IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ACQIS LLC, a Texas limited liability company, Plaintiff, v. ACER INCORPORATED, a Taiwan corporation, Defendant.	Civil Action No. 2:21-cv-275 **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

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

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

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

THE PARTIES

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

6. Defendant Acer Inc. is a corporation organized and existing under the laws of Taiwan that lists its global headquarters as 8F, No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan.

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, 422 W TX-281 Loop, Suite 100, Longview, Texas 75605; Office Depot, 4329 Old Bullard Rd, Tyler, TX 75703; Staples, 2306 S Jefferson Ave, Mt. Pleasant, TX 75455; and Amazon.com.

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 and personal jurisdiction over the Defendant consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. On information and belief, Defendant has purposefully manufactured and/or distributed computer products that infringe the ACQIS Patents, or that were made abroad using patented processes claimed in the ACQIS Patents, through established distribution channels with the expectation that those products would be sold in the United States, 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 Acer computer products in the United States, the State of Texas, and this District; importing infringing Acer computer products and/or Acer computer products made abroad using ACQIS's patented processes into the United States for sale in the State of Texas and this District; and/or inducing others to commit acts of patent infringement in the United States, the State of Texas, and this District. Accordingly, Acer has established minimum contacts within the forum and purposefully availed itself of the benefits of Texas, and the exercise of personal jurisdiction over Acer would not offend traditional notions of fair play and substantial justice. In addition, or in the alternative, this Court has personal jurisdiction over Acer pursuant to Federal Rule of Civil Procedure 4(k)(2).

11. Venue is proper in this District pursuant to 28 U.S.C. § 1391(c)(3) because

Defendant does not reside in the United States and thus may be sued in any judicial district in the United States.

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 Acer to offer superior computers products, including faster, more efficient, and more reliable computers.

II. The Inventor

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

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

23. 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).

24. 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.

25. 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.

26. 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.

27. 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.

28. 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. Acer

29. Acer is a global leader in the personal and business computer market. Acer makes and sells a variety of laptop computers, desktop computers, and servers. Acer has imported infringing laptop computers, desktop computers, and servers, as well as laptop

computers, desktop computers, and servers made using infringing processes, into the United States through an established distribution channel with the expectation that those products would be sold in the United States, the State of Texas, and this District.

30. On information and belief, Acer's sales of laptop computers, desktop computers, and servers generated approximately $10 billion in global revenue in 2020, a significant portion of which is attributable to sales in the United States.

IV. Acer's Direct Infringement and Accused Instrumentalities

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

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

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

34. 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 14, 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.

35. 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 Acer

36. 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 14, 2018, when ACQIS sent a notice letter to Acer. In that letter, ACQIS identified all of the ACQIS Patents and described the applicability of the ACQIS Patents to PCI Express, USB 3.0, and other technologies. ACQIS's letter also identified Acer's notebook computers, desktop computers, and servers, including Chromebook, Aspire, Nitro, Predator, Swift,

and Icon series PCs. All of these product lines are included in the Accused Instrumentalities.

37. ACQIS's May 14, 2018 letter invited Acer 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.

38. Acer acknowledged receipt of the letter in a May 21, 2018 email and indicated that it would review ACQIS's proposal and get back to ACQIS. After that date, Acer continued to make and sell the products and/or product lines identified in ACQIS's letter. Upon receiving actual notice, Acer chose not to cease infringement or offer to compensate ACQIS in exchange for a license to the ACQIS Patents. At the very least, Acer 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.

39. Acer's choice to continue making and selling infringing Accused Instrumentalities in view of the infringement allegations set forth in ACQIS's May 14, 2018 notice letter is deliberate and egregious. Defendant has thus willfully infringed the ACQIS Patents since at least May 14, 2018.

VI. Acer's Indirect Infringement

40. 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.

41. 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.

42. 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.

43. 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.

44. Defendant further induce others' direct infringement of the ACQIS Patents by providing instruction and direction to end users, such as consumers, about how to use the Accused Instrumentalities such that those end users 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.

45. 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.

46. 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. Acer had worldwide sales of approximately $9.86 billion in 2020.

47. 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

48. The allegations set forth in paragraphs 1 through 47 of this Complaint are incorporated by reference as though fully set forth herein.

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

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

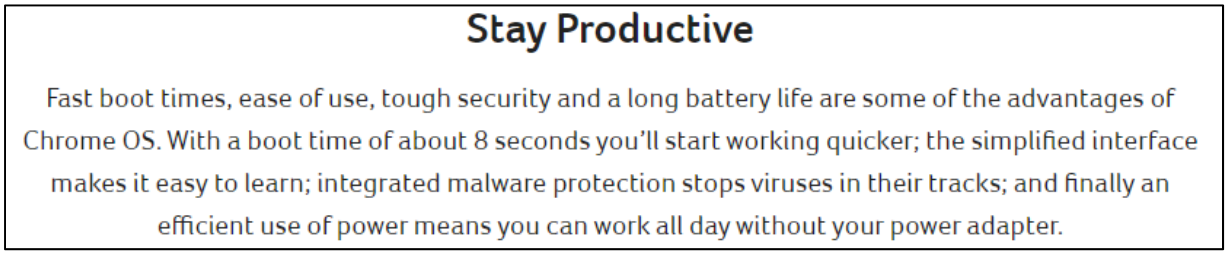
51. The Accused Instrumentalities directly infringed at least claim 36 of the '768 patent at least in the manner described below. Plaintiff's allegations of infringement are not limited to claim 36, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

52. Paragraphs 54-64 describe the manner in which the Accused Instrumentalities infringed claim 36 of the '768 patent, by way of the exemplary Acer Chromebook 311 notebook computer.

53. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Acer Chromebook 311 notebook computer, in particular with regard to the manner in which the Accused Instrumentalities include Intel processors and utilize PCIe and/or USB 3.x functionality. Paragraphs 54-64 are thus illustrative of the manner in which each of the Accused Instrumentalities infringed.

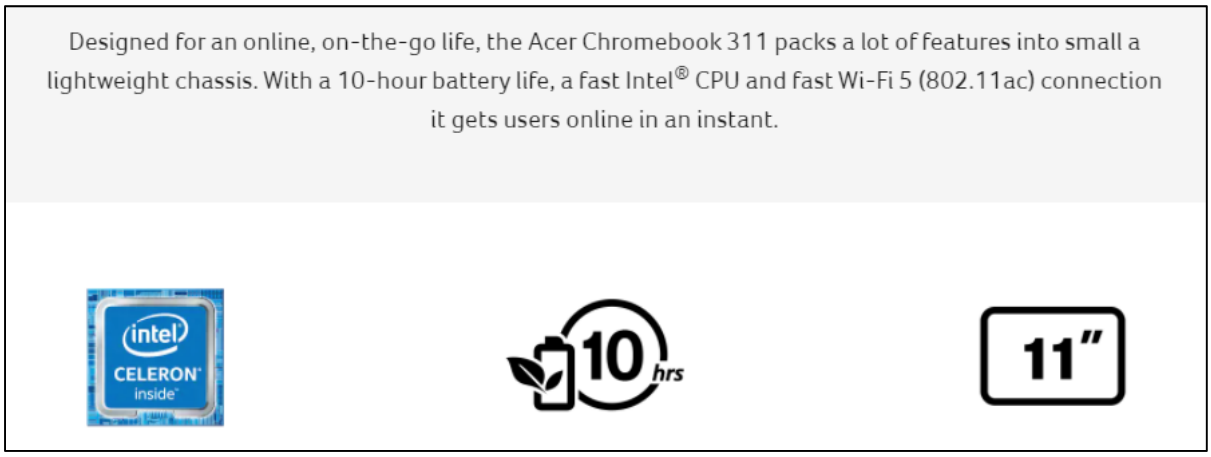
54. The Acer Chromebook 311 notebook computer is a computer that runs the Chrome OS operating system.

https://www.acer.com/ac/en/US/content/series/acerchromebook311.

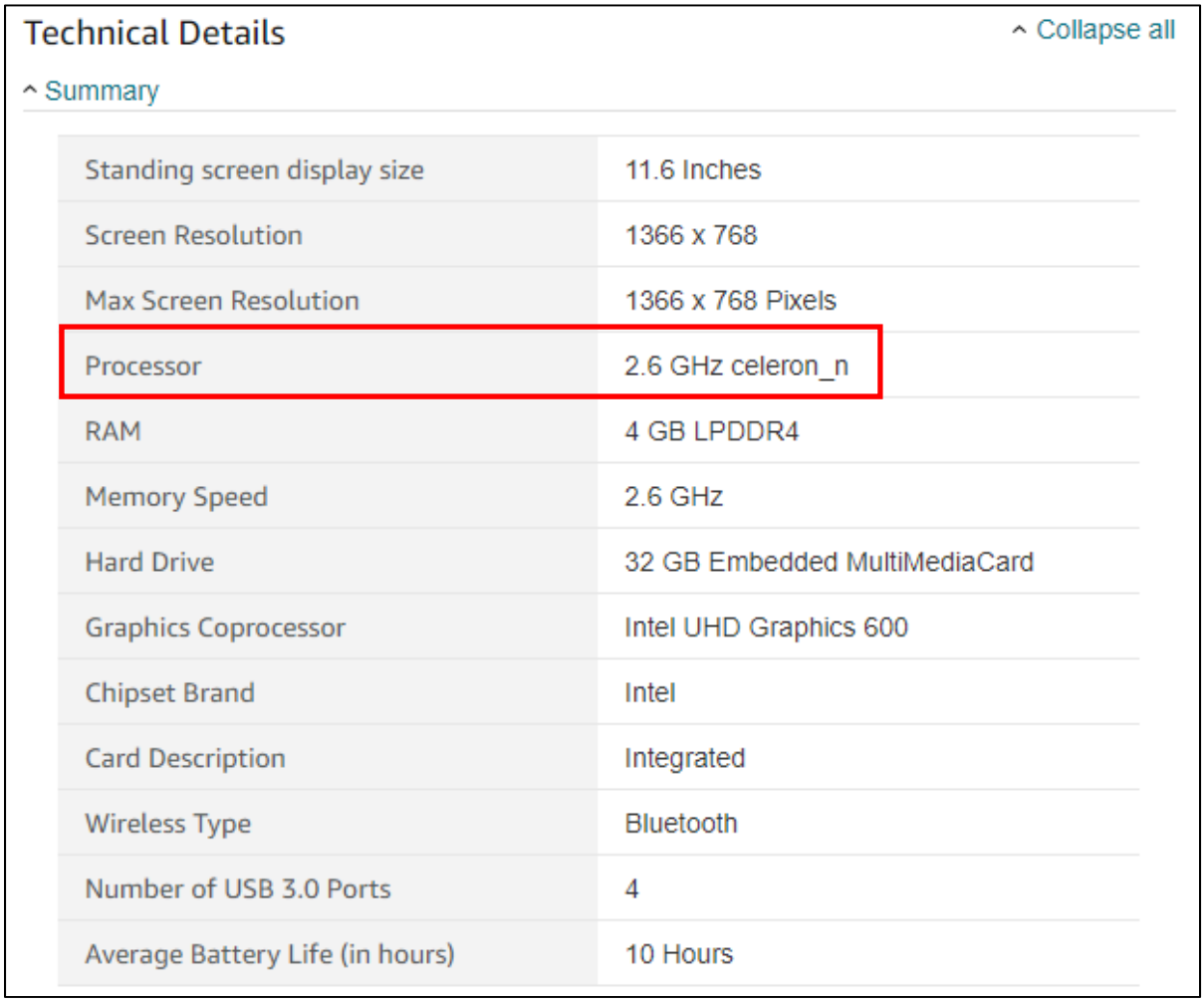


https://www.acer.com/ac/en/US/content/series/acerchromebook311.

55. The Acer Chromebook 311 contains an integrated central processing unit and graphics subsystem in a single chip, i.e., the Intel Celeron N4000 processor.



https://www.acer.com/ac/en/US/content/series/acerchromebook311.



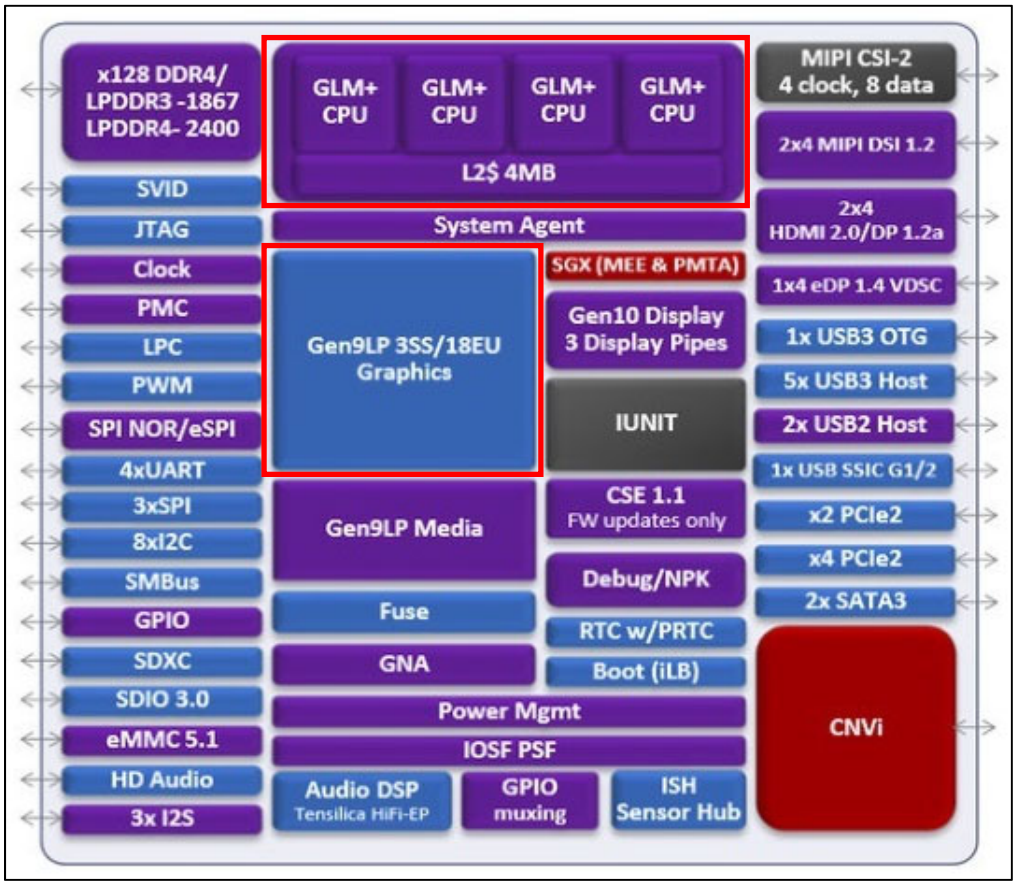
Technical Details — Collapse all

Summary

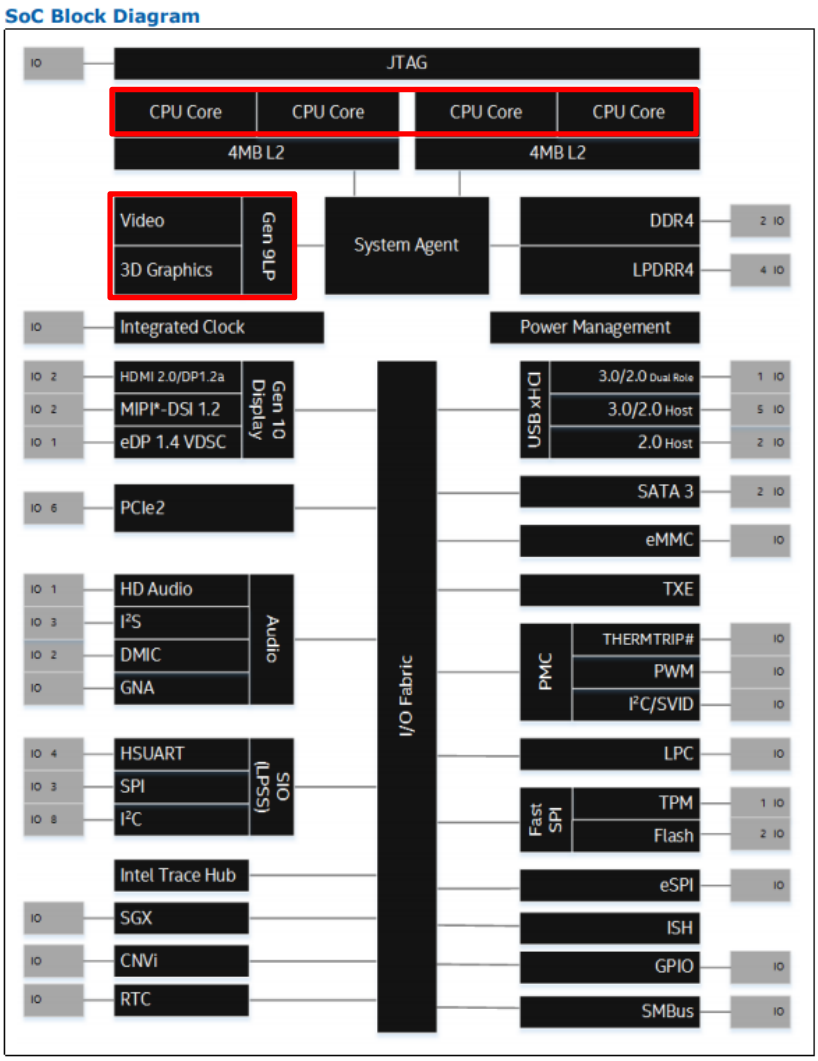
Standing screen display size	11.6 Inches
Screen Resolution	1366 x 768
Max Screen Resolution	1366 x 768 Pixels
Processor	2.6 GHz celeron_n
RAM	4 GB LPDDR4
Memory Speed	2.6 GHz
Hard Drive	32 GB Embedded MultiMediaCard
Graphics Coprocessor	Intel UHD Graphics 600
Chipset Brand	Intel
Card Description	Integrated
Wireless Type	Bluetooth
Number of USB 3.0 Ports	4
Average Battery Life (in hours)	10 Hours

https://www.amazon.com/Acer-Chromebook-CB311-9H-C12A-Celeron-Bluetooth/dp/B07XJ7PXT4 (emphasis added).

56. The Intel Celeron N4000 processor is an SoC-style processor that contains an integrated central processing unit and graphics subsystem in a single chip.



https://www.pcmag.com/news/intels-gemini-lake-chips-offer-15-percent-performance-boost (emphases added).

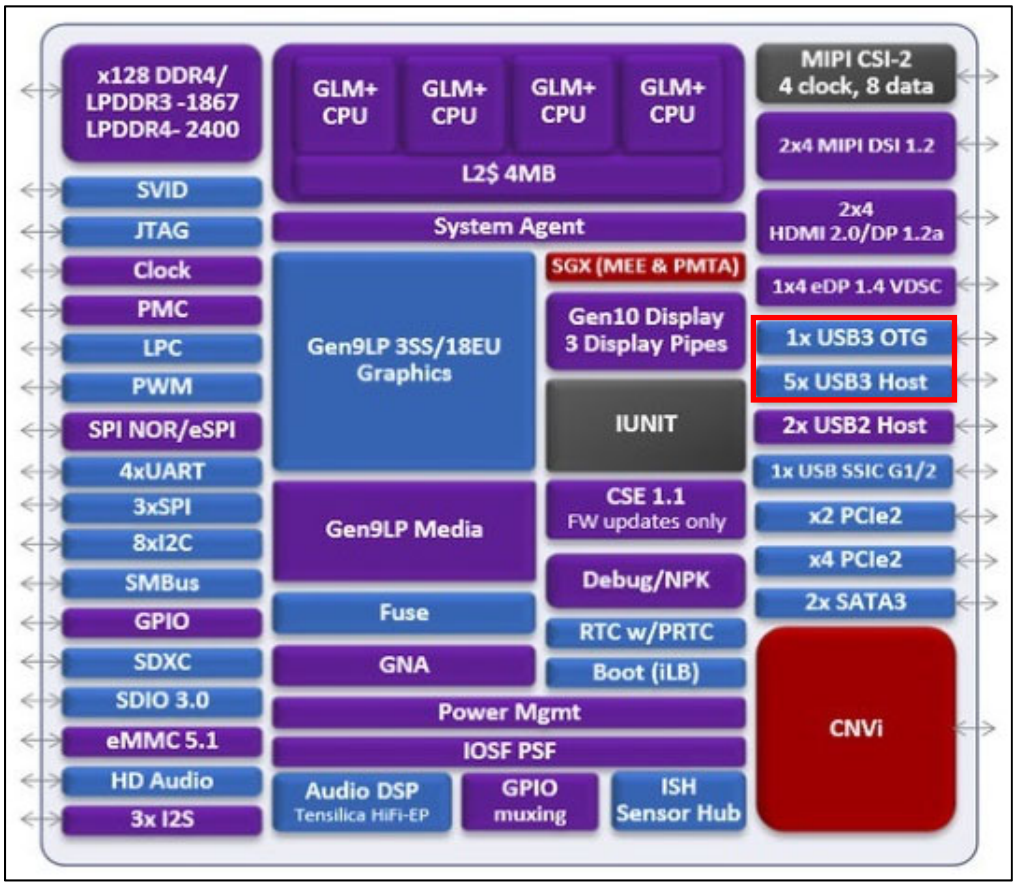


Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 15 (emphases added).

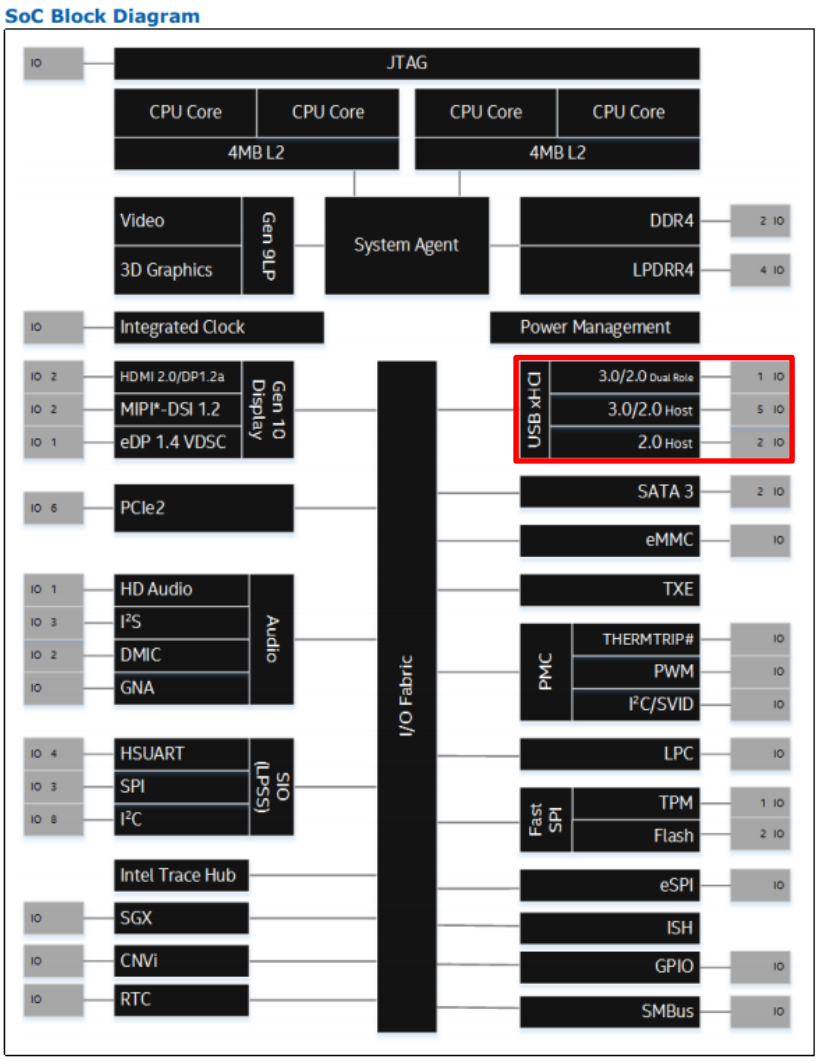
57. The Acer Chromebook 311 comprises a first LVDS channel directly extending from the integrated central processing unit and graphics subsystem of the Intel Celeron N4000 processor. The Intel Celeron N4000 processor in the Acer Chromebook 311 supports up to eight USB ports, as many as six of which can be USB 3.x.

I/O Specifications	
# of USB Ports	8
USB Revision	2.0/3.0

https://ark.intel.com/content/www/us/en/ark/products/128988/intel-celeron-processor-n4000-4m-cache-up-to-2-60-ghz.html.



https://www.pcmag.com/news/intels-gemini-lake-chips-offer-15-percent-performance-boost (emphasis added).



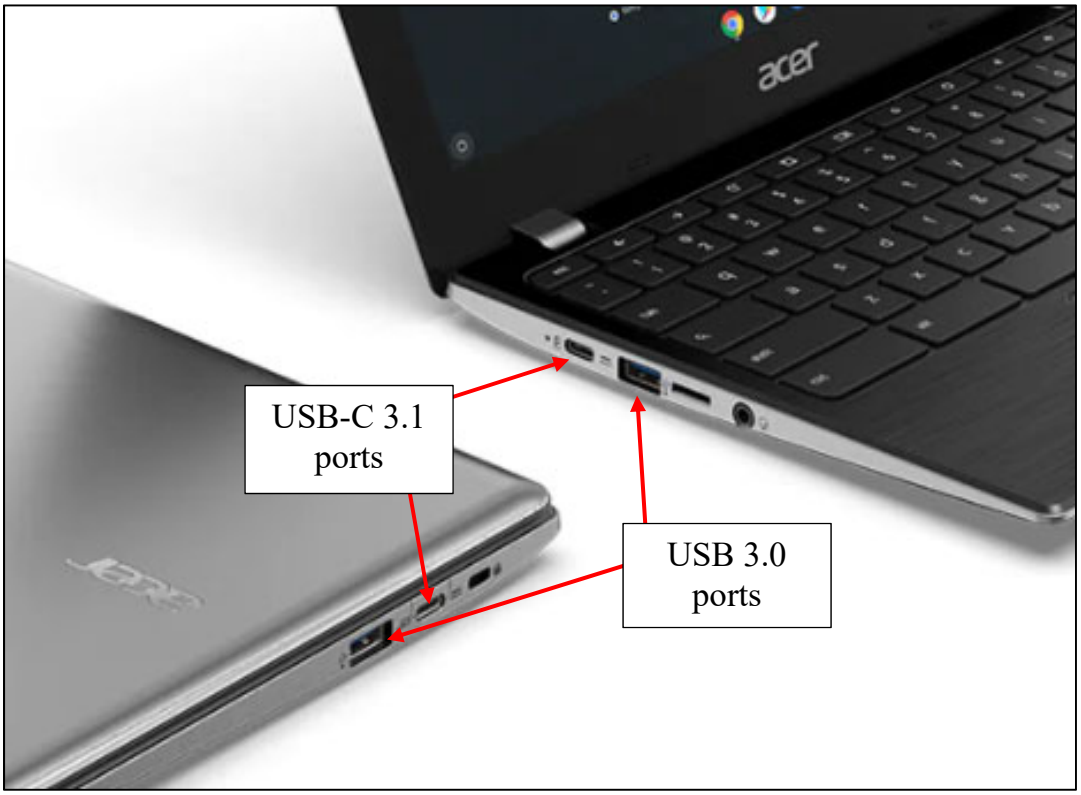
Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 15 (emphasis added).

58. The Acer Chromebook 311 utilizes several of these USB interfaces. The Acer Chromebook 311 contains two USB-C 3.1 ports and two USB 3.0 ports.

Flexible Connectivity

Two USB Type-C ports for ultra-quick data transfer, video streaming, and battery charging. The reversible USB 3.1 Type-C™ connector is the same at both ends and on both sides, so it's easy to attach. USB 3.1 is 10 times faster than USB 2.0. In addition to the two USB 3.1 Type-C ports, there are also two USB 3.0 Type A ports, and a microSD slot for extra

https://www.acer.com/ac/en/US/content/series/acerchromebook311.



https://www.acer.com/ac/en/US/content/series/acerchromebook311 (annotations added).

59. In the Intel Celeron N4000 processor in the Acer Chromebook 311, each of at least the two USB 3.1 Type-C I/O and the two USB 3.0 I/O has an LVDS channel that conveys data using a Universal Serial Bus (USB) protocol. These LVDS channels directly extend from an interface on the SoC, i.e., the single chip that contains the integrated central processing unit and graphics subsystem.

60. Each of the USB-C 3.1 and USB 3.0 LVDS channels comprises a first unidirectional, differential signal pair to convey data in a first direction and a second unidirectional, differential signal pair to convey data in a second, opposite direction.

3.1.4 USB 3.0 Architecture Summary

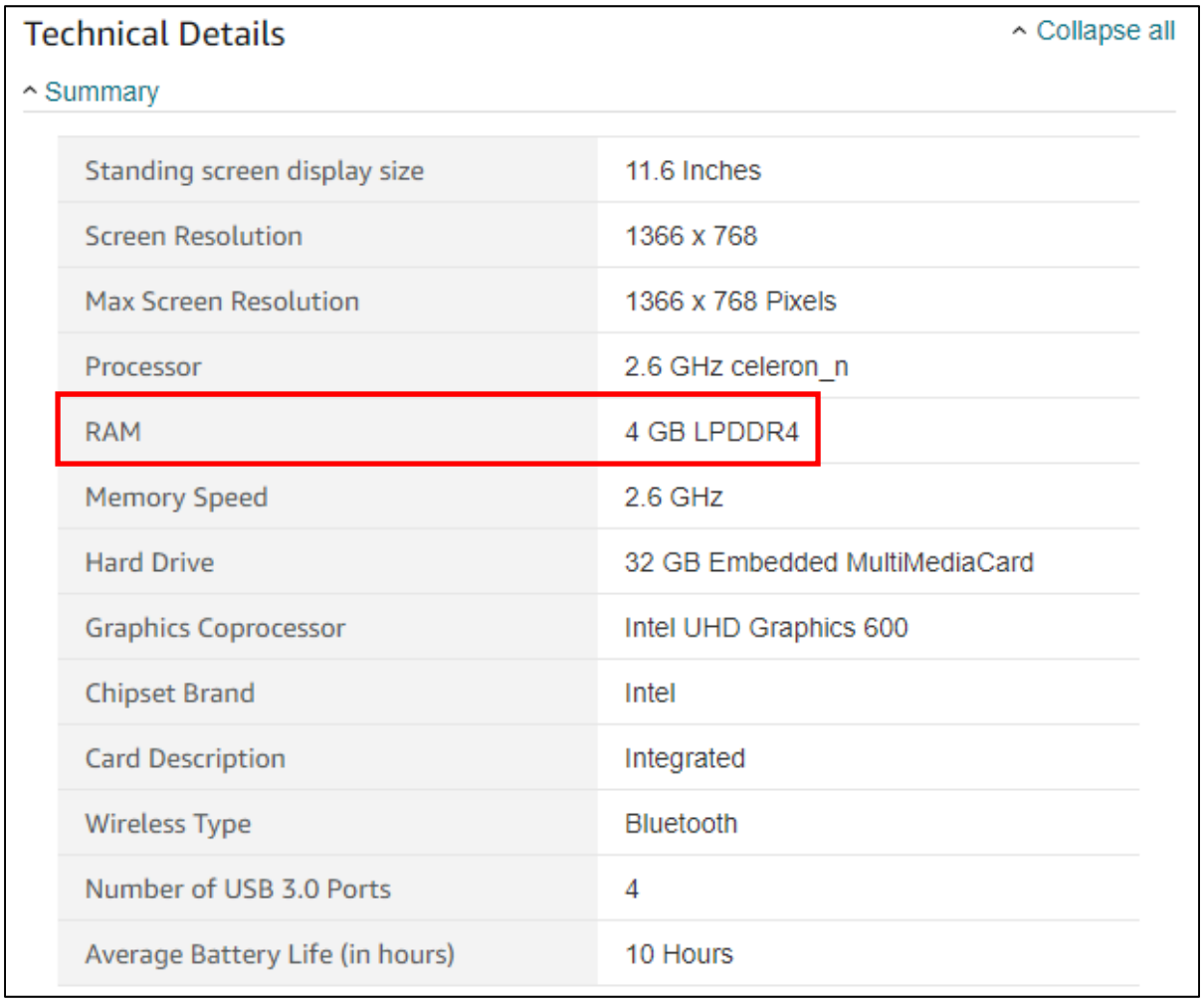
USB 3.0 is a dual-bus architecture that incorporates USB 2.0 and a SuperSpeed bus. Table 3-1 summarizes the key architectural differences between SuperSpeed USB and USB 2.0.

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 (emphasis added).

61. The Acer Chromebook 311 contains a system memory, i.e., 4 GB of LPDDR4 DRAM, directly coupled to the integrated central processing unit and graphics subsystem.



Technical Details

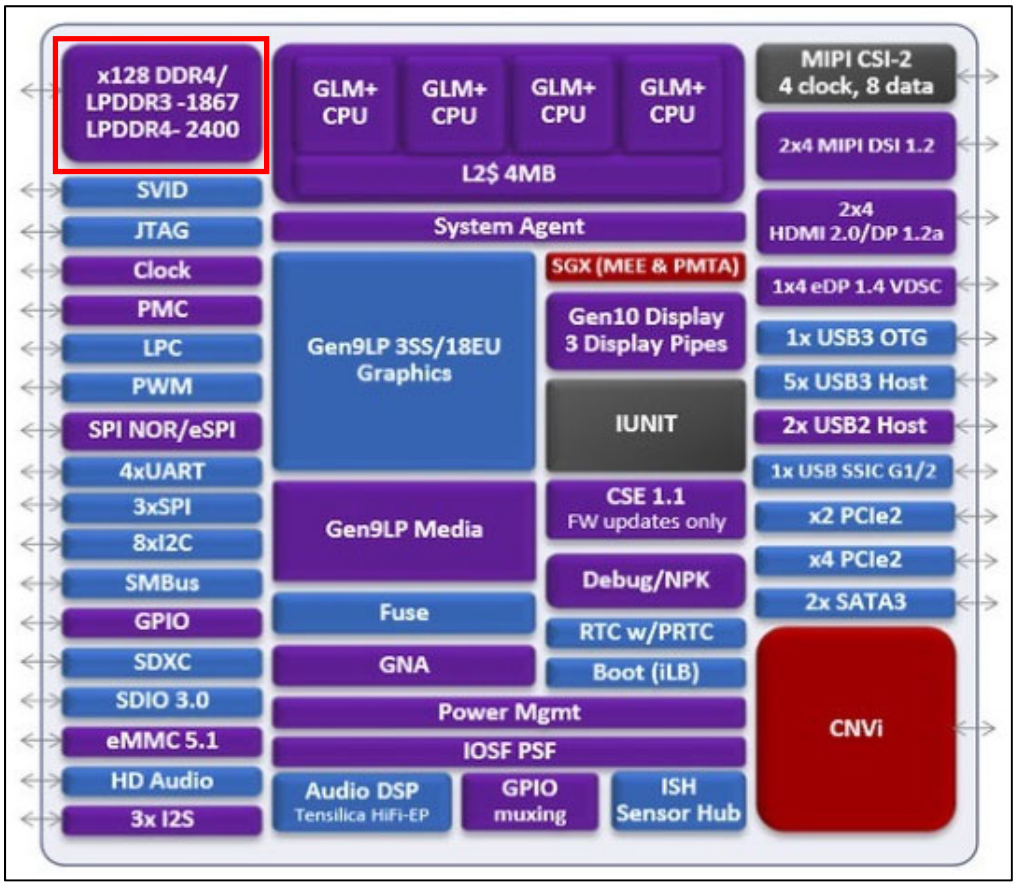
Collapse all

Summary

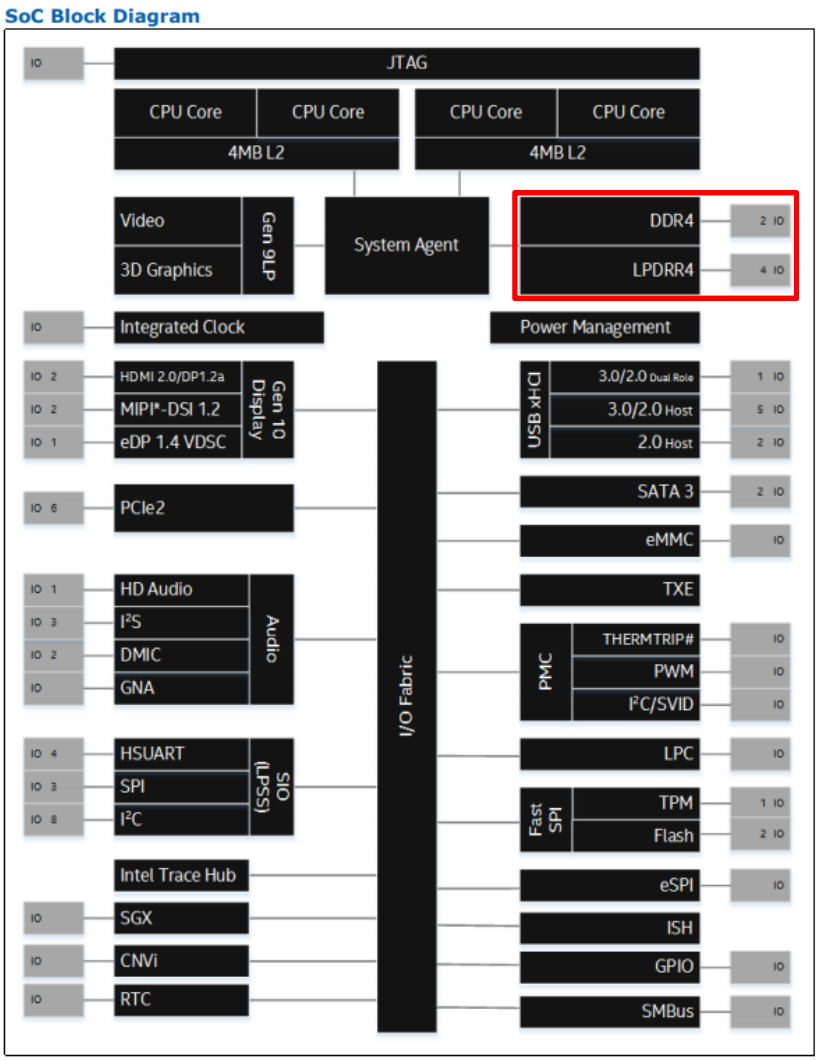
Standing screen display size	11.6 Inches
Screen Resolution	1366 x 768
Max Screen Resolution	1366 x 768 Pixels
Processor	2.6 GHz celeron_n
RAM	4 GB LPDDR4
Memory Speed	2.6 GHz
Hard Drive	32 GB Embedded MultiMediaCard
Graphics Coprocessor	Intel UHD Graphics 600
Chipset Brand	Intel
Card Description	Integrated
Wireless Type	Bluetooth
Number of USB 3.0 Ports	4
Average Battery Life (in hours)	10 Hours

https://www.amazon.com/Acer-Chromebook-CB311-9H-C12A-Celeron-Bluetooth/dp/B07XJ7PXT4 (emphasis added).

62. The LPDDR4 in the Acer Chromebook 311 is directly coupled to the single chip that contains the integrated central processing unit and graphics subsystem of the Intel Celeron N4000 processor. The Intel Celeron N4000 contains a memory controller with I/O, as shown in the diagrams below.



https://www.pcmag.com/news/intels-gemini-lake-chips-offer-15-percent-performance-boost (emphasis added).



Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 15 (emphasis added).

63. The Acer Chromebook 311 also contains a graphics memory, i.e., 4GB of LPDDR4 DRAM, directly coupled to the single chip that contains the integrated central processing unit and graphics subsystem of the Intel Celeron N4000 processor. The LPDDR4 is shared between the CPU and the graphics processing unit (GPU). One or more portions of the LPDDR4 are allocated for graphics operations.

> **5.7.1 Unified Memory Architecture**
> Intel processor graphics architecture has long pioneered sharing DRAM physical memory with the CPU. This unified memory architecture offers a number of system design, power efficiency, and programmability advantages over PCI Express-hosted discrete memory systems.

The Compute Architecture of Intel Processor Graphics Gen9, Ver, 1.0 (Aug. 14, 2015) (available at https://software.intel.com/en-us/file/the-compute-architecture-of-intel-processor-graphics-gen9-v1d0pdf), at 15.

> **5.7.2 Shared Memory Coherency**
> Gen9 compute architecture supports global memory coherency between Intel processor graphics and the CPU cores. SoC products with Intel processor graphics gen9 integrate new hardware components to support the recently updated Intel® Virtualization Technology (Intel® VT) for Directed I/O (Intel® VT-d) specification. This specification extends Intel VT, which generally addresses virtual machine to physical machine usage models and enables virtual machine monitor implementation. In particular, the recent Intel VT-d specification extensions define new page table entry formats, cache protocols, and hardware snooping mechanisms for shared memory between CPU cores and devices such as Intel processor graphics.

The Compute Architecture of Intel Processor Graphics Gen9, Ver, 1.0 (Aug. 14, 2015) (available at https://software.intel.com/en-us/file/the-compute-architecture-of-intel-processor-graphics-gen9-v1d0pdf), at 15.

64. The Intel Celeron N4000 processor in the Acer Chromebook 311 also contains internal graphics memory dedicated to graphics operations. This internal graphics memory is located on the same chip as the integrated central processing unit and graphics subsystem and is directly coupled to them.

> **5.5.2 Shared Local Memory**
> **Shared local memory**[4] is a structure within the L3 complex that supports programmer-managed data for sharing among EU hardware threads within the same subslice. The read/write bus interface between each subslice and shared local memory is again 64-bytes wide. Latency wise, access to shared local memory is similar to accessing the L3 data cache. However, the shared local memory itself is more highly banked than the L3 data cache. The shared local memory banking can yield full shared local memory bandwidth for access patterns that may not be 64-byte aligned or that may not be contiguously adjacent in memory. For gen9-based products, 64 Kbytes of shared local memory are dedicated and available per subslice. Note that shared local memory is not coherent with other memory structures.

The Compute Architecture of Intel Processor Graphics Gen9, Ver, 1.0 (Aug. 14, 2015) (available at https://software.intel.com/en-us/file/the-compute-architecture-of-intel-processor-graphics-gen9-v1d0pdf), at 11.

65. 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 14, 2018, when ACQIS sent a notice letter to Acer. Paragraphs 36-39 above are incorporated herein by reference.

66. 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 Eastern District of Texas.

67. 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.

68. 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.

69. 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.

70. 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.

71. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '768 patent. As of at least May 14, 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.

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

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

74. 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

75. The allegations set forth in paragraphs 1 through 47 of this Complaint are incorporated by reference as though fully set forth herein.

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

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

78. 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.

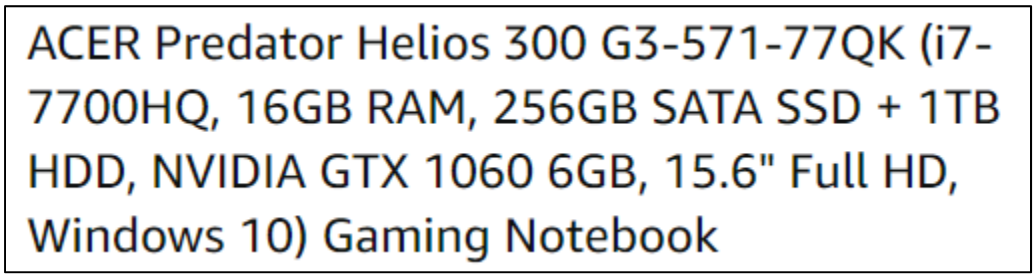
79. Paragraphs 81-93 describe the manner in which the Accused

Instrumentalities infringed claim 1 of the '750 patent, by way of the exemplary Acer Predator Helios 300 notebook computer.

80. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Acer Predator Helios 300 notebook computer, in particular with regard to the manner in which the Accused Instrumentalities include Intel processors and utilize PCIe and/or USB 3.x functionality. Paragraphs 81-93 are thus illustrative of the manner in which each of the Accused Instrumentalities infringed.

81. The Acer Predator Helios 300 is a computer running the Windows 10 Home operating system.

https://www.amazon.com/Acer-Predator-i7-7700HQ-1060-6GB-G3-571-77QK/dp/B06Y4GZS9C.



https://www.amazon.com/Acer-Predator-Quad-Core-i7-7700HQ-Bluetooth/dp/B073RNFXD9.

82. The Acer Predator Helios 300 contains an integrated central processing unit and interface controller in a single chip, i.e., the Intel Core i7-7700HQ processor, as shown in paragraph 81 above. The Intel Core i7-7700HQ processor is part of the 7th Generation Intel Core i7 Processor product collection, formerly code named "Kaby Lake." Specifically, it is part of the Kaby Lake-H product line.

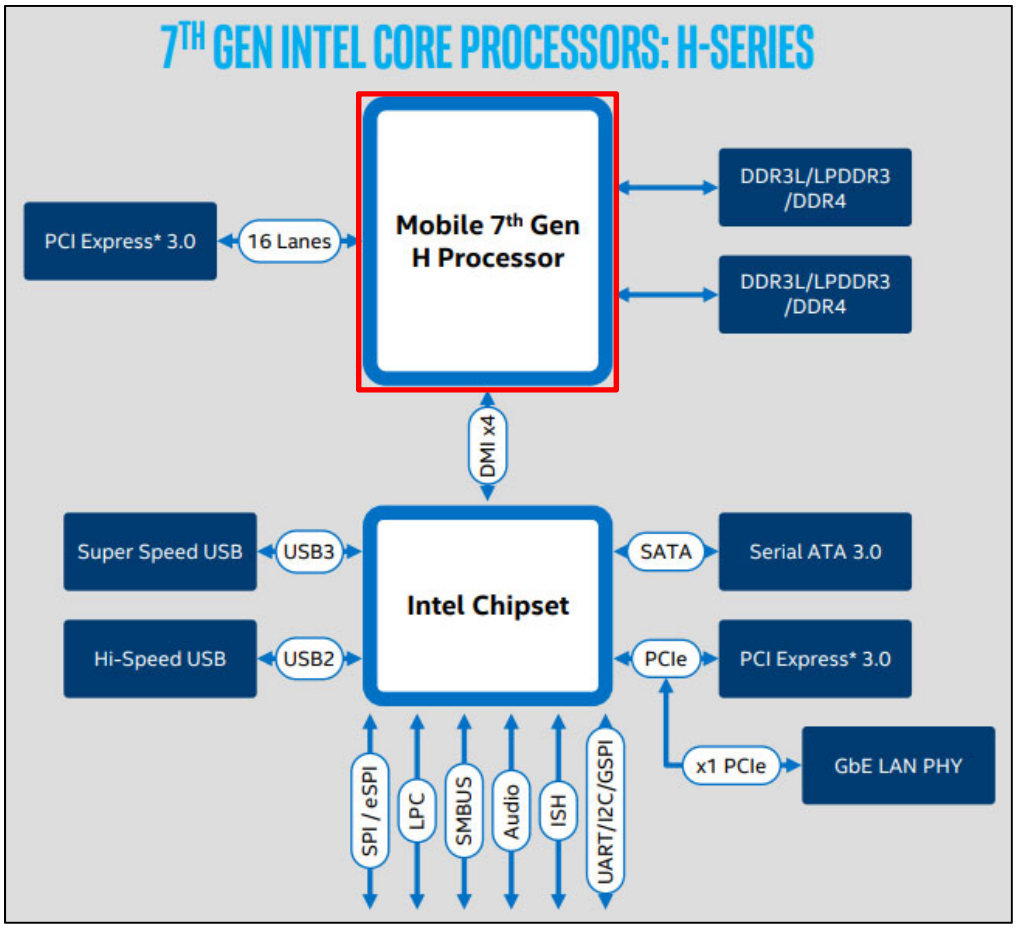
Product Collection	7th Generation Intel® Core™ i7 Processors
Code Name	Products formerly Kaby Lake
Vertical Segment	Mobile
Processor Number ?	i7-7700HQ
Status	Launched
Launch Date ?	Q1'17

https://ark.intel.com/content/www/us/en/ark/products/97185/intel-core-i7-7700hq-processor-6m-cache-up-to-3-80-ghz.html.

Microarchitecture	
ISA	x86-64 (x86)
Microarchitecture	Kaby Lake
Platform	Kaby Lake
Chipset	Sunrise Point
Core Name	Kaby Lake H

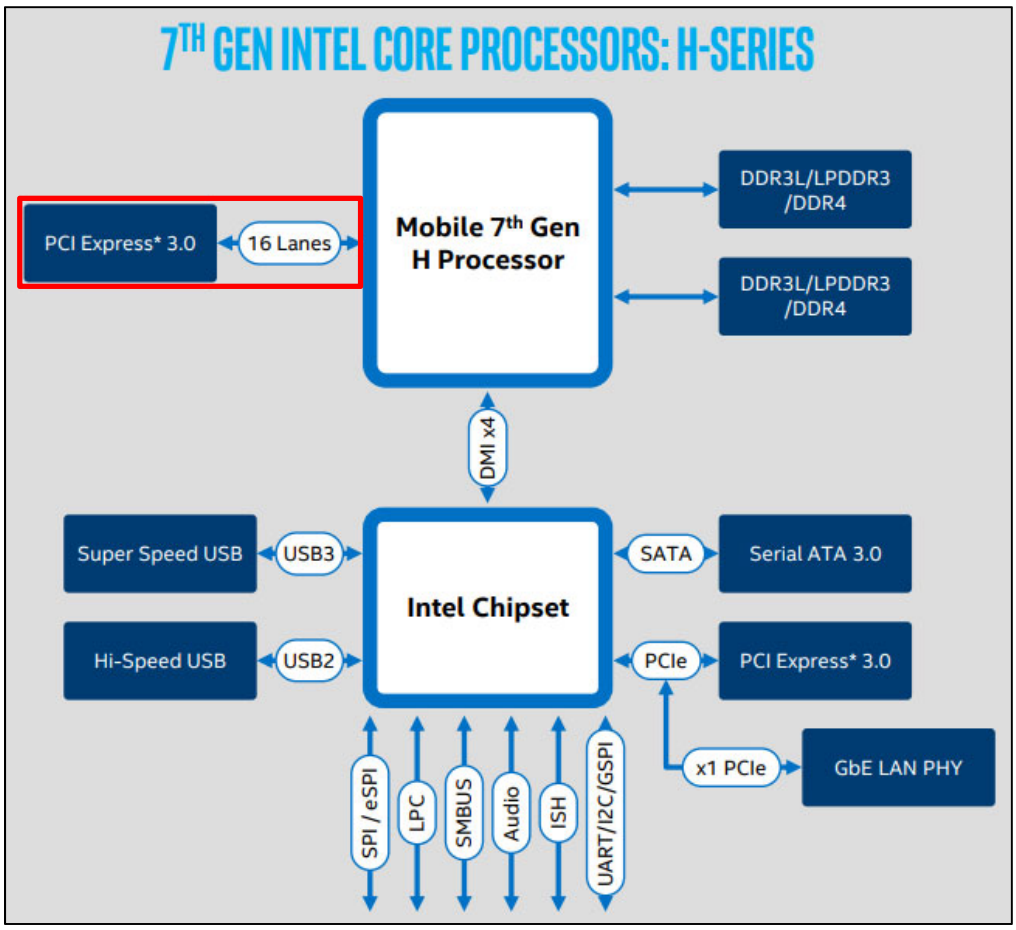
https://en.wikichip.org/wiki/intel/core_i7/i7-7700hq.

83. The Intel Core i7-7700HQ processor contains a quad-core CPU, which is coupled to an Intel chipset.



Product Brief – 7th Gen Intel Core Processors: Y-Series, U-Series and H-Series (available at https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/7th-gen-core-family-mobile-brief.pdf), at 6 (emphasis added).

84. 111. The Intel Core i7-7700HQ processor found in the Acer Predator Helios 300 contains an interface controller on the same chip as the CPU. The Intel Core i7-7700HQ processor includes x16 PCIe 3.0 on-chip.



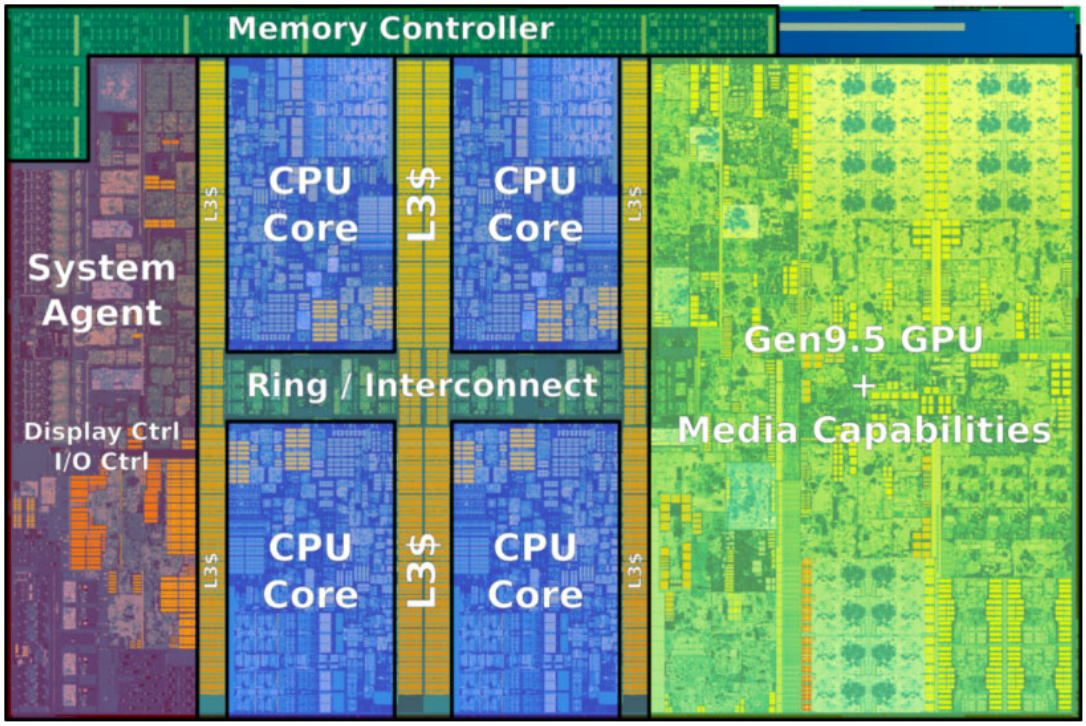
Product Brief – 7th Gen Intel Core Processors: Y-Series, U-Series and H-Series (available at https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/7th-gen-core-family-mobile-brief.pdf), at 6 (emphasis added).

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

https://ark.intel.com/content/www/us/en/ark/products/97185/intel-core-i7-7700hq-processor-6m-cache-up-to-3-80-ghz.html.

85. Because the Intel Core i7-7700HQ 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."

86. The Intel Core i7-7700HQ processor also contains a memory controller with I/O, which is, and/or is part of, an "interface controller."



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

87. The Intel Core i7-7700HQ processor found in the Acer Predator Helios 300, which includes the integrated CPU, interface controller, and PLL clock circuitry, has a first LVDS channel directly extending from the interface controller.

88. The Acer Predator Helios 300 includes a NVIDIA GeForce GTX 1060 discrete graphics processor, which connects to the CPU via PCIe 3.0.

ACER Predator Helios 300 G3-571-77QK (i7-7700HQ, 16GB RAM, 256GB SATA SSD + 1TB HDD, NVIDIA GTX 1060 6GB, 15.6" Full HD, Windows 10) Gaming Notebook

https://www.amazon.com/Acer-Predator-Quad-Core-i7-7700HQ-Bluetooth/dp/B073RNFXD9.

Graphics Coprocessor	NVIDIA GeForce GTX 1060
Chipset Brand	NVIDIA
Card Description	GTX 1060, Dedicated
Graphics Card Ram Size	6 GB

https://www.amazon.com/Acer-Predator-Quad-Core-i7-7700HQ-Bluetooth/dp/B073RNFXD9.

Bus Support	**PCIe 3.0**

https://www.nvidia.com/en-in/geforce/products/10series/geforce-gtx-1060/.

89. The Acer Predator Helios 300 uses the Intel Core i7-7700HQ processor's

on-chip PCIe 3.0 I/O for directly connecting the discrete NVIDIA GeForce GTX 1060 graphics processor to the processor chip in a multi-lane PCIe 3.0 configuration.

2.2 PCI Express* Graphics Interface (PEG)

This section describes the PCI Express* interface capabilities of the processor. See the *PCI Express Base* Specification 3.0* for details on PCI Express*.

2.2.1 PCI Express* Support

The processor's PCI Express* interface is a 16-lane (x16) port that can also be configured as multiple ports at narrower widths (see Table 2-11, Table 2-12).

The processor supports the configurations shown in the following table.

Datasheet – 7th Generation Intel Processor Families for H Platforms, Vol. 1 of 2, Rev. 004 (Aug. 2020) (available at https://cdrdv2.intel.com/v1/dl/getcontent/335190), at 28.

Table 2-10. PCI Express* Bifurcation and Lane Reversal Mapping

Bifurcation	Link Width			CFG Signals			Lanes															
	0:1:0	0:1:1	0:1:2	CFG [6]	CFG [5]	CFG [2]	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1x16	x16	N/A	N/A	1	1	1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1x16 **Reversed**	x16	N/A	N/A	1	1	0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2x8	x8	x8	N/A	1	0	1	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
2x8 **Reversed**	x8	x8	N/A	1	0	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
1x8+2x4	x8	x4	x4	0	0	1	0	1	2	3	4	5	6	7	0	1	2	3	0	1	2	3
1x8+2x4 **Reversed**	x8	x4	x4	0	0	0	3	2	1	0	3	2	1	0	7	6	5	4	3	2	1	0

Notes:

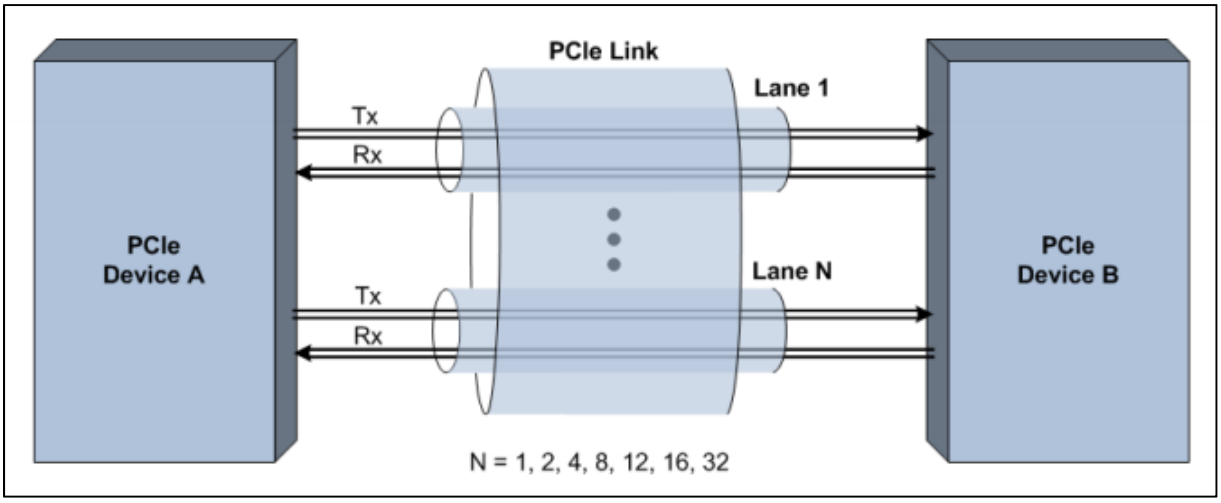
1. For CFG bus details, refer to Section 6.4.
2. Support is also provided for narrow width and use devices with lower number of lanes (that is, usage on x4 configuration), however further bifurcation is not supported.
3. In case that more than one device is connected, the device with the highest lane count, should always be connected to the lower lanes, as follows:
   - Connect lane 0 of 1st device to lane 0.
   - Connect lane 0 of 2nd device to lane 8.
   - Connect lane 0 of 3rd device to lane 12.

   For example:
   a. When using 1x8 + 2x4, the 8 lane device should use lanes 0:7.
   b. When using 1x4 + 1x2, the 4 lane device should use lanes 0:3, and other 2 lanes device should use lanes 8:9.
   c. When using 1x4 + 1x2 + 1x1, 4 lane device should use lanes 0:3, two lane device should use lanes 8:9, one lane device should use lane 12.
4. for reversal lanes, for example:
   When using 1x8, the 8 lane device should use lanes 8:15, so lane 15 will be connected to lane 0 of the Device.
5. For Basin Falls platform use 1x8+2x4 Bifurcation

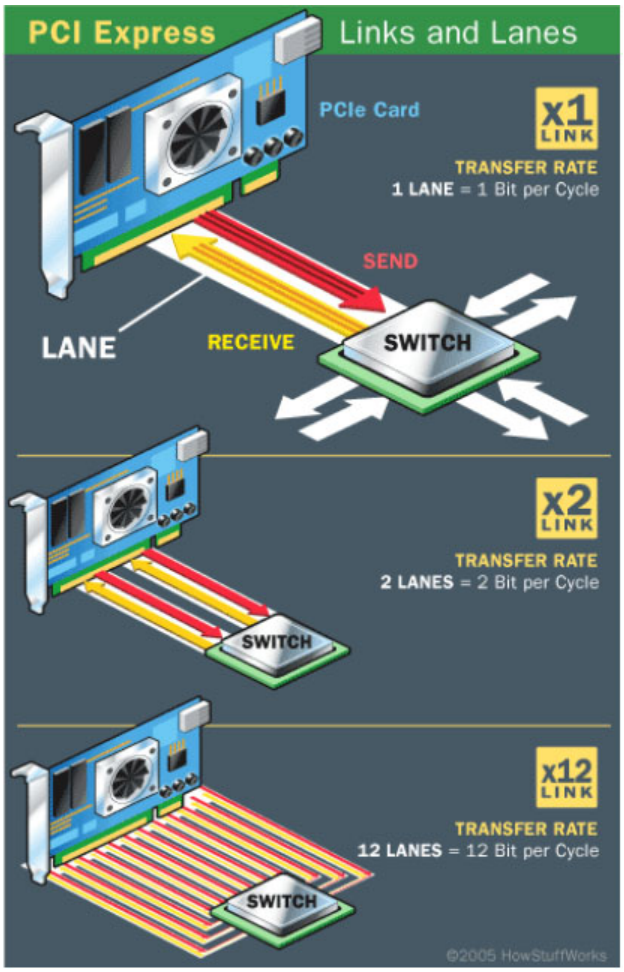
Datasheet – 7th Generation Intel Processor Families for H Platforms, Vol. 1 of 2, Rev. 004 (Aug. 2020) (available at https://cdrdv2.intel.com/v1/dl/getcontent/335190), at 28.

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

91. 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 signal 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 direction (i.e., the Rx signal pairs in the upper illustration and the signal pairs in yellow in the lower illustration).

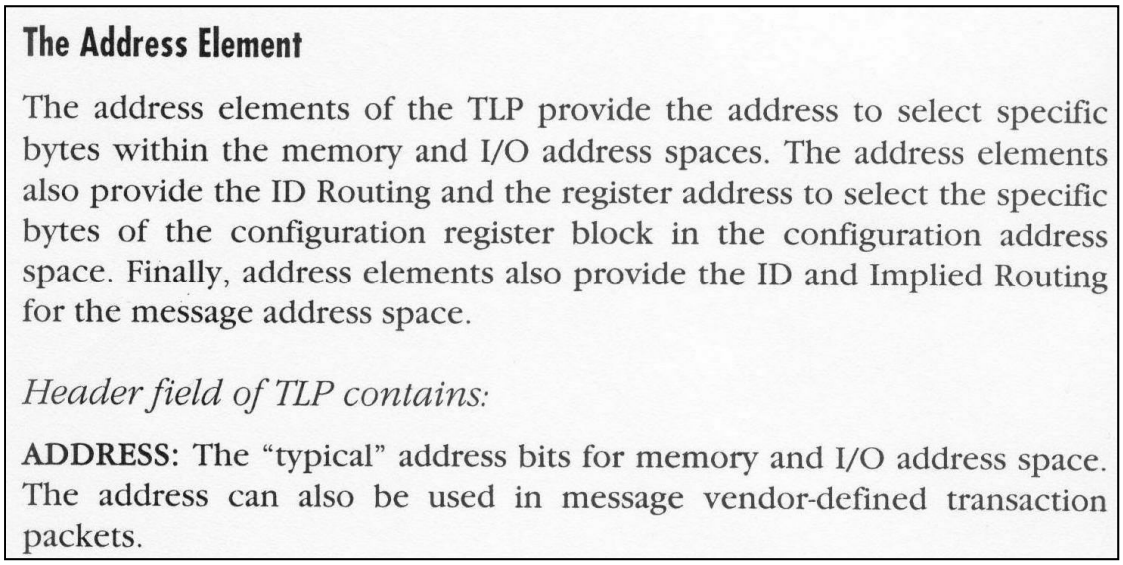


Silicon Labs AN562, PCI Express 3.1 Jitter Requirements (Rev. 0.2 11/15) (available at https://www.silabs.com/documents/public/application-notes/AN562.pdf), at 2.



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

92. 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. The transaction layer packets (TLPs) used for PCIe data transmission include both address and data elements as well as byte enable ("BE") information.



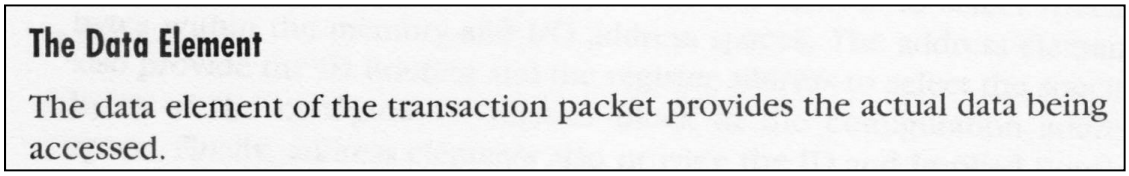
The Address Element

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

Header field of TLP contains:

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

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



The Data Element

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

Id. at 220.

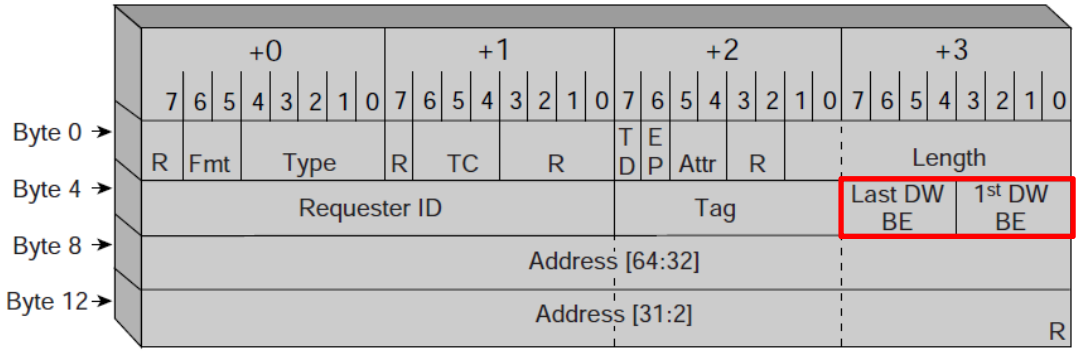


Figure 6.4 64-bit Address Memory Request Header

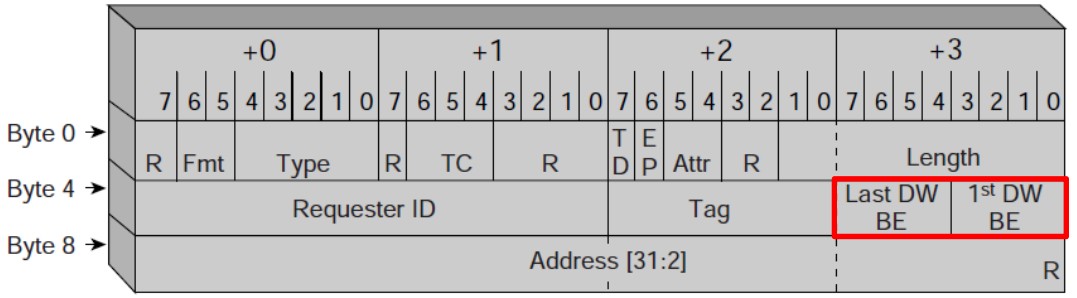
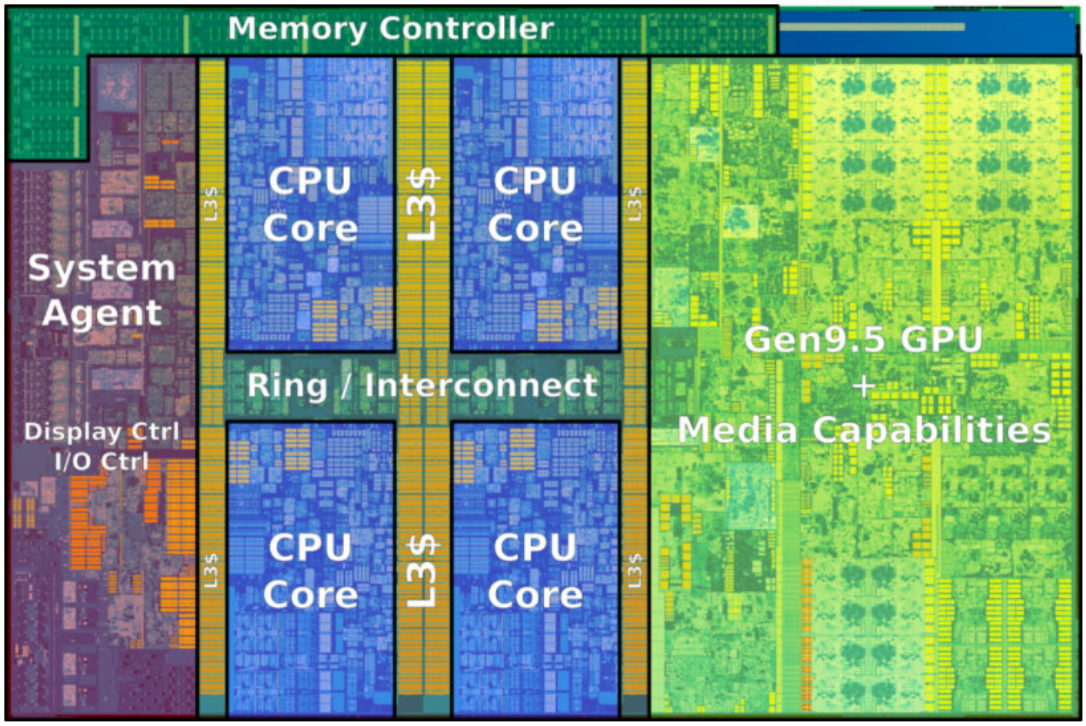


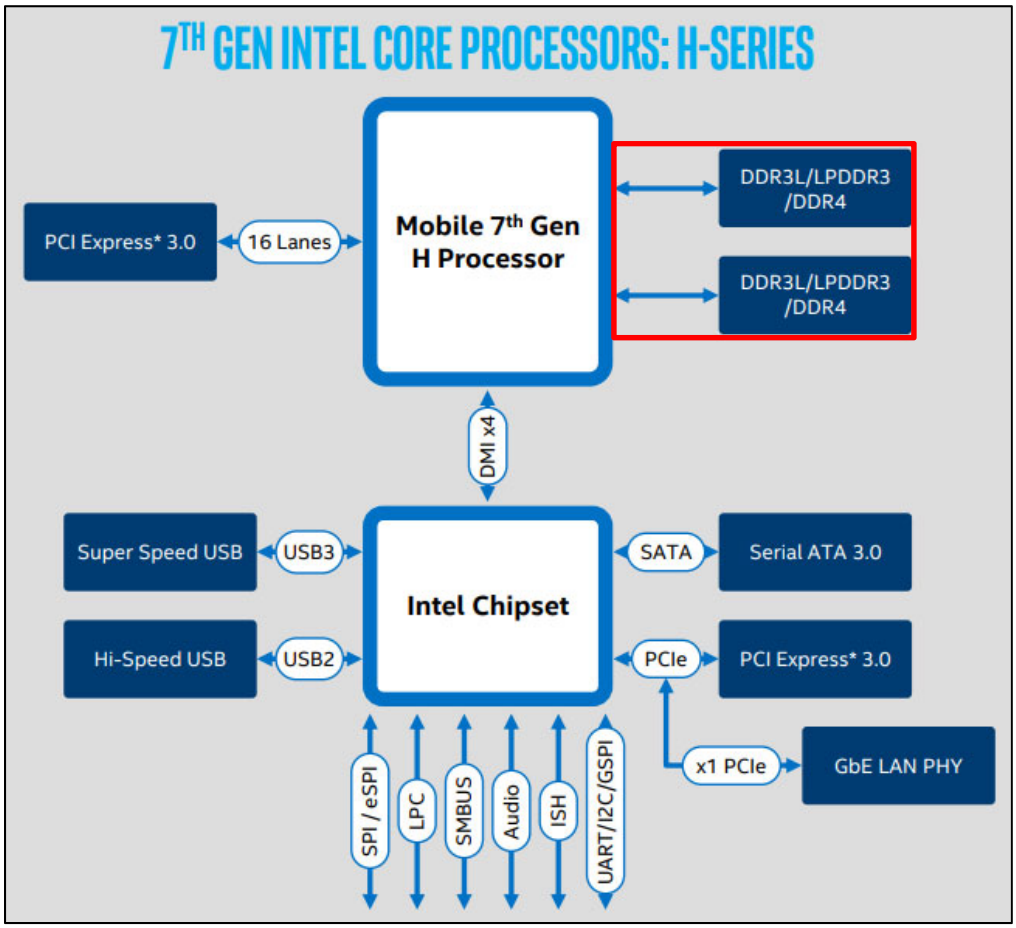
Figure 6.5 32-bit Address Memory Request Header

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

93. The Acer Predator Helios 300 contains a system memory, i.e., 16 GB of DDR4 DRAM, which is directly coupled to the integrated central processing unit and interface controller of the Intel Core i7-7700HQ processor. The Intel Core i7-7700HQ processor contains a memory controller with I/O, to which the DDR4 is directly coupled.



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



Product Brief – 7th Gen Intel Core Processors: Y-Series, U-Series and H-Series (available at https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/7th-gen-core-family-mobile-brief.pdf), at 6 (emphasis added).

94. 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 14, 2018, when ACQIS sent a notice letter to Acer. Paragraphs 36-39 above are incorporated herein by reference.

95. 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 Eastern District of Texas.

96. 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.

97. 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.

98. 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.

99. 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.

100. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '750 patent. As of at least May 14, 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.

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

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

103. 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

104. The allegations set forth in paragraphs 1 through 47 of this Complaint are incorporated by reference as though fully set forth herein.

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

106. 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 products made abroad using the claimed '797 methods.

107. Acer has infringed at least claim 33 of the '797 patent at least in the manner described below. Plaintiff's allegations of infringement are not limited to claim 33, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

108. Paragraphs 111-119 describe the manner in which Acer has infringed claim 33 of the '797 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Acer Chromebook Spin 511 notebook computer, and/or when importing into the United States Accused Instrumentalities made abroad using the claimed process.

109. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Acer Chromebook Spin 511 notebook computer, in particular with regard to the manner in which the Accused Instrumentalities

include Intel processors and utilize PCIe and/or USB 3.x functionality. Paragraphs 111-119 are thus illustrative of the manner in which Acer has infringed the claims of the '797 patent as to each of the Accused Instrumentalities.

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

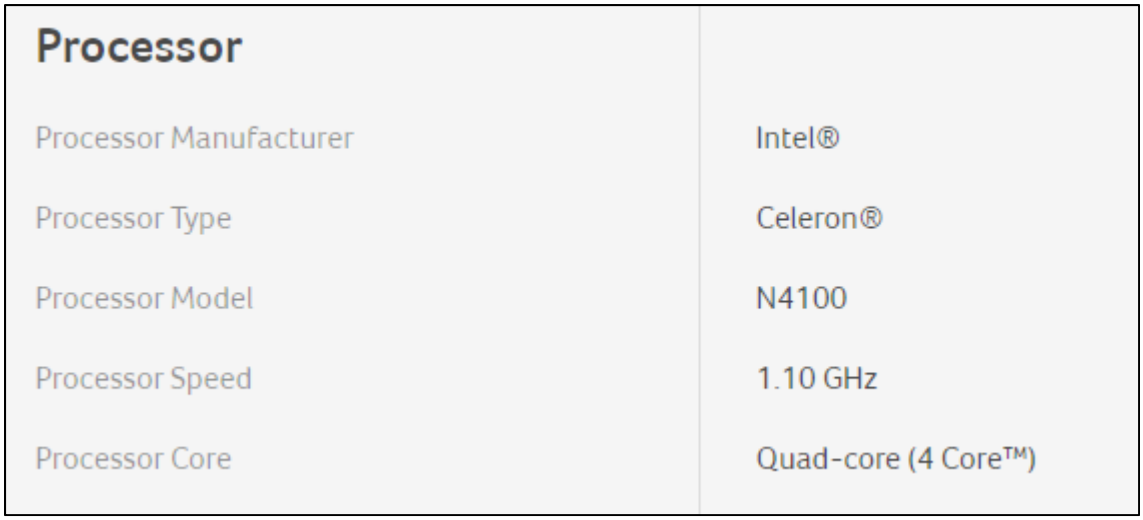
111. The Acer Chromebook Spin 511 is a computer running the Chrome OS operating system.

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001.

Operating System	
Operating System	Chrome OS™

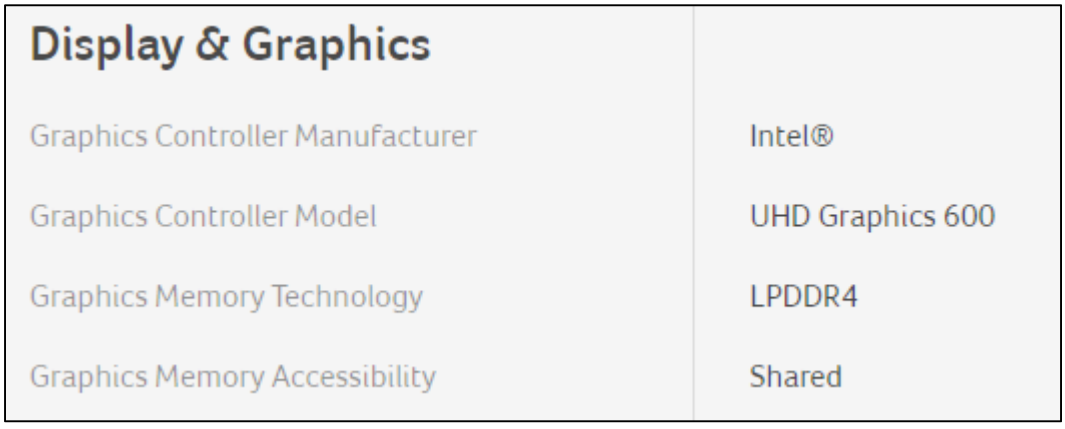
https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001.

112. The Acer Chromebook Spin 511 contains an integrated CPU and graphics controller chip, i.e., an Intel Celeron N4100 processor (or Celeron N4000) with integrated Intel UHD Graphics 600 graphics.



Processor	
Processor Manufacturer	Intel®
Processor Type	Celeron®
Processor Model	N4100
Processor Speed	1.10 GHz
Processor Core	Quad-core (4 Core™)

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001.



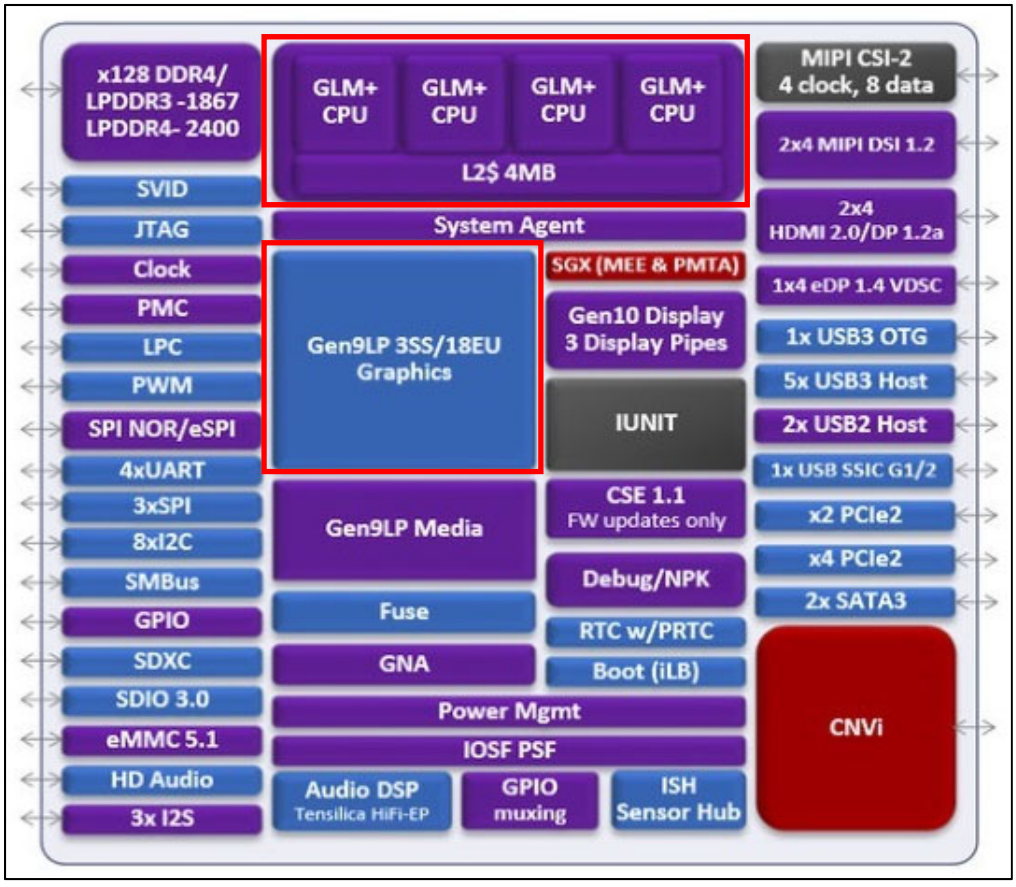
Display & Graphics	
Graphics Controller Manufacturer	Intel®
Graphics Controller Model	UHD Graphics 600
Graphics Memory Technology	LPDDR4
Graphics Memory Accessibility	Shared

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001.

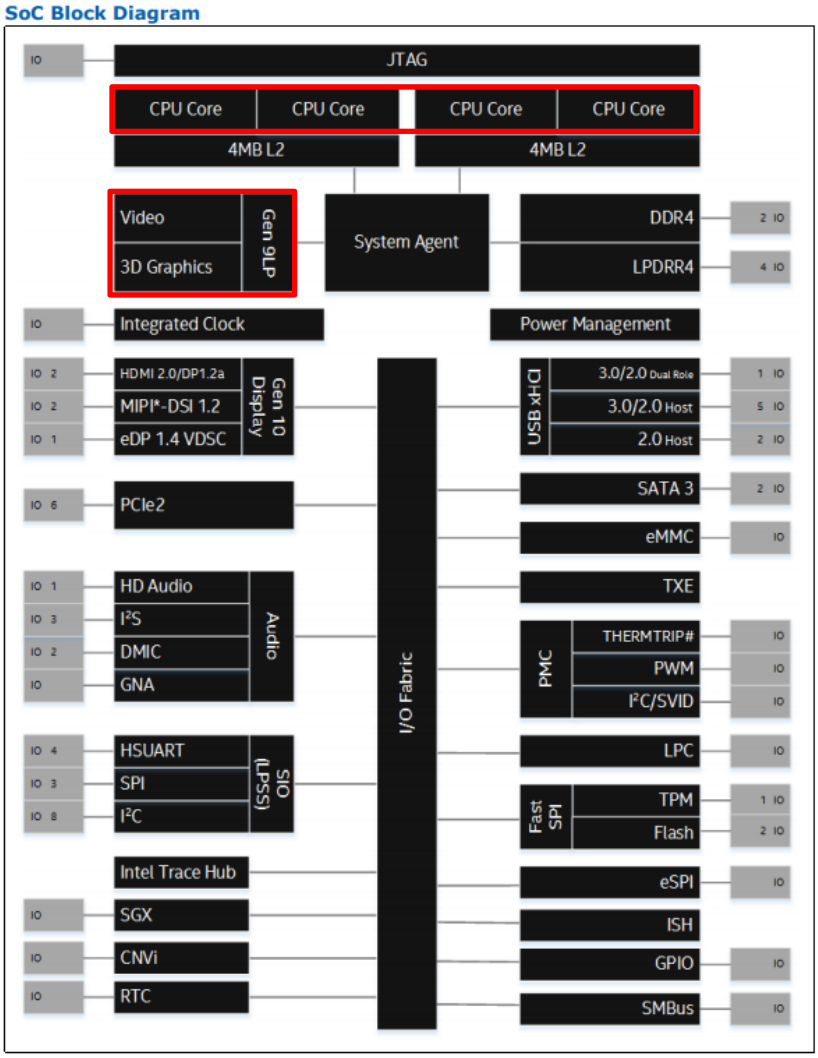
> **The Acer Chromebook Spin 511 delivers solid all-day performance for access to multiple tabs, video lessons and more, while providing longer battery life.** With the latest dual-core Intel® Celeron® N4000 or quad-core N4100 processors, highly graphical classroom projects run smoother so tasks are performed quicker. **It provides a fast and reliable Internet connection** with up to Gigabit Wi-Fi speed with Intel Wireless-AC 2×2 802.11ac MU-MIMO.

https://acerforeducation.acer.com/technologies/k12/bett-show-2019-acer-unveils-new-suite-of-11-6-inch-chromebooks/.

113. The Intel Celeron N4100 processor is an SoC-style processor that contains an integrated central processing unit and graphics controller in a single chip.



https://www.pcmag.com/news/intels-gemini-lake-chips-offer-15-percent-performance-boost (emphases added).



Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 15 (emphases added).

114. The Acer Chromebook Spin 511 contains a number of connectors, including two USB-C 3.1 ports and two USB 3.0 ports.

Interfaces/Ports	
Number of USB 3.1 Gen 1 Ports	2
Total Number of USB Ports	2
USB Type-C	Yes
USB Type-C Detail	USB Type-C port supporting: USB 3.1 Gen 1 (up to 5 Gbps) DisplayPort over USB-C USB charging 5/9/15/20 V; 3 A DC-in port 20 V; 45 W

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001.

All of the new 11.6-inch Acer Chromebooks include up to two USB 3.0 ports, and up to two USB 3.1 Type-C ports, which can be used to charge the device as well as other products, transfer data quickly up to 5Gbps, and connect to an HD display. The Acer Chromebook 311 (C733/R752T) also features up to Bluetooth 5.0 and two USB 3.0 ports.

https://acerforeducation.acer.com/technologies/k12/bett-show-2019-acer-unveils-new-suite-of-11-6-inch-chromebooks/.

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001 (annotations added).

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001 (annotations added).

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

Acer has coupled an integrated CPU and graphics controller chip to a connector, i.e., the USB-C 3.1 and USB 3.0 ports are coupled to the integrated CPU and graphics controller chip of the Acer Chromebook Spin 511 notebook computer.

116. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511, Acer has conveyed a first Low Voltage Differential Signal (LVDS) channel through the connector comprising two unidirectional, serial channels that transmit data in opposite directions.

117. In the Intel Celeron N4100 processor in the Acer Chromebook Spin 511, each of at least the two USB 3.1-C ports and the two USB 3.0 ports has an LVDS channel coupled to the integrated CPU and graphics controller chip. Each LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions, through each respective connector. Paragraphs 59-60 are incorporated herein by reference.

118. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511, Acer has conveyed USB protocol data from the integrated CPU and graphics controller chip, over the first LVDS channel for external USB protocol data communication.

119. The Acer Chromebook Spin 511 utilizes the USB 3.x capability of the Intel Celeron N4100 processor to convey USB protocol data from the integrated CPU and graphics controller chip, over the first LVDS channel, i.e., each USB-C 3.1 and USB 3.0 channel. Each of the Acer Chromebook Spin 511's USB-C 3.1 and USB 3.0 ports is

connected to its respective first LVDS channel and is used for external USB protocol data communication.

120. 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 14, 2018, when ACQIS sent a notice letter to Acer. Paragraphs 36-39 above are incorporated herein by reference.

121. 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 Eastern District of Texas.

122. 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.

123. 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.

124. 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.

125. 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 USB-C and USB 3.0 connectors of the Acer Chromebook Spin 511 notebook computer to convey USB protocol data externally.

126. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '797 patent. As of at least May 14, 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.

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

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

129. 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

130. The allegations set forth in paragraphs 1 through 47 of this Complaint are incorporated by reference as though fully set forth herein.

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

132. 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 products made abroad using the claimed '654 methods.

133. Acer 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.

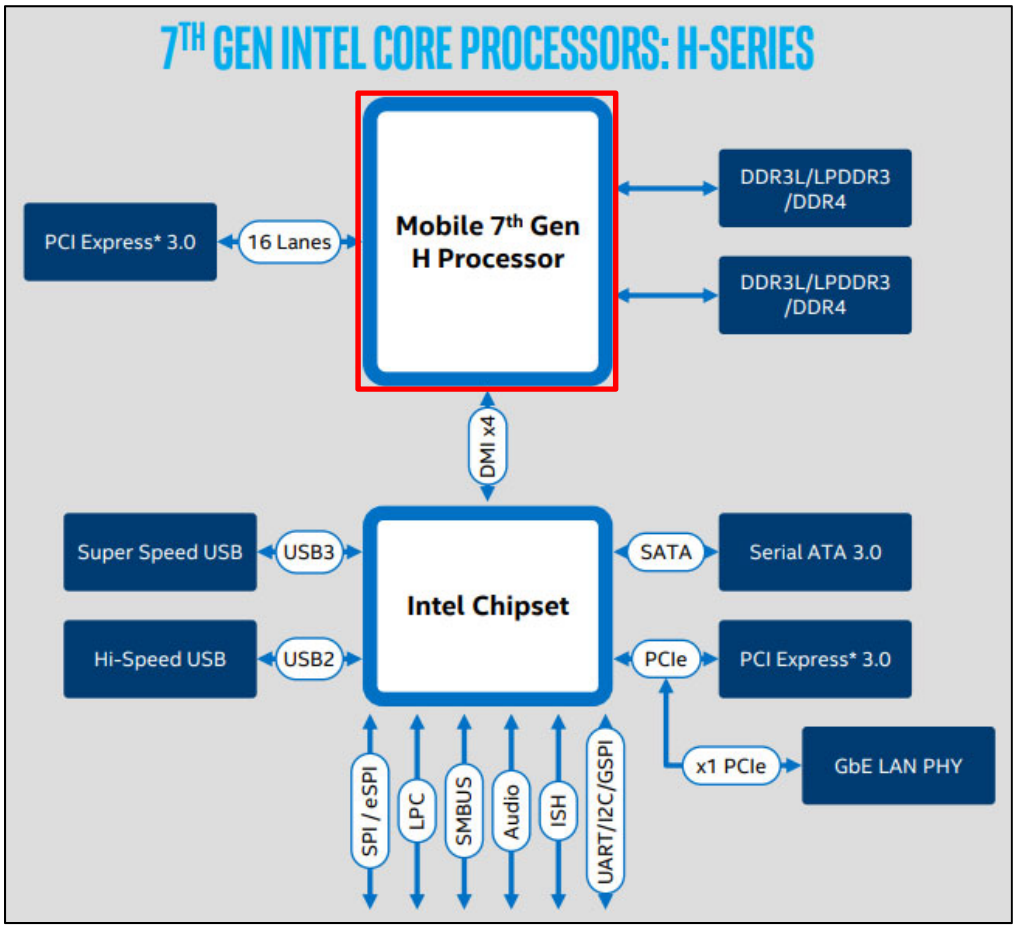
134. Paragraphs 137-141 describe the manner in which Acer has infringed claim 20 of the '654 patent, at least when manufacturing and/or testing in the United States

Accused Instrumentalities, as exemplified by the Acer Predator Helios 300 notebook computer, and/or when importing into the United States Accused Instrumentalities made abroad using the claimed process.

135. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Acer Predator Helios 300 notebook computer, in particular with regard to the manner in which the Accused Instrumentalities include Intel processors and utilize PCIe and/or USB 3.x functionality. Paragraphs 137-141 are thus illustrative of the manner in which Acer has infringed the claims of the '654 patent as to each of the Accused Instrumentalities.

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

137. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Predator Helios 300 notebook computer, Acer has provided an integrated CPU and graphics controller on a printed circuit board of a computer. Specifically, the Intel Core i7-7700HQ processor, which contains an integrated CPU and graphics controller, i.e., Intel HD Graphics 630, on a single chip.



Product Brief – 7th Gen Intel Core Processors: Y-Series, U-Series and H-Series (available at https://www.intel.com/content/dam/www/public/us/en/documents/product-briefs/7th-gen-core-family-mobile-brief.pdf), at 6 (emphasis added).

Processor Graphics	
Processor Graphics ‡	Intel® HD Graphics 630
Graphics Base Frequency	350 MHz
Graphics Max Dynamic Frequency	1.10 GHz
Graphics Video Max Memory	64 GB
Graphics Output	eDP/DP/HDMI/DVI

https://ark.intel.com/content/www/us/en/ark/products/97185/intel-core-i7-7700hq-processor-6m-cache-up-to-3-80-ghz.html.

138. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Predator Helios 300 notebook computer, Acer has connected a first LVDS channel directly to the integrated CPU and graphics controller, and the first LVDS channel comprises two unidirectional, serial channels that transmit data in opposite directions. Paragraphs 84-92 above are incorporated herein by reference.

139. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Predator Helios 300, Acer has provided a connector, i.e., USB 3.0 and/or USB-C 3.1 connectors, as exemplified by the USB 3.0 connectors of the Acer Predator Helios 300 notebook computer, for the computer to connect to a console.

Ports: 2 x USB 3. 0, 2 x USB 2. 0, 1 x HDMI,

https://www.amazon.com/Acer-Predator-Quad-Core-i7-7700HQ-Bluetooth/dp/B073RNFXD9.

https://www.amazon.com/Acer-Predator-Quad-Core-i7-7700HQ-Bluetooth/dp/B073RNFXD9.

140. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Predator Helios 300 notebook computer, Acer has provided a second LVDS channel comprising two unidirectional, serial channels that transmit data in

opposite directions. Specifically, the Intel Core i7-7700HQ in the Acer Predator Helios 300 supports USB 3.0, and the Acer Predator Helios 300 contains a connector, i.e., at least one USB 3.0 port, which allows coupling to a console through the USB 3.0 LVDS channel comprising two unidirectional, serial channels that transmit data in opposite directions. Paragraphs 59-60 above are incorporated herein by reference.

141. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Predator Helios 300 notebook computer, Acer has enabled USB protocol data to be conveyed over the second LVDS channel. Specifically, the Acer Predator Helios 300 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.

142. 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 14, 2018, when ACQIS sent a notice letter to Acer. Paragraphs 36-39 above are incorporated herein by reference.

143. 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 Eastern District of Texas.

144. 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.

145. 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.

146. 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.

147. 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 USB 3.0 connector of the Acer Predator Helios 300 notebook computer to convey USB protocol data.

148. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '654 patent. As of at least May 14, 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.

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

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

151. 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

152. The allegations set forth in paragraphs 1 through 47 of this Complaint are incorporated by reference as though fully set forth herein.

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

154. 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 products made abroad using the claimed '140 methods.

155. Acer has infringed at least claim 18 of the '140 patent at least in the manner described below. Plaintiff's allegations of infringement are not limited to claim 18, and additional infringed claims will be identified and disclosed through discovery and infringement contentions.

156. Paragraphs 159-167 describe the manner in which Acer has infringed claim 18 of the '140 patent, at least when manufacturing and/or testing in the United States Accused Instrumentalities, as exemplified by the Acer Chromebook Spin 511 notebook computer, and/or when importing into the United States Accused Instrumentalities made abroad using the claimed process.

157. On information and belief, the Accused Instrumentalities are in relevant part substantially similar to the exemplary Acer Chromebook Spin 511 notebook computer, in particular with regard to the manner in which the Accused Instrumentalities include Intel processors and utilize PCIe and/or USB 3.x functionality. Paragraphs 159-167 are thus illustrative of the manner in which Acer has infringed the claims of the '140 patent as to each of the Accused Instrumentalities.

158. Acer has practiced claim 18's method of improving performance of a computer at least when manufacturing and/or testing the Accused Instrumentalities in the United States and/or when importing into the United States products made abroad using the claimed process.

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

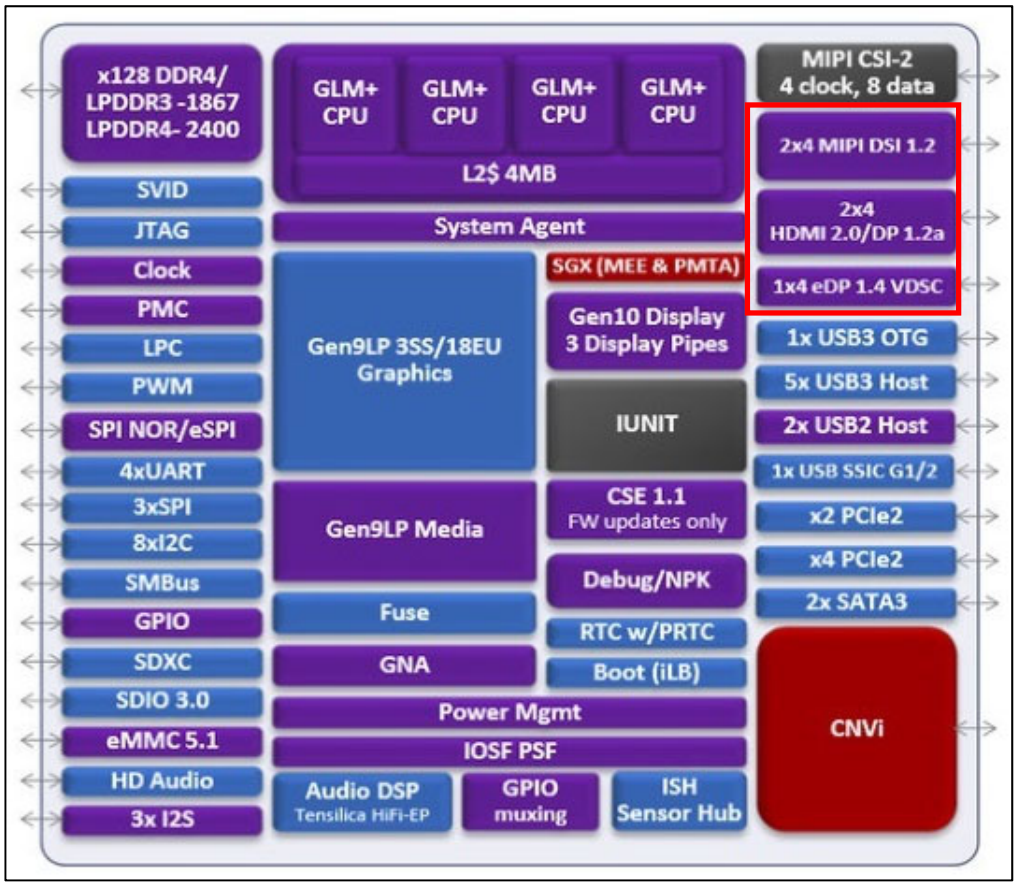
including the Acer Chromebook Spin 511 notebook computer, Acer has obtained an integrated CPU with a graphics controller in a single chip. Paragraphs 112-113 above are incorporated herein by reference.

160. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511 notebook computer, Acer has connected a differential signal channel directly to the integrated CPU and graphics controller to output video data.

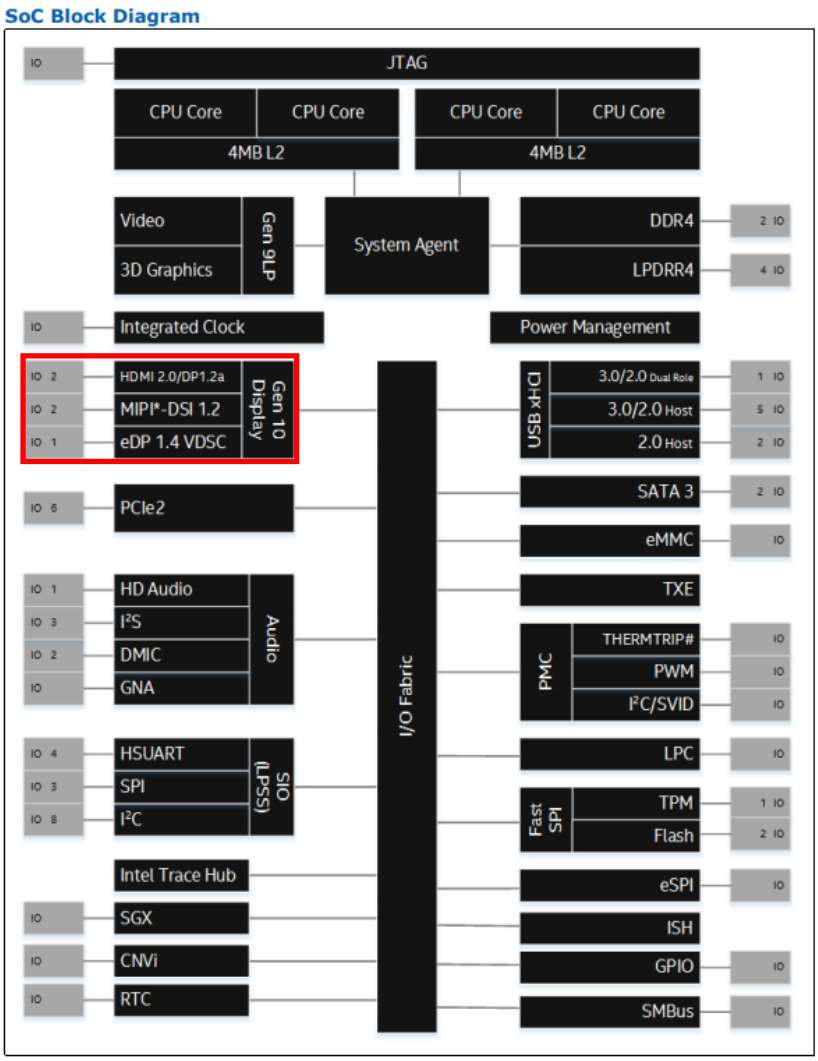
161. The integrated CPU and graphics controller chip of the Intel Celeron N4100 processor in the Acer Chromebook Spin 511 directly outputs video data via MIPI-DSI, Embedded DisplayPort (eDP), and DisplayPort.

Processor Graphics	
Processor Graphics ‡	Intel® UHD Graphics 600
Graphics Base Frequency	200 MHz
Graphics Burst Frequency	700 MHz
Graphics Video Max Memory	8 GB
Graphics Output	eDP/DP/HDMI/MIPI-DSI

https://ark.intel.com/content/www/us/en/ark/products/128983/intel-celeron-processor-n4100-4m-cache-up-to-2-40-ghz.html.



https://www.pcmag.com/news/intels-gemini-lake-chips-offer-15-percent-performance-boost (emphasis added).

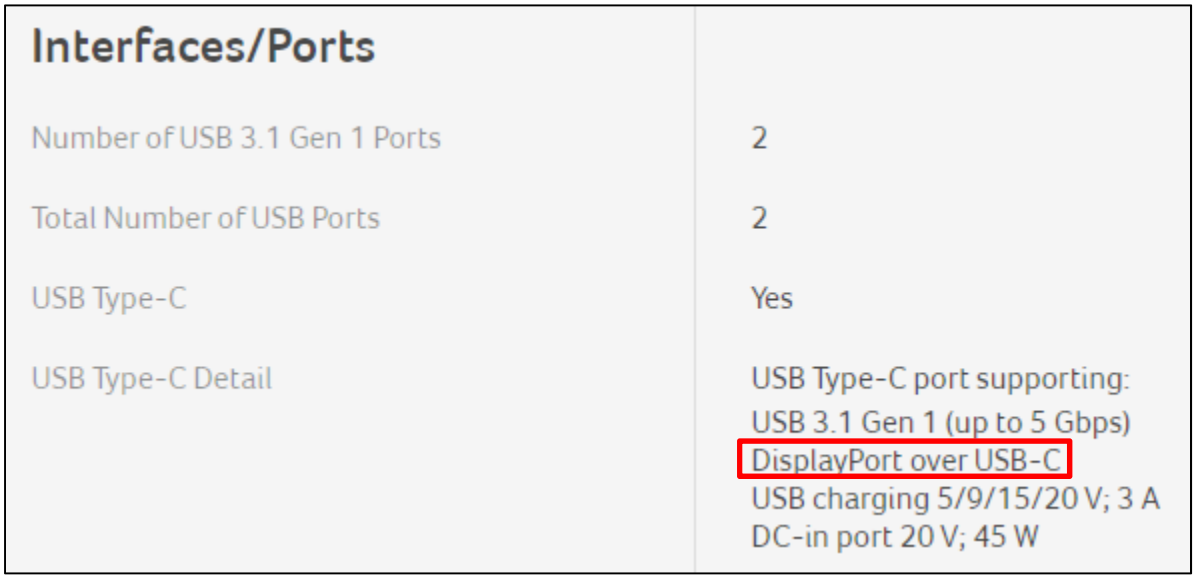


Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 15 (emphasis added).

162. The Intel Celeron N4100 processor in the Acer Chromebook Spin 511 outputs video data to the device display using one of either MIPI-DSI or eDP, both of which are differential signal channel(s).

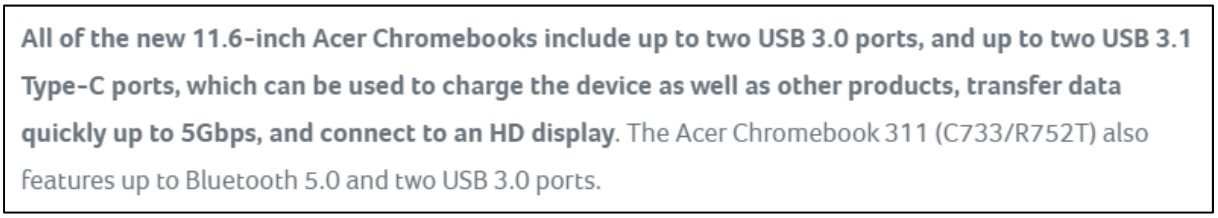
163. The Intel Celeron N4100 processor in the Acer Chromebook Spin 511 also directly outputs video data via an additional differential signal channel, i.e., DisplayPort,

and the Acer Chromebook Spin 511 contains USB-C 3.1 ports that output video data via DisplayPort.



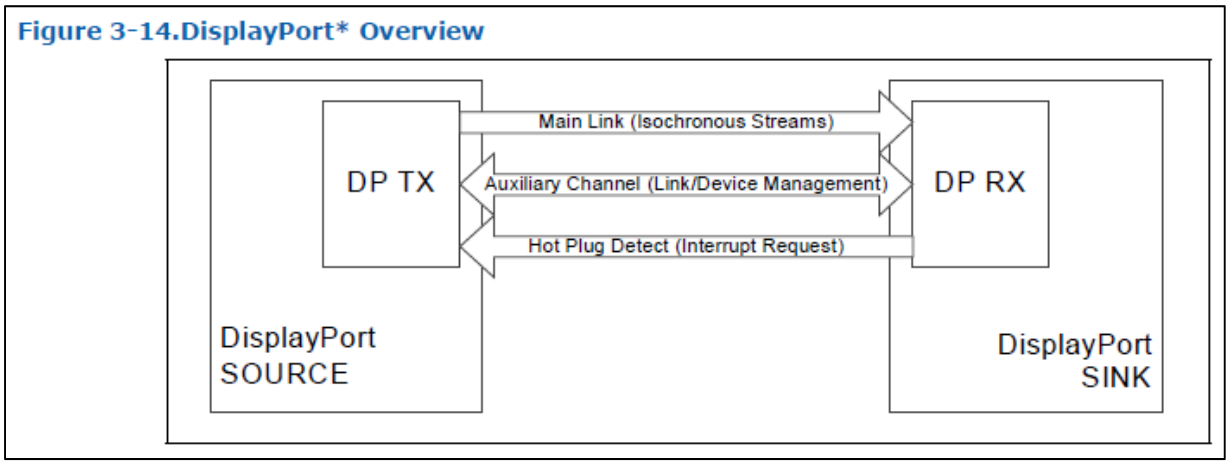
Interfaces/Ports	
Number of USB 3.1 Gen 1 Ports	2
Total Number of USB Ports	2
USB Type-C	Yes
USB Type-C Detail	USB Type-C port supporting: USB 3.1 Gen 1 (up to 5 Gbps) DisplayPort over USB-C USB charging 5/9/15/20 V; 3 A DC-in port 20 V; 45 W

https://www.acer.com/ac/en/AU/content/model/NX.H93SA.001 (emphasis added).



All of the new 11.6-inch Acer Chromebooks include up to two USB 3.0 ports, and up to two USB 3.1 Type-C ports, which can be used to charge the device as well as other products, transfer data quickly up to 5Gbps, and connect to an HD display. The Acer Chromebook 311 (C733/R752T) also features up to Bluetooth 5.0 and two USB 3.0 ports.

https://acerforeducation.acer.com/technologies/k12/bett-show-2019-acer-unveils-new-suite-of-11-6-inch-chromebooks/.



Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 66.

Overview of Display Port

Display Port is a digital communication interface that utilizes differential signaling to achieve a high bandwidth bus interface designed to support connections between PCs and monitors, projectors, and TV displays. Display Port is also suitable for display connections between consumer electronics devices such as high definition optical disc players, set top boxes, and TV displays.

A Display Port 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.

The SoC supports DisplayPort Standard Version 1.2a.

Datasheet – Intel Pentium Silver and Intel Celeron Processors, Vol. 1 of 2, Rev. 004 (Apr. 2020) (available at https://www.intel.com/content/www/us/en/products/processors/celeron/n4000.html), at 66 (emphasis added).

164. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511 notebook computer, Acer has provided a connector for the computer for connection to a console. The Acer Chromebook Spin 511 contains two USB-C 3.1 ports and two USB 3.0 ports, each of which can be used to

connect the device to a console. Paragraph 114 above is incorporated herein by reference.

165. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511 notebook computer, Acer has provided a first LVDS channel to couple to the connector, the first LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions.

166. In the Acer Chromebook Spin 511, each of at least the two USB 3.1-C I/O and the two USB 3.0 I/O in the Intel Celeron N4100 processor has an LVDS channel comprising two unidirectional, serial bit channels that transmit data in opposite directions. Each LVDS channel is used to couple the USB 3.1/3.0 I/O to its respective connector, i.e., the USB-C 3.1 ports and the USB 3.0 ports. Paragraphs 59-60 are incorporated herein by reference.

167. At least in manufacturing and/or testing the Accused Instrumentalities, including the Acer Chromebook Spin 511 notebook computer, Acer has conveyed Universal Serial Bus (USB) protocol information through the first LVDS channel. In the Acer Chromebook Spin 511, each USB 3.1/3.0 I/O in the Intel Celeron N4100 processor has a corresponding LVDS channel to couple to its respective connector, and each LVDS channel conveys USB protocol information.

168. 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 14, 2018, when ACQIS sent a notice letter to Acer. Paragraphs 36-39 above are incorporated herein by reference.

169. 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 Eastern District of Texas.

170. 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.

171. 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.

172. 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.

173. 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 USB-C and USB 3.0 connectors of the Acer Chromebook Spin 511 notebook computer to convey USB protocol data.

174. Defendant has induced others' direct infringement despite actual notice that the Accused Instrumentalities infringed the '140 patent. As of at least May 14, 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.

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

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

177. 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

178. 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 seems just, equitable, and proper.

Dated: July 21, 2021

Respectfully submitted,

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

Ronald J. Schutz
MN Bar No. 0130849
Email: rschutz@robinskaplan.com
Aaron R. Fahrenkrog (to appear *pro hac vice*)
MN Bar No. 0386673
Email: afahrenkrog@robinskaplan.com
Logan J. Drew
MN Bar No. 0389449
Email: ldrew@robinskaplan.com
Mary Pheng (to appear *pro hac vice*)
MN Bar No. 0398500
Email: mpheng@robinskaplan.com
ROBINS KAPLAN LLP
2800 LaSalle Plaza
800 LaSalle Avenue
Minneapolis, MN 55402
Telephone: 612-349-8500
Facsimile: 612-339-4181

Of Counsel:

T. John Ward, Jr.
Texas State Bar No. 00794818
E-mail: jw@wsfirm.com
Andrea L. Fair
Texas State Bar No. 24078488
E-mail: andrea@wsfirm.com
WARD, SMITH & HILL, PLLC
1507 Bill Owens Parkway
Longview, TX 75604
(903) 757-6400 (telephone)
(903) 757-2323 (facsimile)

Attorneys for Plaintiff ACQIS LLC