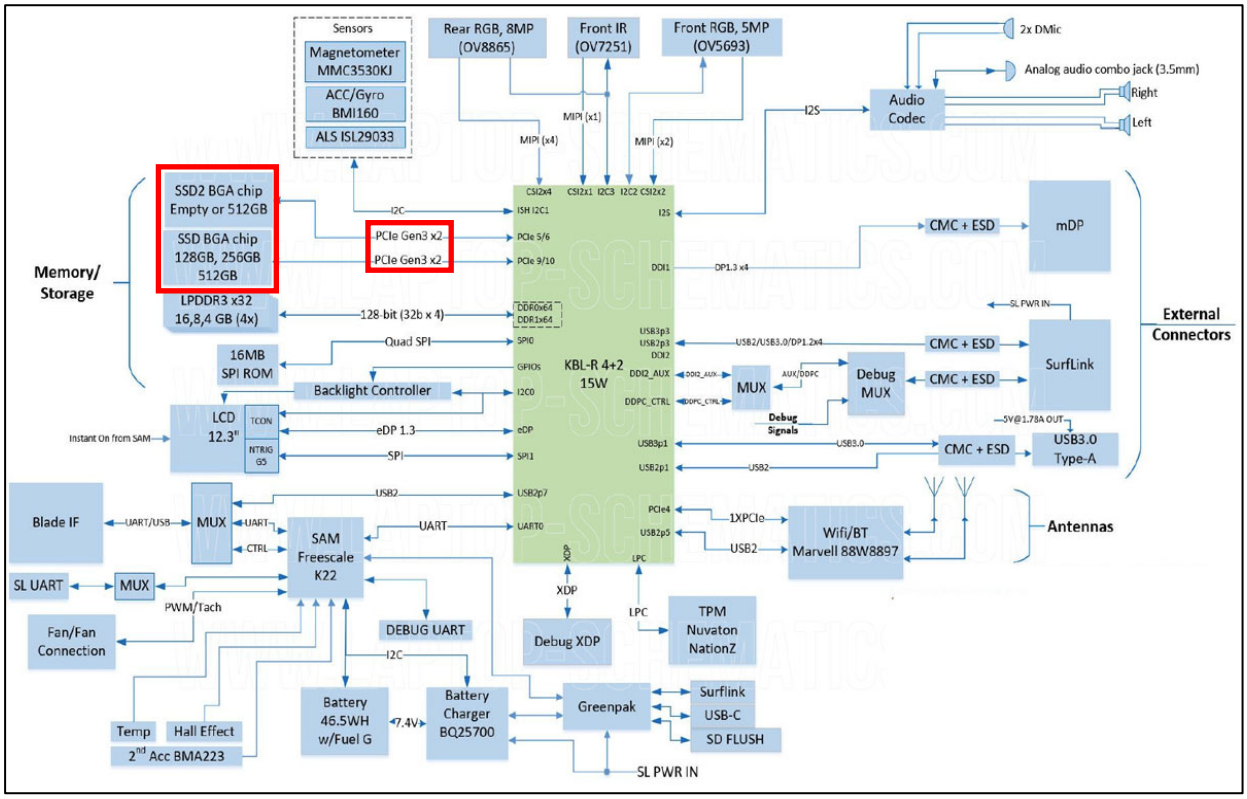


- SK Hynix HFB1M8M0331A (BC501) 128 GB NVMe SSD

https://www.ifixit.com/Teardown/Microsoft+Surface+Pro+6+Teardown/113786.

66. The Microsoft Surface Pro 6 uses the Intel Core i5-8250U processor's on-chip PCIe 3.0 I/O for directly connecting the NVMe SSD to the processor chip in a multi-lane PCIe 3.0 configuration. The Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes to connect the

NVMe SSD to the processor chip, depending on the storage capacity of the device, as shown below.

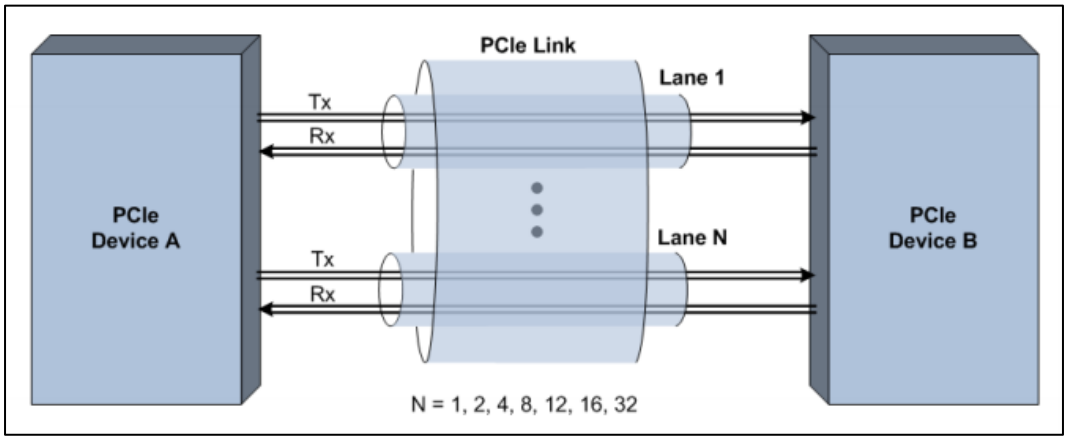


http://laptop-schematics.com/view/12612/ (annotations added).

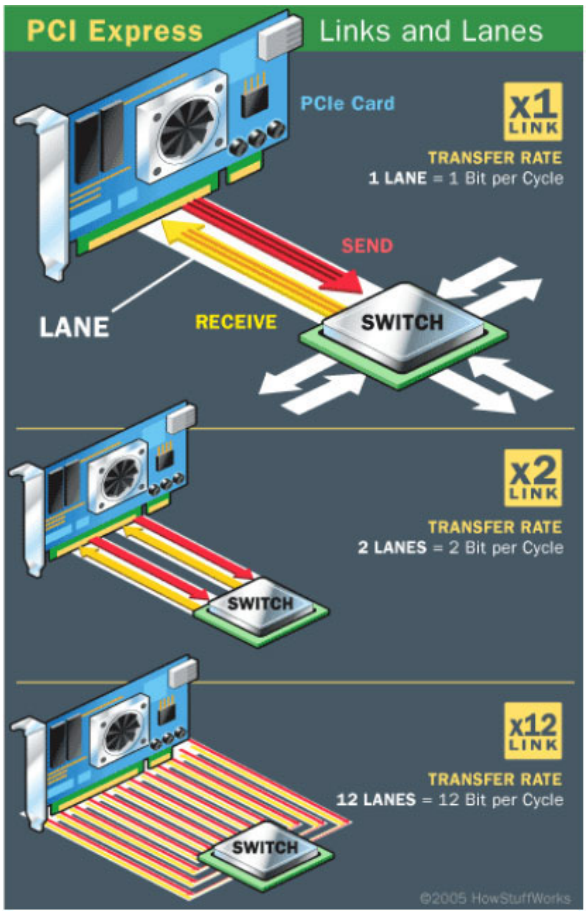
67. This PCIe 3.0 interface has an LVDS channel directly extending from the interface controller that conveys address and data bits of a PCI bus transaction in a serial form.

68. This LVDS channel comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction. As shown in the exemplary PCIe illustrations below, each lane in a PCIe implementation contains a first unidirectional, differential signal pair to convey data in a first direction (i.e., the Tx pairs in the upper illustration and the signal pairs in red in the lower illustration) and a second unidirectional, differential signal pair to convey data in a second, opposite direction (i.e., the Rx signal pairs in the upper illustration and the signal pairs in yellow

in the lower illustration).



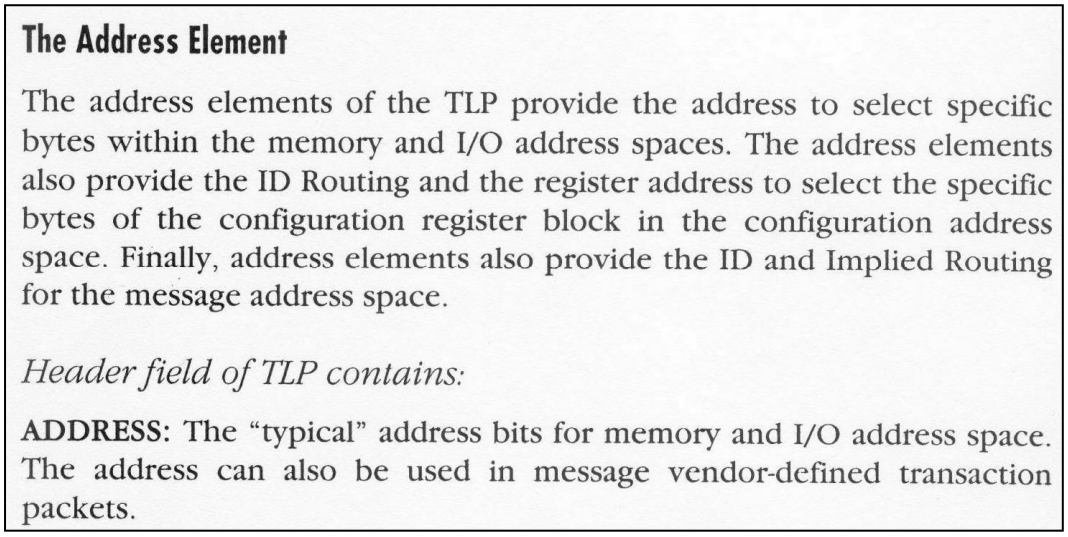
Silicon Labs AN562, PCI Express 3.1 Jitter Requirements (Rev. 0.2 11/15) (available at https://www.silabs.com/documents/public/application-notes/AN562.pdf), at 2.



https://computer.howstuffworks.com/pci-express.htm.

69. The data that is transmitted in a serial PCIe bus transaction by the LVDS channel

includes address and data bits of a PCI bus transaction. The transaction layer packets (TLPs) used for PCIe data transmission include both address and data bits of a PCI bus transaction.



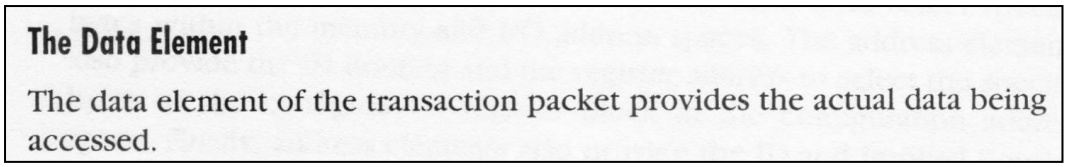
The Address Element

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

Header field of TLP contains:

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

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



The Data Element

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

The Complete PCI Express Reference, Intel Press (2003), at 220.

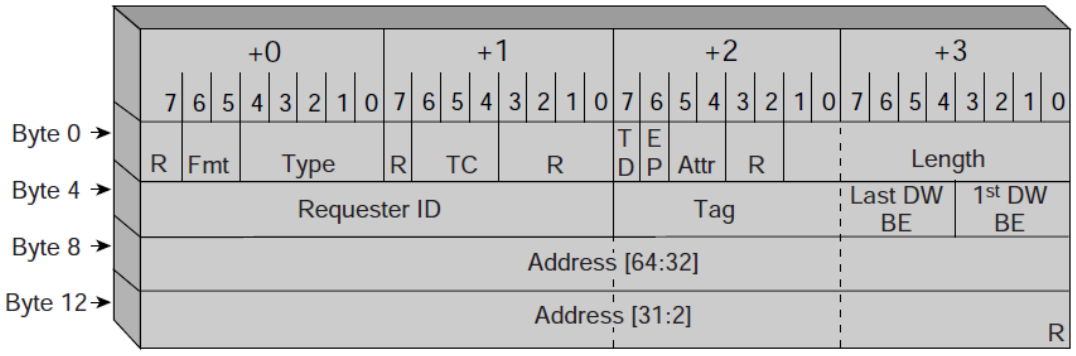


Figure 6.4 64-bit Address Memory Request Header

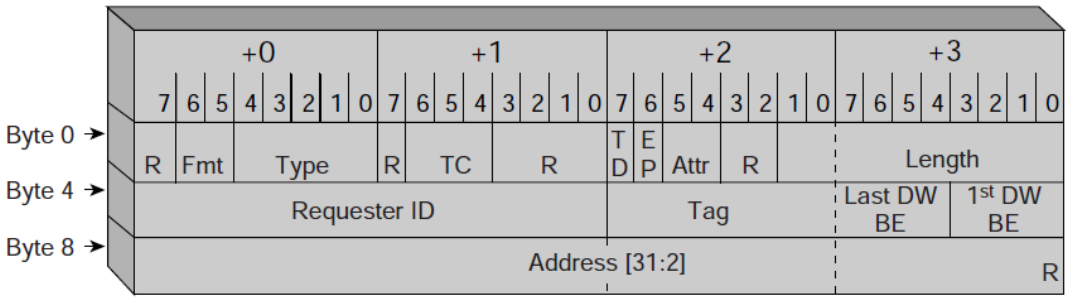
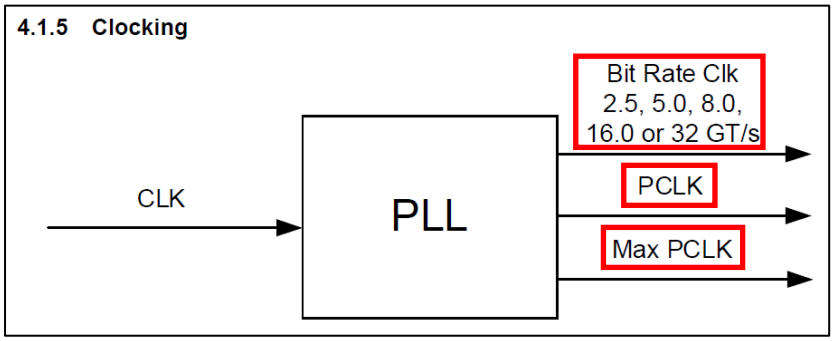


Figure 6.5 32-bit Address Memory Request Header

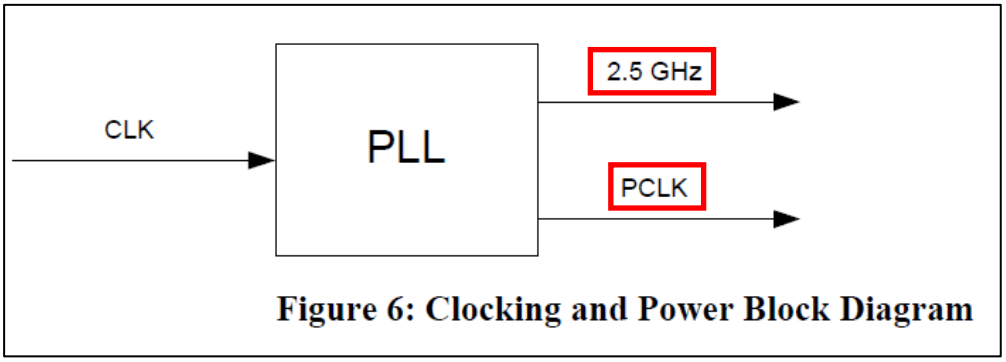
Introduction to PCI Express – A Hardware and Software Developers Guide, Intel Press (2003), at 100.

70. The PHY in the Intel Core i5-8250U processor includes PLL clock circuitry. The PHY contains at least one PLL and likely contains multiple PLLs. Within the PHY Interface for the PCI Express Architecture (PIPE), published by Intel, the PLL clock circuitry generates at least two clocks at different frequencies. One frequency is used as a bitrate clock (2.5 GHz – 32 GHz, depending on the PCIe transfer rates supported; PCIe 3.x supports 8 GT/s, and PCIe 2.x supports 5 GT/s), and the other is for the PIPE interface to the rest of the PCIe controller, i.e., PCLK (or pipe_clock) at 125 MHz or 250 MHz. Additionally, the PLL clock circuitry may generate a third clock frequency which is the bitrate clock divided by 10, i.e., bit rate clk / 10. Thus, the PLL clock circuitry generates different clock frequencies, which are used to convey the

PCI bus transactions through the LVDS channel.



PHY Interface for the PCI Express, SATA, USB 3.1, DisplayPort, and Converged IO Architectures, Version 5.1 (2018) (available at https://www.intel.com/content/dam/www/public/us/en/documents /white-papers/phy-interface-pci-express-sata-usb30-architectures-3.1.pdf), at 32 (annotations added).



PHY Interface for the PCI Express Architecture, Version 2.00 (2007) (available at http://www.applistar.com/wp-content/uploads/apps/pipe2_00.pdf), at 11 (annotations added).

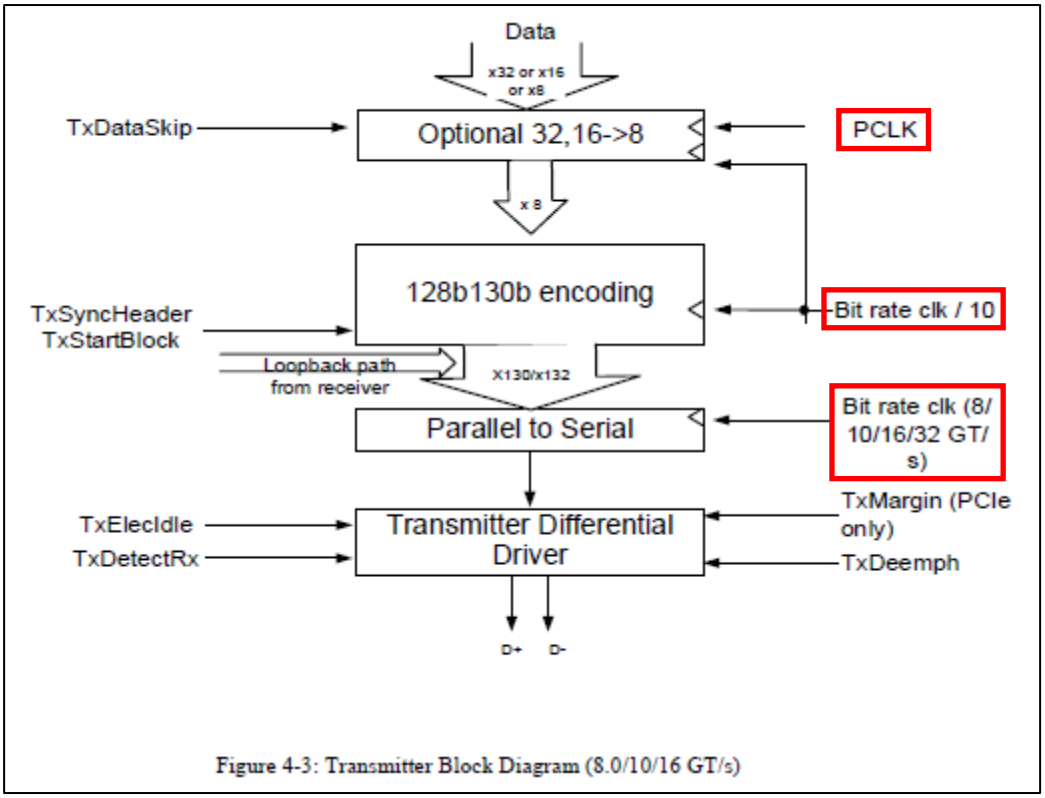


Figure 4-3: Transmitter Block Diagram (8.0/10/16 GT/s)

PHY Interface for the PCI Express, SATA, USB 3.1, DisplayPort, and Converged IO Architectures, Version 5.1 (2018) (available at https://www.intel.com/content/dam/www/public/us/en/documents /white-papers/phy-interface-pci-express-sata-usb30-architectures-3.1.pdf), at 29 (annotations added).

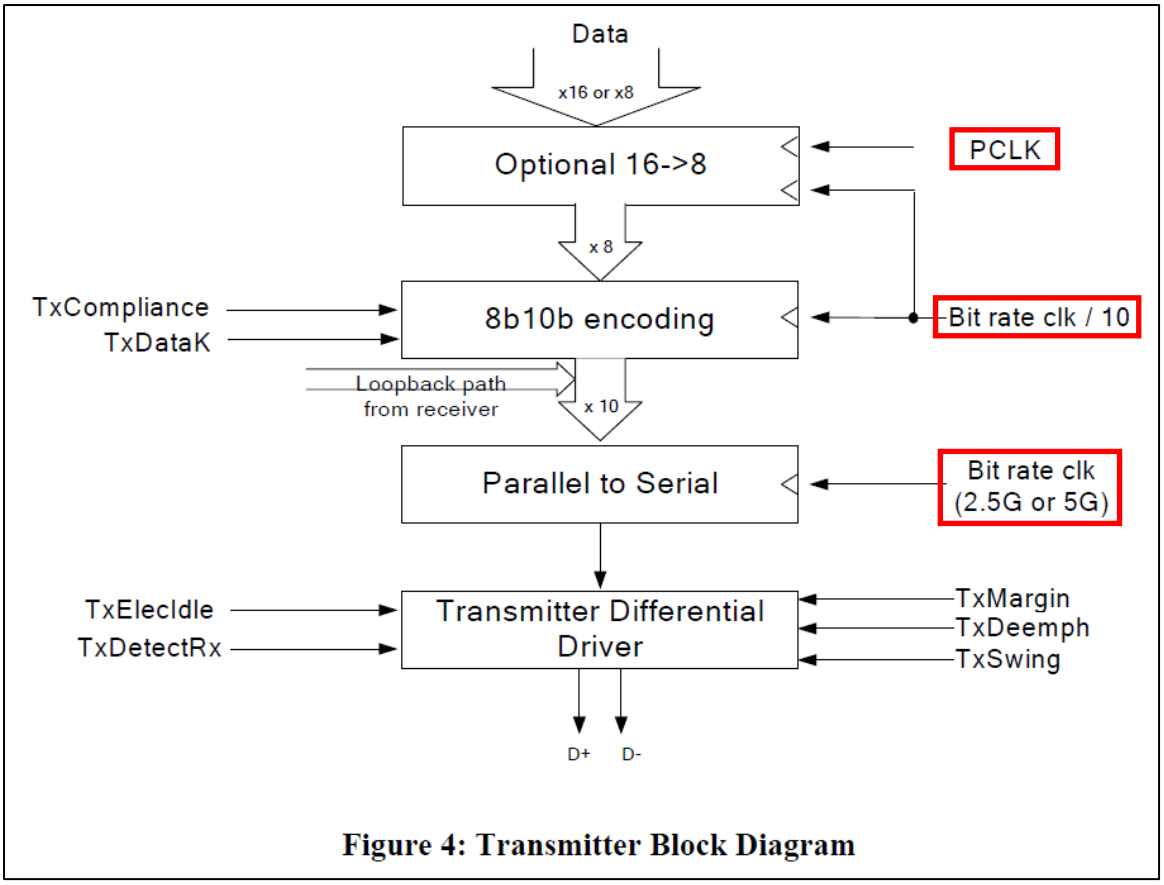


Figure 4: Transmitter Block Diagram

PHY Interface for the PCI Express Architecture, Version 2.00 (2007) (available at http://www.applistar.com/wp-content/uploads/apps/pipe2_00.pdf), at 10 (annotations added).

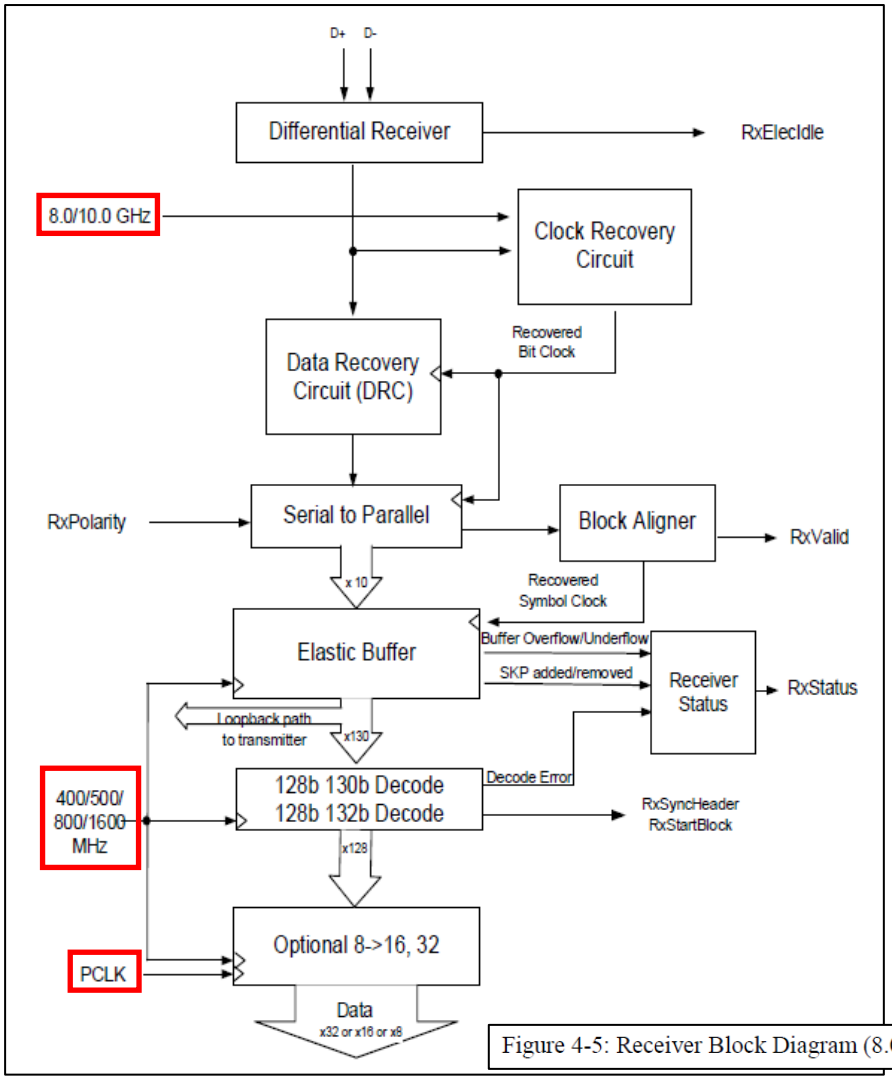


Figure 4-5: Receiver Block Diagram (8.0/10/16 GT/s)

PHY Interface for the PCI Express, SATA, USB 3.1, DisplayPort, and Converged IO Architectures, Version 5.1 (2018) (available at https://www.intel.com/content/dam/www/public/us/en/documents /white-papers/phy-interface-pci-express-sata-usb30-architectures-3.1.pdf), at 31-32 (annotations added).

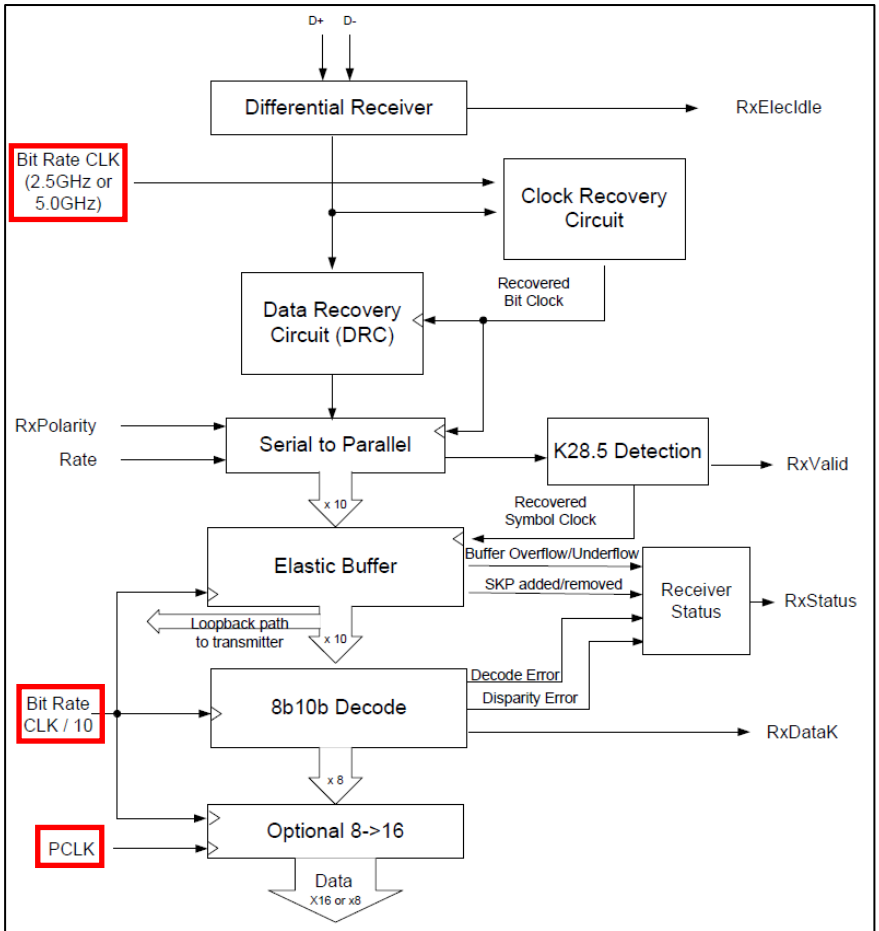


Figure 5: Receiver Block Diagram

PHY Interface for the PCI Express Architecture, Version 2.00 (2007) (available at http://www.applistar.com/wp-content/uploads/apps/pipe2_00.pdf), at 11 (annotations added).

Table 6-18. External Input Signals

Name	Active Level	Description	Relevant Protocols
CLK	Edge	This differential Input is used to generate the bit-rate clock for the PHY transmitter and receiver. Specs for this clock signal (frequency, jitter, …) are implementation dependent and must be specified for each implementation. This clock may have a spread spectrum modulation.	PCIe, SATA, USB, DisplayPort, Converged IO
PCLK	Rising Edge	*This signal is relevant for "PCLK as PHY Input" mode only.* All data movement across the parallel interface is synchronized to this clock. This clock operates at a frequency set by *PCLK Rate*. The rising edge of the clock is the reference for all signals. Spread spectrum modulation on this clock is allowed.	PCIe, SATA, USB, DisplayPort, Converged IO

PHY Interface for the PCI Express, SATA, USB 3.1, DisplayPort, and Converged IO Architectures, Version 5.1 (2018) (available at https://www.intel.com/content/dam/www/public/us/en/documents /white-papers/phy-interface-pci-express-sata-usb30-architectures-3.1.pdf), at 77.

Name	Direction	Active Level	Description
CLK	Input	Edge	This Input is used to generate the bit-rate clock for the PHY transmitter and receiver. Specs for this clock signal (frequency, jitter, …) are implementation dependent and must be specified for each implementation. This clock may have a spread spectrum modulation.
PCLK	Output	Rising Edge	Parallel interface data clock. All data movement across the parallel interface is synchronized to this clock. This clock operates at 125MHz, 250MHz, or 500 MHz depending on the *Rate* control input and the data interface width. The rising edge of the clock is the reference for all signals. Spread spectrum modulation on this clock is allowed.

PHY Interface for the PCI Express Architecture, Version 2.00 (2007) (available at http://www.applistar.com/wp-content/uploads/apps/pipe2_00.pdf), at 16.

71. The PLL clock circuitry in the PCIe PHY in the Intel Core i5-8250U processor also generates different clock frequencies based on PCIe version and the associated data transfer rate. The PLL clock circuitry, e.g., the transmit (TX) PLL, multiplies the reference clock

frequency to achieve the desired data rate.

> **3. Refclk and Clocking Architectures**
>
> An external clock reference clock (Refclk) is required for transmitting data between two PCIe devices. A Refclk frequency of 100 MHz ±300 ppm is specified for all three line rates (2.5 Gbps, 5.0 Gbps, 8.0 Gbps). The burden has been placed on the TX PLL to multiply the 100 MHz Refclk frequency to the desired data rate. Although the Refclk frequency has remained the same, the jitter performance requirements of the Refclk have improved to support the higher data rates prevalent with PCI Express 2.1 and 3.1. We will look at the Refclk jitter requirements in the following sections.

Silicon Labs AN562, PCI Express 3.1 Jitter Requirements (Rev. 0.2 11/15) (available at https://www.silabs.com/documents/public/application-notes/AN562.pdf), at 3.

- PCI Express* reference clock is 100 MHz differential clock.

Datasheet – 8th and 9th Generation Intel Core Processor Families and Intel Xeon E Processor Families, Vol. 1 of 2, Rev. 006 (July 2020) (available at https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/8th-gen-core-family-datasheet-vol-1.pdf), at 29.

Vcc_{PLL}	Processor PLLs power rails
Vcc_{PLL_OC}	

Id. at 114.

72. Defendant had actual notice pursuant to 35 U.S.C. § 287(a) of the ’768 patent and the infringement alleged herein as of on or around May 18, 2018, when it received ACQIS’s notice letter. Paragraphs 41-44 above are incorporated herein by reference.

73. Defendant has indirectly infringed the ’768 patent by actively inducing the direct infringement of others of the ’768 patent, in the United States, the State of Texas, and the Western District of Texas.

74. Defendant has induced, through affirmative acts, its customers and other third parties, such as retailers and end users, to directly infringe the ’768 patent by using, offering to sell, selling within the United States, and/or importing into the United States those Accused Instrumentalities, which infringe the ’768 patent.

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

76. Defendant knew that its customers would sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Defendant specifically intended its customers to purchase those Accused Instrumentalities from Defendant and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Defendant's direct and indirect purchasers directly infringed the '768 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States. For example, on information and belief, Defendant instructed end users regarding the powering on and use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would convey address and data bits of a PCI bus transaction between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol data. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

77. Defendant further induced others' direct infringement of the '768 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users used the Accused Instrumentalities and

directly infringed the '768 patent. Defendant had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendant and specifically intended that end users would perform such uses in the United States. Such infringing uses occurred upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendant configured the Accused Instrumentalities in such a way as to induce infringement by end users upon any use of those Accused Instrumentalities.

78. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '768 patent. As of at least May 18, 2018, Defendant knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

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

80. Defendant's acts of infringement as described above have been willful.

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

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

82. The allegations set forth in paragraphs 1 through 52 of this Complaint are incorporated by reference as though fully set forth herein.

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

84. Defendant has directly infringed one or more claims of the ’750 patent in violation of 35 U.S.C. § 271.

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

86. Paragraphs 88-96 describe the manner in which the Accused Instrumentalities infringed claim 1 of the ’750 patent, by way of the exemplary Microsoft Surface Pro 6 computer.

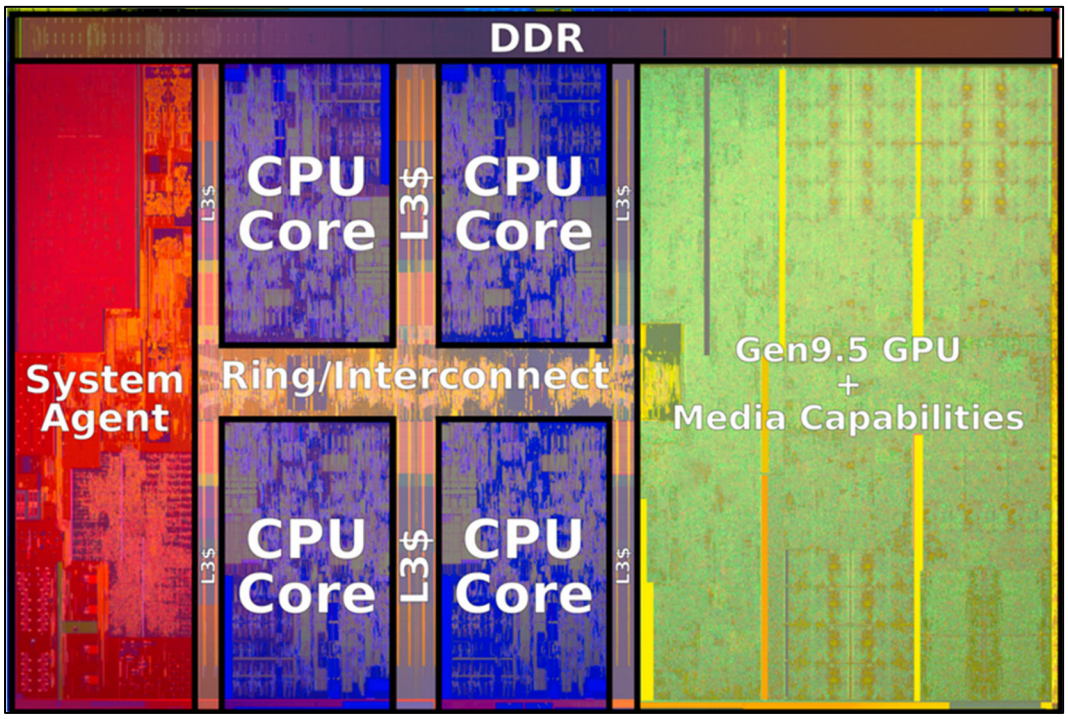
87. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Microsoft Surface Pro 6 computer, in particular with regard to the manner in which the Accused Instrumentalities utilize PCIe and/or USB 3.x functionality for connecting internal components and/or providing USB 3.x ports. Paragraphs 88-96 are thus illustrative of the manner in which each of the Accused Instrumentalities infringed.

88. The Microsoft Surface Pro 6 is a computer running the Windows 10 Home operating system. Paragraph 59 above is incorporated herein by reference.

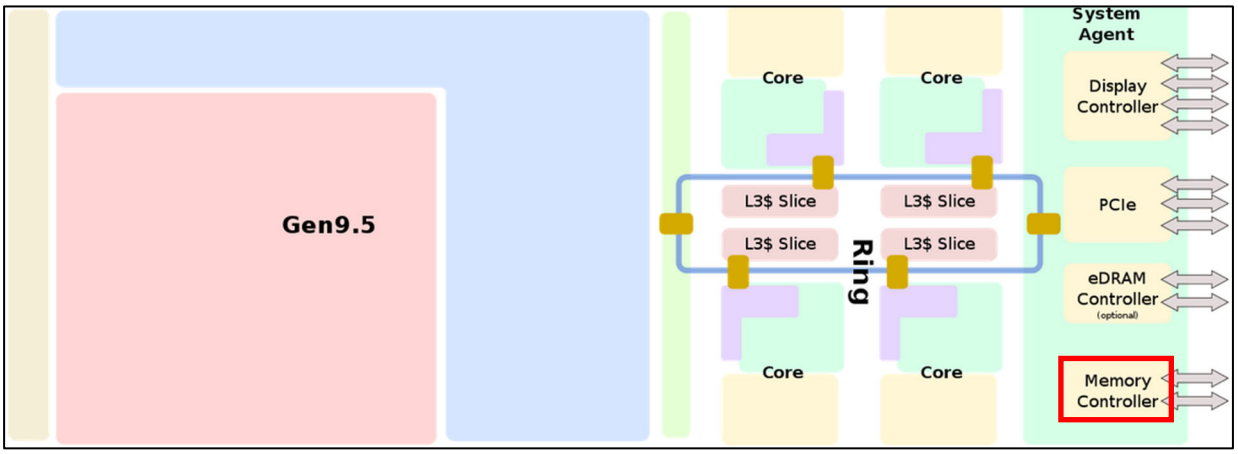
89. The Microsoft Surface Pro 6 contains an integrated central processing unit and interface controller in a single chip, i.e., an Intel Core i5-8250U processor. The Intel Core i5-8250U processor contains an interface controller on the same chip as the CPU and supports up to 12 lanes of PCIe 3.0. Because the Intel Core i5-8250U processor supports on-chip PCIe, it necessarily contains one or more logic blocks to implement the PCIe functionality, i.e., a PCIe controller and related circuitry found in the Physical Layer (PHY). This logic block (or plurality of logic blocks) is, and/or is part of, an “interface controller.” Paragraphs 60-63 above are

incorporated herein by reference.

90. The Intel Core i5-8250U processor contains a memory controller with I/O. The memory controller is located within the "System Agent" section of the chip, shown below.



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake.



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake (annotations added).

91. The Intel Core i5-8250U processor found in the Microsoft Surface Pro 6, which includes the integrated CPU and interface controller, has a first LVDS channel directly extending

from the interface controller.

92. The Microsoft Surface Pro 6 includes a 128GB, 256GB, 512GB, or 1TB solid-state drive (SSD). The SSD is an NVMe SSD that utilizes PCIe to connect to other system components, e.g., the CPU. The Microsoft Surface Pro 6 uses the Intel Core i5-8250U processor's on-chip PCIe I/O for directly connecting the NVMe SSD to the processor chip in a multi-lane PCIe 3.0 configuration. The Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes to connect the NVMe SSD to the processor chip, depending on the storage capacity of the device. Paragraphs 65-66 above are incorporated herein by reference.

93. This PCIe 3.0 interface has an LVDS channel directly extending from the interface controller that conveys address bits, data bits, and byte enable information of a PCI bus transaction in a serial bit stream.

94. This LVDS channel comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction. Each lane in a PCIe implementation contains a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second direction. Paragraph 68 above is incorporated herein by reference.

95. The data that is transmitted in a serial PCIe bus transaction by the LVDS channel includes address bits, data bits, and byte enable information bits of a PCI bus transaction. The transaction layer packets (TLPs) used for PCIe data transmission include both address and data bits as well as byte enable ("BE") information bits of a PCI bus transaction.

The Address Element

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

Header field of TLP contains:

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

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

The Data Element

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

The Complete PCI Express Reference, Intel Press (2003), at 220.

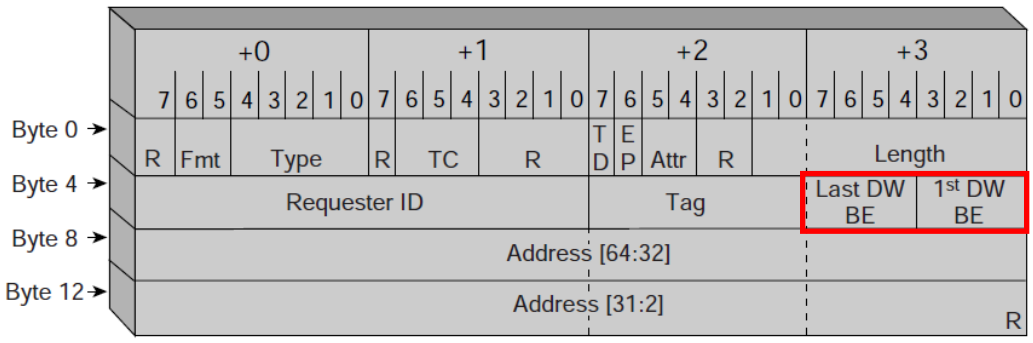


Figure 6.4 64-bit Address Memory Request Header

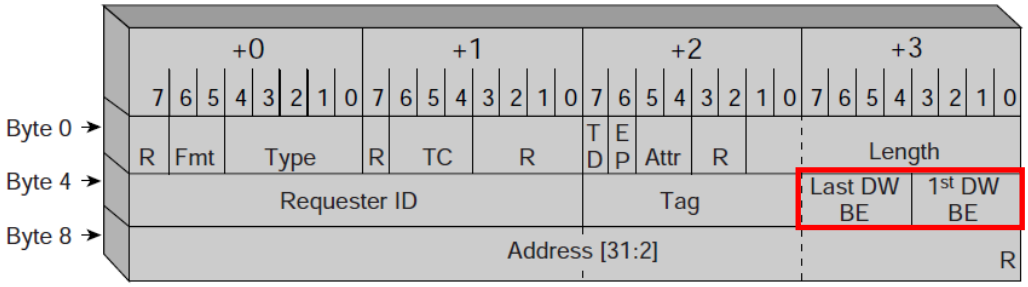


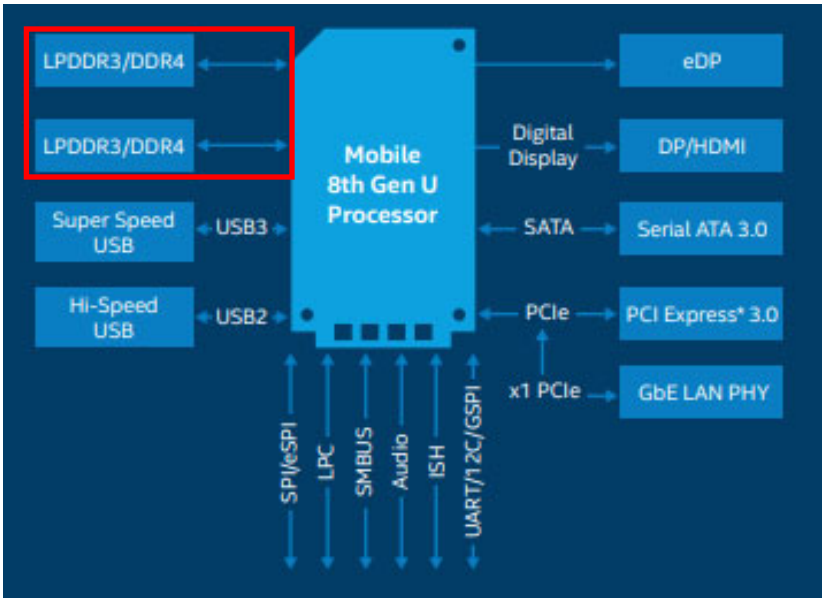
Figure 6.5 32-bit Address Memory Request Header

Introduction to PCI Express – A Hardware and Software Developers Guide, Intel Press (2003), at 100 (annotations added, indicating byte enable information bits).

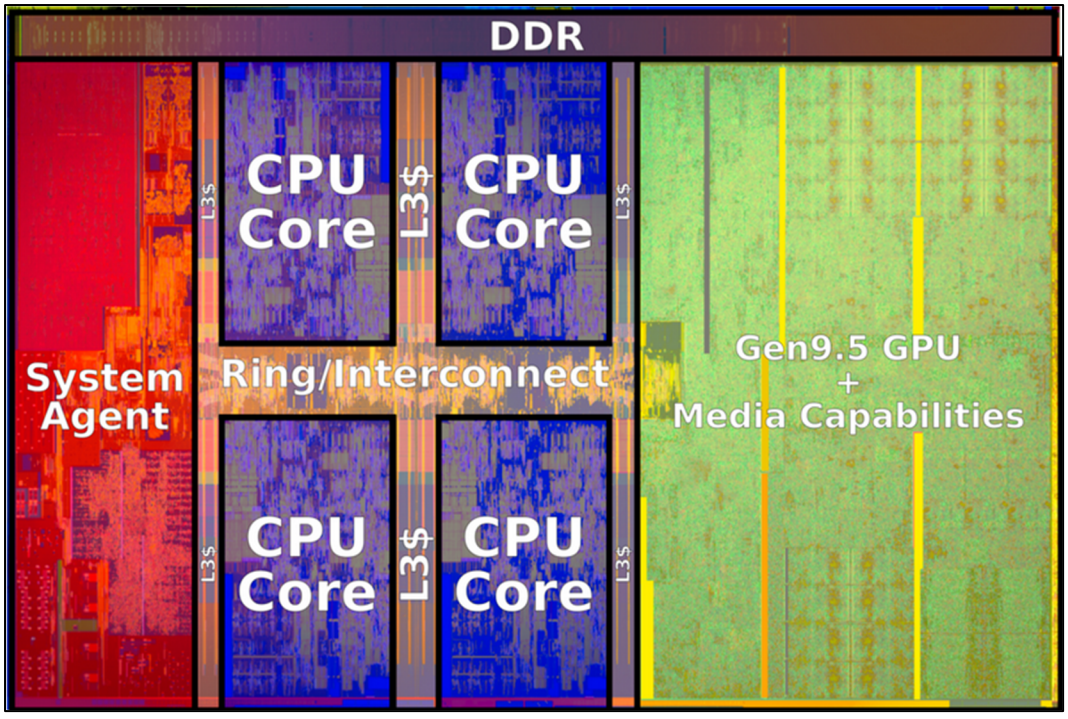
96. The Microsoft Surface Pro 6 contains a system memory, i.e., at least 8GB of RAM, which is directly coupled to the integrated central processing unit and interface controller of the Intel Core i5-8250U processor. The Intel Core i5-8250U processor contains a memory controller with I/O, to which the RAM is directly coupled.

Memory	8GB or 16GB RAM

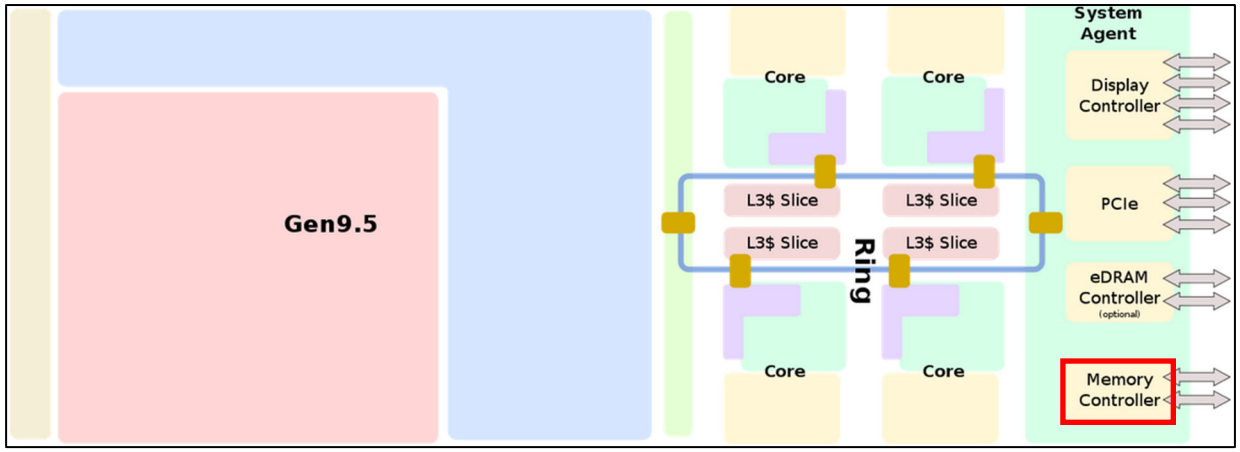
https://www.microsoft.com/en-us/surface/devices/surface-pro-6.



Product Brief – 8th Generation Intel Core Processors, Mobile U-Series: Peak Performance on the Go (available at https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/08/8th-gen-intel-core-product-brief.pdf), at 2 (annotations added).



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake.



https://en.wikichip.org/wiki/intel/microarchitectures/kaby_lake (annotations added).

97. Defendant had actual notice pursuant to 35 U.S.C. § 287(a) of the '750 patent and the infringement alleged herein as of on or around May 18, 2018, when it received ACQIS's notice letter. Paragraphs 41-44 above are incorporated herein by reference.

98. Defendant has indirectly infringed the '750 patent by actively inducing the direct infringement of others of the '750 patent, in the United States, the State of Texas, and the Western District of Texas.

99. Defendant has induced, through affirmative acts, its customers and other third parties, such as retailers and end users, to directly infringe the '750 patent by using, offering to sell, selling within the United States, and/or importing into the United States those Accused Instrumentalities, which infringe the '750 patent.

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

101. Defendant knew that its customers would sell infringing Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States, and Defendant specifically intended its customers to purchase those Accused Instrumentalities from Defendant and sell the Accused Instrumentalities in the United States or cause Accused Instrumentalities to be sold in the United States. Defendant's direct and indirect purchasers directly infringed the '750 patent by importing such Accused Instrumentalities into the United States, selling such Accused Instrumentalities in the United States, and using such Accused Instrumentalities in the United States.

102. Defendant further induced others' direct infringement of the '750 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users used the Accused Instrumentalities and directly infringed the '750 patent. Defendant had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendant and specifically intended that end users would perform such uses in the United States. Such infringing uses occurred upon operation of the Accused Instrumentalities in their normal, intended manner without any specific action of the end user other than turning on the product. That is, Defendant configured the Accused Instrumentalities in such a way as to induce infringement by end users upon any use of those Accused Instrumentalities. For example, on information and belief, Defendant instructed end users regarding the powering on and use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would convey address bits, data bits, and byte enable information bits of a PCI bus transaction between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol data. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-

usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

103. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '750 patent. As of at least May 18, 2018, Defendant knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

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

105. Defendant's acts of infringement as described above have been willful.

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

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

107. The allegations set forth in paragraphs 1 through 52 of this Complaint are incorporated by reference as though fully set forth herein.

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

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

110. Microsoft has infringed at least claim 14 of the '797 patent at least in the manner

described below. Plaintiff's allegations of infringement are not limited to claim 14, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

111. Paragraphs 113-122 describe the manner in which Microsoft has infringed claim 14 of the '797 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Microsoft Surface Pro 6 computer, and/or when importing into the United States and/or selling in the United States Accused Instrumentalities made abroad using the claimed process.

112. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Microsoft Surface Pro 6 computer, in particular with regard to the manner in which the Accused Instrumentalities utilize PCIe and/or USB 3.x functionality for connecting internal components and/or providing USB 3.x ports. Paragraphs 113-122 are thus illustrative of the manner in which Microsoft has infringed the claims of the '797 patent as to each of the Accused Instrumentalities.

113. The Microsoft Surface Pro 6 is a computer running the Windows 10 Home operating system. Paragraph 59 above is incorporated herein by reference.

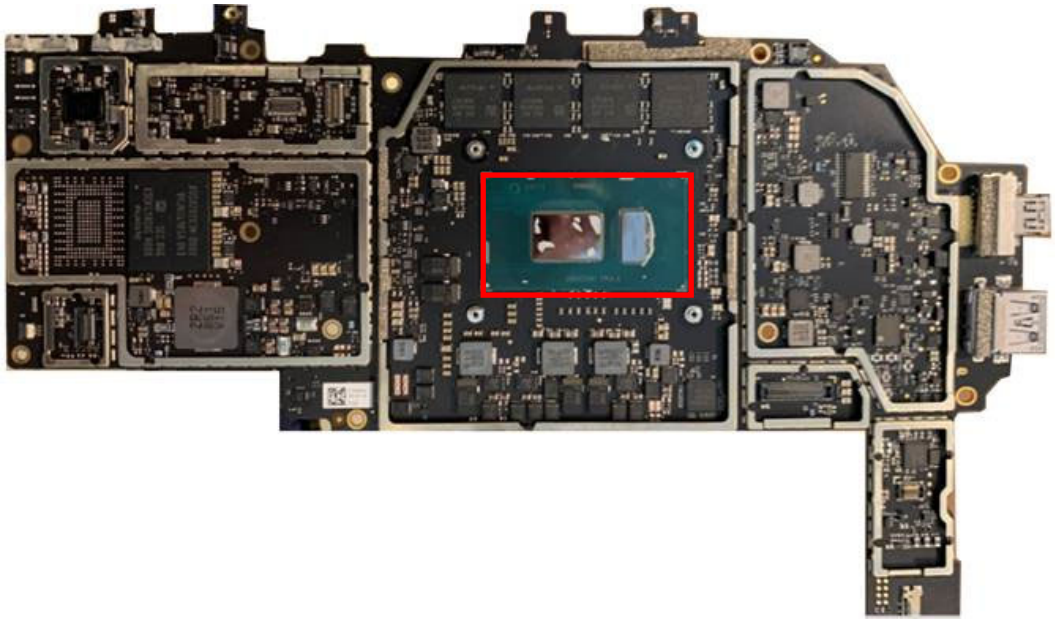
114. The Microsoft Surface Pro 6 contains a CPU mounted on a circuit board, i.e., an Intel Core i5-8250U or i7-8650U processor, both of which are part of the 8th generation Intel Core Processor product collection, formerly code named "Kaby Lake R" (or "Kaby Lake Refresh").

Processor	Intel® Core™ 8th Gen i5-8250U or i7-8650U[5]

https://www.microsoft.com/en-us/surface/devices/surface-pro-6.

Product Collection	8th Generation Intel® Core™ i5 Processors
Code Name	Products formerly Kaby Lake R
Vertical Segment	Mobile
Processor Number ?	i5-8250U

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.



Teardown photograph of the Microsoft Surface Pro 6 showing the CPU mounted on a standard motherboard (annotations added).

115. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has connected an LVDS channel directly to the CPU on the motherboard, the LVDS channel comprising two unidirectional, serial channels that transmit data in opposite directions. As discussed above, the Intel Core i5-8250U processor supports up to 12 lanes of PCIe 3.0. Paragraphs 60-63 above are incorporated herein by reference.

116. The Microsoft Surface Pro 6 includes a 128GB, 256GB, 512GB, or 1TB solid-state drive (SSD). The SSD is an NVMe SSD that utilizes PCIe to connect to other system components, e.g., the CPU. The Microsoft Surface Pro 6 uses the Intel Core i5-8250U

processor's on-chip PCIe I/O for directly connecting the NVMe SSD to the processor chip in a multi-lane PCIe 3.0 configuration. The Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes to connect the NVMe SSD to the processor chip, depending on the storage capacity of the device. Paragraphs 65-66 above are incorporated herein by reference.

117. The Intel Core i5-8250U processor contains one or more logic blocks to implement the PCIe functionality, i.e., a PCIe controller and related circuitry found in the Physical Layer (PHY). The PCIe controller has an associated PHY connected to it via the PIPE interface.

118. This PCIe 3.0 interface used in the Microsoft Surface Pro 6 for connecting the SSD to the CPU, as described above, has an LVDS channel directly connected to the CPU on the motherboard.

119. This PCIe 3.0 LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. Paragraph 68 above is incorporated herein by reference.

120. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has increased data throughput of the serial channels by providing each channel with multiple pairs of differential signal lines. The Microsoft Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes to connect the SSD to the processor chip, depending on the storage capacity of the device. Paragraphs 65-66 above are incorporated herein by reference.

121. At least in manufacturing and/or testing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has conveyed encoded address and data bits of a Peripheral Component Interconnect (PCI) bus transaction in serial form over the serial channels to preserve the PCI bus transaction. The data that is transmitted in a serial PCIe bus transaction by the LVDS channel includes encoded address and data bits of a PCI bus transaction. The

transaction layer packets (TLPs) used for PCIe data transmission include both address and data bits of a PCI bus transaction. Paragraph 69 above is incorporated herein by reference. The address and data bits are encoded via symbol encoding before being transmitted.

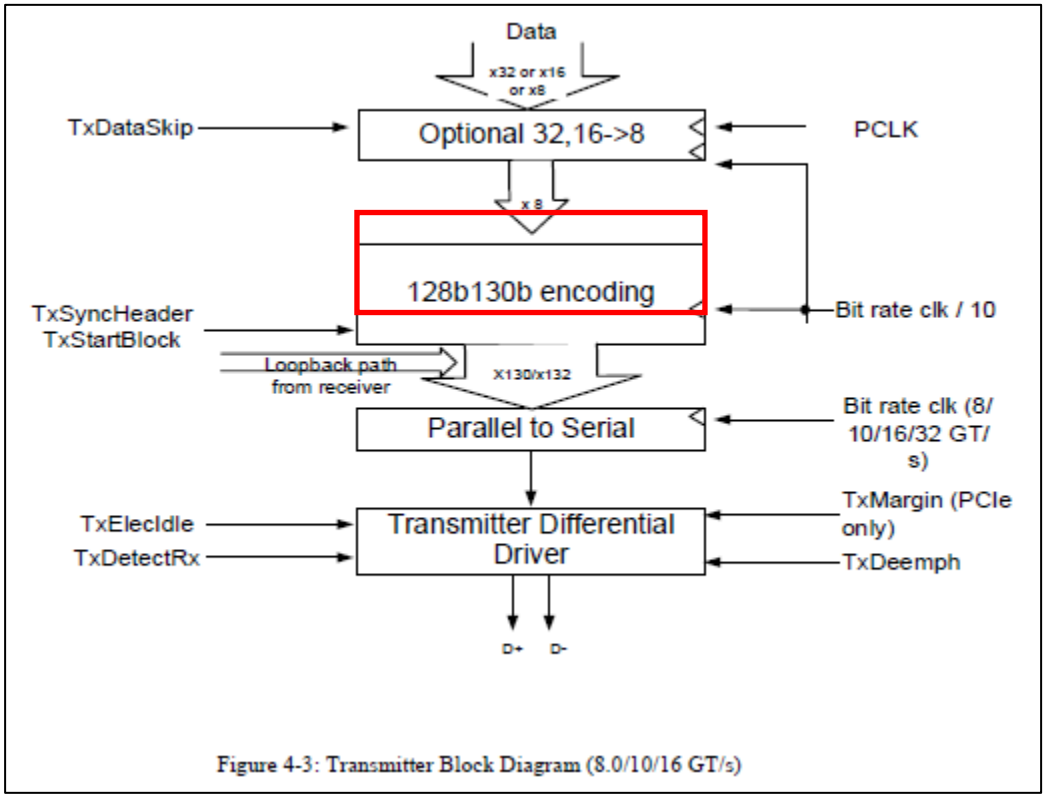


Figure 4-3: Transmitter Block Diagram (8.0/10/16 GT/s)

PHY Interface for the PCI Express, SATA, USB 3.1, DisplayPort, and Converged IO Architectures, Version 5.1 (2018) (available at https://www.intel.com/content/dam/www/public/us/en/documents /white-papers/phy-interface-pci-express-sata-usb30-architectures-3.1.pdf), at 29 (annotations added).

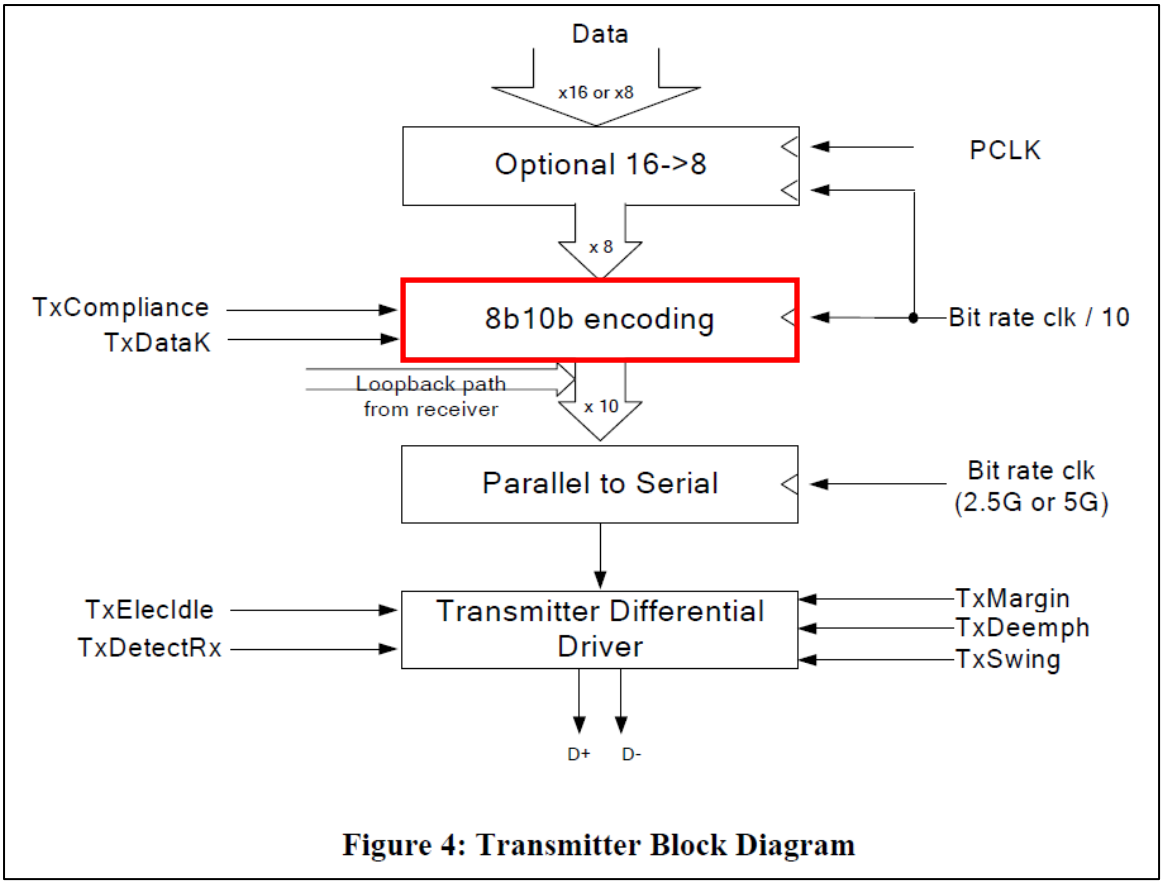


Figure 4: Transmitter Block Diagram

PHY Interface for the PCI Express Architecture, Version 2.00 (2007) (available at http://www.applistar.com/wp-content/uploads/apps/pipe2_00.pdf), at 10 (annotations added).

122. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has coupled the CPU to a peripheral device attached to the motherboard through the LVDS channel. As discussed above, the Microsoft Surface Pro 6 uses the on-chip PCIe 3.0 interface of the Intel Core i5-8250U processor and its LVDS channel to couple the CPU to a peripheral device, i.e., the NVMe SSD.

123. Defendant had actual notice pursuant to 35 U.S.C. § 287(a) of the '797 patent and the infringement alleged herein as of on or around May 18, 2018, when it received ACQIS's notice letter. Paragraphs 41-44 above are incorporated herein by reference.

124. Defendant has indirectly infringed the '797 patent by actively inducing the direct infringement of others of the '797 patent, in the United States, the State of Texas, and the

Western District of Texas.

125. Defendant has induced, through affirmative acts, its customers and other third parties to directly infringe the '797 patent. Defendant induced others' direct infringement of the '797 patent by selling Accused Instrumentalities to third-party customers who then directly infringed by performing the claimed methods in the United States using the Accused Instrumentalities and/or importing into the United States or selling in the United States Accused Instrumentalities made abroad using the claimed process.

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

127. Defendant knew that its customers would use the Accused Instrumentalities to perform the claimed methods in the United States, and Defendant specifically intended its customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendant's direct and indirect purchasers directly infringed the '797 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

128. Defendant further induced others' direct infringement of the '797 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringed the '797 patent. Defendant had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendant and specifically intended that end

users would perform such uses in the United States. For example, Defendant instructed end users regarding the use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would convey encoded address and data bits of a PCI bus transaction between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol data. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

129. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '797 patent. As of at least May 18, 2018, Defendant knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

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

131. Defendant's acts of infringement as described above have been willful.

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

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

133. The allegations set forth in paragraphs 1 through 52 of this Complaint are incorporated by reference as though fully set forth herein.

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

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

136. Microsoft has infringed at least claim 20 of the ’654 patent at least in the manner described below. Plaintiff’s allegations of infringement are not limited to claim 20, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

137. Paragraphs 139-150 describe the manner in which Microsoft has infringed claim 20 of the ’654 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Microsoft Surface Pro 6 computer, and/or when importing into the United States and/or selling in the United States Accused Instrumentalities made abroad using the claimed process.

138. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Microsoft Surface Pro 6 computer, in particular with regard to the manner in which the Accused Instrumentalities utilize PCIe and/or USB 3.x functionality for connecting internal components and/or providing USB 3.x ports. Paragraphs 139-150 are thus illustrative of the manner in which Microsoft has infringed the claims of the ’654 patent as to each of the Accused Instrumentalities.

139. Microsoft has practiced claim 20’s method of increasing external data communication speed of a computer at least when manufacturing and/or testing the Accused Instrumentalities in the United States and/or when importing into the United States and/or selling

in the United States products made abroad using the claimed process.

140. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has provided an integrated CPU and graphics controller on a printed circuit board of a computer. As discussed above in paragraphs 60-62, which are incorporated herein by reference, the Microsoft Surface Pro 6 contains an Intel Core i5-8250U processor. The Intel Core i5-8250U processor contains an integrated quad-core CPU and graphics controller, i.e., Intel UHD Graphics 620.

CPU Specifications	
Total Cores	4
Total Threads	8
Max Turbo Frequency	3.40 GHz
Intel® Turbo Boost Technology 2.0 Frequency‡	3.40 GHz
Processor Base Frequency	1.60 GHz
Cache	6 MB Intel® Smart Cache

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.

Processor Graphics ‡	Intel® UHD Graphics 620
Graphics Base Frequency	300 MHz
Graphics Max Dynamic Frequency	1.10 GHz
Graphics Video Max Memory	32 GB

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.

141. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has connected a first LVDS channel directly to the integrated CPU and

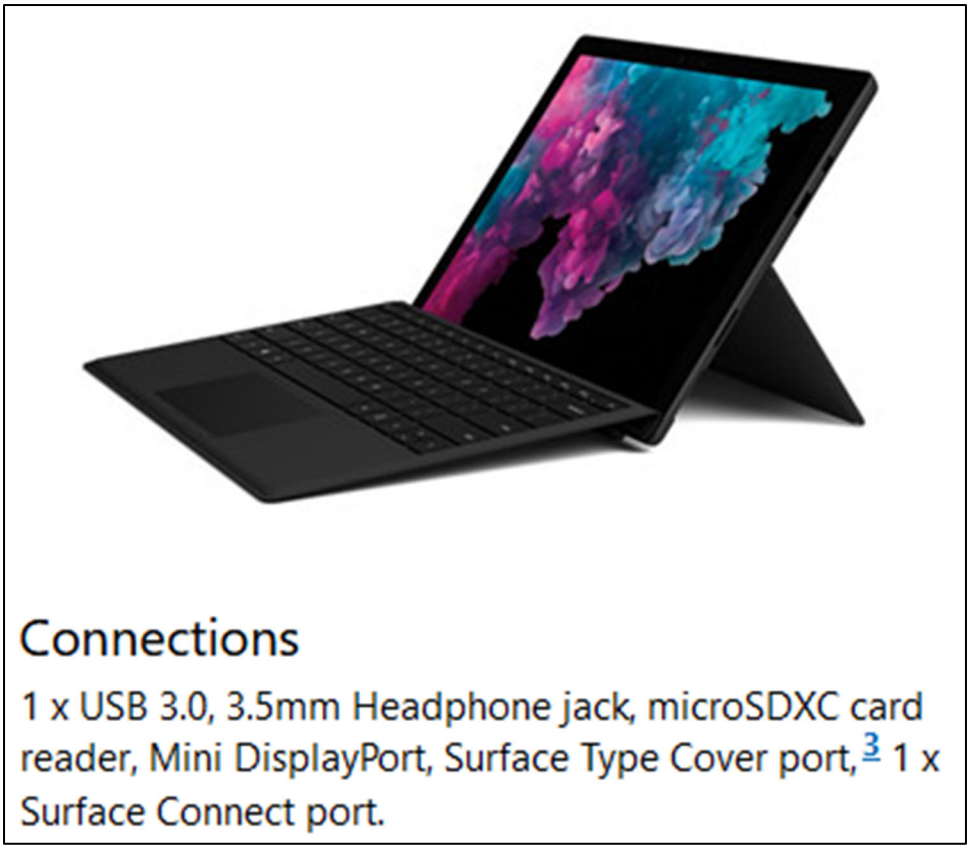
graphics controller, and the first LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. As discussed above, the Intel Core i5-8250U processor supports up to 12 lanes of PCIe 3.0. Paragraphs 60-63 above are incorporated herein by reference.

142. The Microsoft Surface Pro 6 includes a 128GB, 256GB, 512GB, or 1TB solid-state drive (SSD). The SSD is an NVMe SSD that utilizes PCIe to connect to other system components, e.g., the CPU. The Microsoft Surface Pro 6 uses the Intel Core i5-8250U processor's on-chip PCIe I/O for directly connecting the NVMe SSD to the processor chip in a multi-lane PCIe 3.0 configuration. The Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes to connect the NVMe SSD to the processor chip, depending on the storage capacity of the device. Paragraphs 65-66 above are incorporated herein by reference.

143. This PCIe 3.0 interface used in the Microsoft Surface Pro 6 for connecting the SSD to the CPU, as described above, has an LVDS channel directly connected to the integrated CPU and graphics controller.

144. This PCIe 3.0 LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. Paragraph 68 above is incorporated herein by reference.

145. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has provided a connector for the computer that connects to a console. The Microsoft Surface Pro 6 includes a connector that connects to a console, i.e., a USB 3.0 port, which can be used to connect to a console, e.g., a monitor, a TV, or a mobile device.



https://www.microsoft.com/en-us/surface/devices/surface-pro-6.

146. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has provided a second LVDS channel to couple to the console through the connector, i.e., the USB 3.0 port, the second LVDS channel comprising two unidirectional, serial channels that transmit data in opposite directions.

147. The Intel Core i5-8250U processor in the Microsoft Surface Pro 6 supports up to six USB 3.0 interfaces.

Universal Serial Bus 3.0	Integrated USB 3.0 support enhances performance with a design data rate of up to 5 gigabits per second (Gbps) with up to 6 USB 3.0 ports.
Universal Serial Bus 2.0	Hi-Speed USB 2.0 support with a design data rate of up to 480 megabits per second (Mbps) with up to 6 USB 2.0 ports in Y-series and 10 USB 2.0 ports in U-series.

Product Brief – 8th Generation Intel Core Processors, Mobile U-Series: Peak Performance on the Go (available at https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/08/8th-gen-intel-core-product-brief.pdf), at 4.

148. The USB 3.0 port in the Microsoft Surface Pro 6 utilizes one of these USB 3.0 interfaces. This USB 3.0 I/O has an LVDS channel that conveys Universal Serial Bus (USB) protocol data.

149. The USB 3.0 LVDS channel comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction. USB 3.x uses differential signaling and at least two unidirectional channels, allowing simultaneous bidirectional data flow. Each lane has four wires, i.e., one signal pair to transmit data in one direction, and another signal pair to transmit data in the opposite direction.

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

Universal Serial Bus 3.0 Specification, Rev. 1.0 (Nov. 12, 2008), at page 3-3 (annotations added).

150. At least in manufacturing and/or testing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has enabled Universal Serial Bus (USB) protocol data to be conveyed over the second LVDS channel. Specifically, the Microsoft Surface Pro 6 allows USB protocol data to be conveyed over the second LVDS channel coupled to the USB 3.0 connector, i.e., the USB 3.0 LVDS channel.

151. Defendant had actual notice pursuant to 35 U.S.C. § 287(a) of the '654 patent and the infringement alleged herein as of on or around May 18, 2018, when it received ACQIS's

notice letter. Paragraphs 41-44 above are incorporated herein by reference.

152. Defendant has indirectly infringed the ’654 patent by actively inducing the direct infringement of others of the ’654 patent, in the United States, the State of Texas, and the Western District of Texas.

153. Defendant has induced, through affirmative acts, its customers and other third parties to directly infringe the ’654 patent. Defendant induced others’ direct infringement of the ’654 patent by selling Accused Instrumentalities to third-party customers who then directly infringed by performing the claimed methods in the United States using the Accused Instrumentalities and/or importing into the United States or selling in the United States Accused Instrumentalities made abroad using the claimed process.

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

155. Defendant knew that its customers would use the Accused Instrumentalities to perform the claimed methods in the United States, and Defendant specifically intended its customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendant’s direct and indirect purchasers directly infringed the ’654 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

156. Defendant further induced others’ direct infringement of the ’654 patent by providing instruction and direction to end users, such as consumers, about how to use the

Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringed the '654 patent. Defendant had knowledge that end users would use Accused Instrumentalities in the manner directed by Defendant and specifically intended that end users would perform such uses in the United States. For example, Defendant instructed end users regarding the use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would convey encoded address and data bits of a PCI bus transaction between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol data. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

157. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '654 patent. As of at least May 18, 2018, Defendant knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

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

159. Defendant's acts of infringement as described above have been willful.

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

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

161. The allegations set forth in paragraphs 1 through 52 of this Complaint are incorporated by reference as though fully set forth herein.

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

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

164. Microsoft has infringed at least claim 35 of the '140 patent at least in the manner described below. Plaintiff's allegations of infringement are not limited to claim 35, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

165. Paragraphs 167-180 describe the manner in which Microsoft has infringed claim 35 of the '140 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Microsoft Surface Pro 6 computer, and/or when importing into the United States and/or selling in the United States Accused Instrumentalities made abroad using the claimed process.

166. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Microsoft Surface Pro 6 computer, in particular with regard to the manner in which the Accused Instrumentalities utilize PCIe and/or USB 3.x functionality for connecting internal components and/or providing USB 3.x ports. Paragraphs 167-180 are thus illustrative of the manner in which Microsoft has infringed the claims of the '140 patent as to each of the Accused Instrumentalities.

167. Microsoft has practiced claim 35's method of improving performance of a computer at least when manufacturing the Accused Instrumentalities in the United States and/or when importing into the United States and/or selling in the United States products made abroad using the claimed process.

168. The Microsoft Surface Pro 6 is a computer running the Windows 10 Home operating system. Paragraph 59 above is incorporated herein by reference.

169. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has obtained an integrated Central Processing Unit (CPU) and graphics controller in a single chip. As discussed above in paragraphs 60-62 and 140, which are incorporated herein by reference, the Microsoft Surface Pro 6 contains an Intel Core i5-8250U processor. The Intel Core i5-8250U processor contains an integrated quad-core CPU and graphics controller, i.e., Intel UHD Graphics 620, in a single chip.

170. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has connected a first Low Voltage Differential Signal (LVDS) channel directly to the integrated CPU and graphics controller, and the first LVDS channel comprises two unidirectional, serial bit channels that transmit data in opposite directions. As discussed above, the Intel Core i5-8250U processor supports up to 12 lanes of PCIe 3.0. Paragraphs 60-63 above are incorporated herein by reference.

171. The Microsoft Surface Pro 6 includes a 128GB, 256GB, 512GB, or 1TB solid-state drive (SSD). The SSD is an NVMe SSD that utilizes PCIe to connect to other system components, e.g., the CPU. The Microsoft Surface Pro 6 uses the Intel Core i5-8250U processor's on-chip PCIe I/O for directly connecting the NVMe SSD to the processor chip in a multi-lane PCIe 3.0 configuration. The Surface Pro 6 uses either 2 or 4 of the 12 PCIe 3.0 lanes

to connect the NVMe SSD to the processor chip, depending on the storage capacity of the device. Paragraphs 65-66 above are incorporated herein by reference.

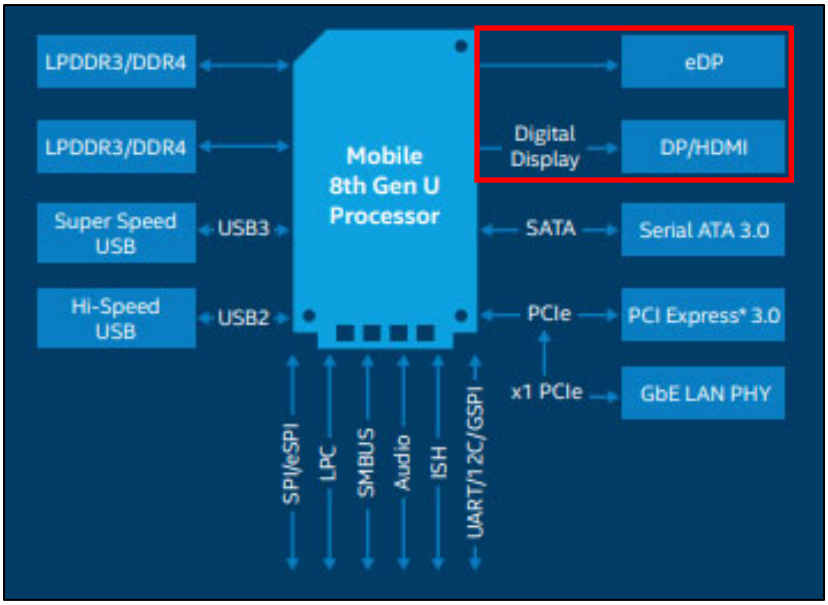
172. This PCIe 3.0 interface used in the Microsoft Surface Pro 6 for connecting the SSD to the CPU, as described above, has an LVDS channel directly connected to the integrated CPU and graphics controller.

173. This PCIe 3.0 LVDS channel comprises two unidirectional, serial bit channels that transmit data in opposite directions. Paragraph 68 above is incorporated herein by reference.

174. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has connected a differential signal channel directly to the integrated CPU and graphics controller to output video data. The Intel Core i5-8250U processor in the Microsoft Surface Pro 6 is connected directly to one or more differential signal channels and is capable of outputting video data through the differential signal channel(s) via Embedded DisplayPort (eDP) and DisplayPort.

Processor Graphics ‡	Intel® UHD Graphics 620
Graphics Base Frequency	300 MHz
Graphics Max Dynamic Frequency	1.10 GHz
Graphics Video Max Memory	32 GB
Graphics Output	eDP/DP/HDMI/DVI

https://ark.intel.com/content/www/us/en/ark/products/124967/intel-core-i58250u-processor-6m-cache-up-to-3-40-ghz.html.



Product Brief – 8th Generation Intel Core Processors, Mobile U-Series: Peak Performance on the Go (available at https://newsroom.intel.com/newsroom/wp-content/uploads/sites/11/2017/08/8th-gen-intel-core-product-brief.pdf), at 2 (annotations added).

175. The eDP channel uses differential signaling in, e.g., the main link.

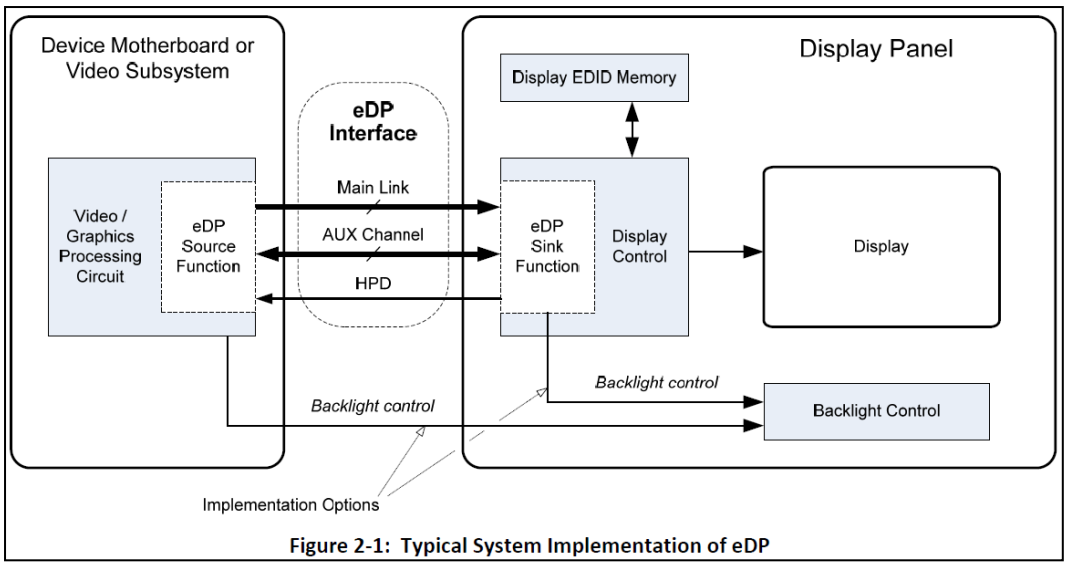


Figure 2-1: Typical System Implementation of eDP

VESA Embedded DisplayPort Standard, Ver. 1.2 (May 5, 2010), at 14.

Main Link	High-speed, unidirectional data channel within the DisplayPort interface used for channel data transport from DisplayPort Source to DisplayPort Sink. Used to transport video and other stream data. Can also transport audio. The Main Link can consist of one, two, or four lanes; each lane is a differential signal pair. One of three bit rates can be used: 5.4Gb/s per lane (referred to as "High Bit Rate 2", and not recommended by this standard), 2.7Gb/s per lane (referred to as "High Bit Rate") or 1.62Gb/s per lane (referred to as "Reduced Bit Rate").

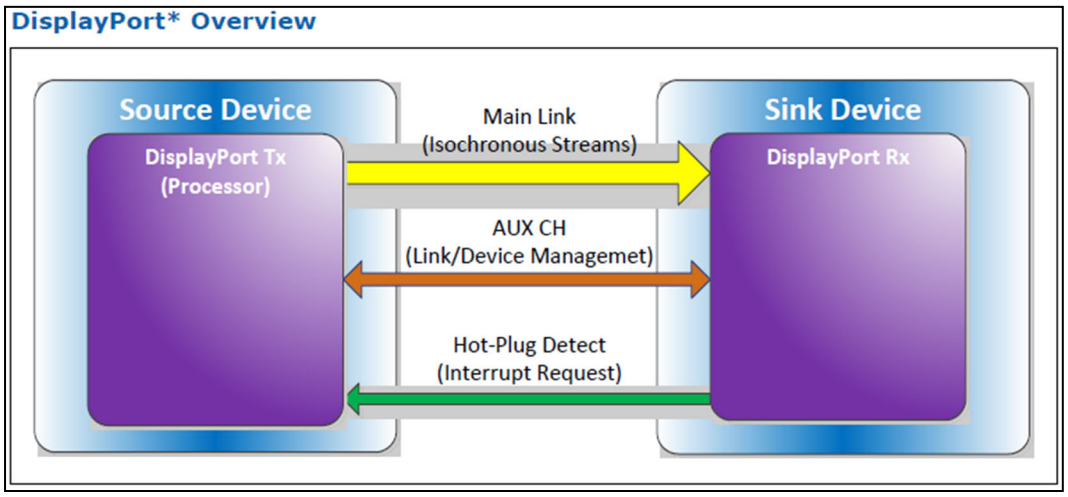
Id. at 12 (annotations added).

176. The Intel Core i5-8250U processor in the Microsoft Surface Pro 6 also directly outputs video data via an additional differential signal channel, i.e., DisplayPort.

Connections	1 x full-size USB 3.0 3.5 mm headphone jack Mini DisplayPort 1 x Surface Connect port Surface Type Cover port[3] MicroSDXC card reader Compatible with Surface Dial[*]

https://www.microsoft.com/en-us/surface/devices/surface-pro-6 (annotations added).

177. The DisplayPort channel uses differential signaling in, e.g., the main link.



8th and 9th Generation Intel® Core™ Processor Families Datasheet, Volume 1 of 2 (available at https://www.intel.com/content/www/us/en/products/docs/processors/core/8th-gen-core-family-datasheet-vol-1.html), at 46.

DisplayPort*

The DisplayPort* is a digital communication interface that uses differential signaling to achieve a high-bandwidth bus interface designed to support connections between PCs and monitors, projectors, and TV displays.

A DisplayPort* consists of a Main Link, Auxiliary channel, and a Hot-Plug Detect signal. The Main Link is a unidirectional, high-bandwidth, and low-latency channel used for transport of isochronous data streams such as uncompressed video and audio. The

> Auxiliary Channel (AUX CH) is a half-duplex bidirectional channel used for link management and device control. The Hot-Plug Detect (HPD) signal serves as an interrupt request for the sink device.

Id. at 45-46.

178. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has provided a connector, i.e., a USB 3.0 port, for the computer for connection to an external peripheral. Paragraphs 145-148 above are incorporated herein by reference.

179. At least in manufacturing the Accused Instrumentalities, including the Microsoft Surface Pro 6, Microsoft has provided a second LVDS channel to couple to the connector, the second LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions. The Intel Core i5-8250U processor in the Microsoft Surface Pro 6 supports up to six USB 3.0 interfaces, and the USB 3.0 port in the Microsoft Surface Pro 6 utilizes one of these USB 3.0 interfaces. This USB 3.0 I/O has an LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions. Paragraphs 145-148 are incorporated herein by reference.

180. The USB 3.0 LVDS channel comprises two unidirectional, serial bit channels that transmit data in opposite directions. USB 3.x uses differential signaling and at least two unidirectional channels, allowing simultaneous bidirectional data flow. Each lane has four wires, i.e., one signal pair to transmit data in one direction, and another signal pair to transmit data in the opposite direction. Paragraph 149 is incorporated herein by reference.

181. Defendant had actual notice pursuant to 35 U.S.C. § 287(a) of the ’140 patent and the infringement alleged herein as of on or around May 18, 2018, when it received ACQIS’s notice letter. Paragraphs 41-44 above are incorporated herein by reference.

182. Defendant has indirectly infringed the ’140 patent by actively inducing the direct

infringement of others of the '140 patent, in the United States, the State of Texas, and the Western District of Texas.

183. Defendant has induced, through affirmative acts, its customers and other third parties to directly infringe the '140 patent. Defendant induced others' direct infringement of the '140 patent by selling Accused Instrumentalities to third-party customers who then directly infringed by performing the claimed methods in the United States using the Accused Instrumentalities and/or importing into the United States or selling in the United States Accused Instrumentalities made abroad using the claimed process.

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

185. Defendant knew that its customers would use the Accused Instrumentalities to perform the claimed methods in the United States, and Defendant specifically intended its customers to use those Accused Instrumentalities to perform the claimed methods in the United States. Defendant's direct and indirect purchasers directly infringed the '140 patent by using the Accused Instrumentalities to perform the claimed methods in the United States.

186. Defendant further induced others' direct infringement of the '140 patent by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities to perform the claimed methods in the United States, such that those end users directly infringed the '140 patent. Defendant had knowledge that end users would use

Accused Instrumentalities in the manner directed by Defendant and specifically intended that end users would perform such uses in the United States. For example, Defendant instructed end users regarding the use of the Microsoft Surface Pro 6 such that upon any use, the Surface Pro 6 would transmit data between the CPU and the PCIe 3.0-connected SSD. Defendant also instructed end users regarding the use of the USB 3.0 connector of the Microsoft Surface Pro 6 to convey USB protocol information. *See, e.g.*, https://support.microsoft.com/en-us/surface/boot-surface-from-a-usb-device-fe7a7323-8d1d-823d-be17-9aec89c4f9f5.

187. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '140 patent. As of at least May 18, 2018, Defendant knew that the induced conduct would constitute infringement—and intended that infringement at the time of committing the aforementioned affirmative acts, such that the acts and conduct have been committed with the specific intent to induce infringement—or deliberately avoided learning of the infringing circumstances at the time of committing these acts so as to be willfully blind to the infringement that was induced.

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

189. Defendant's acts of infringement as described above have been willful.

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

JURY TRIAL DEMANDED

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

PRAYER FOR RELIEF

WHEREFORE, Plaintiff ACQIS respectfully requests that this Court:

A. Enter judgment that Defendant has infringed one or more claims of each of the ACQIS Patents, and that such infringement was willful;

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

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

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

Dated: April 14, 2022

Respectfully submitted,

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

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