

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

VANTAGE MICRO LLC,

Plaintiff,

v.

NVIDIA CORPORATION,

Defendant.

Civil Action No. 6;19-cv-00582

DEMAND FOR JURY TRIAL

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Vantage Micro LLC (“Vantage Micro” or “Plaintiff”) hereby alleges for its Complaint for patent infringement against Defendant NVIDIA Corporation (“NVIDIA” or “Defendant”) on personal knowledge as to its own actions and on information and belief as to the actions of others, as follows:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 1 *et seq.*

THE PARTIES

2. Plaintiff Vantage Micro is a limited liability company organized under the laws of the State of Delaware, with its principal place of business at 717 North Union Street, Suite 9, Wilmington, DE 19805.

3. On information and belief, Defendant NVIDIA is a corporation organized and existing under the laws of Delaware, with its principal place of business at 2701 San Tomas Expressway, Santa Clara, CA 95050. NVIDIA is registered with the State of Texas and may be

served with process through its registered agent, Corporation Service Company d/b/a CSC-Lawyers Incorporating Service Company, 211 E. 7th St., Suite 620, Austin, TX 78701. On information and belief, NVIDIA has a regional office in this District, including at least at 11001 Lakeline Blvd., Building 2, Suite 100, Austin, TX 78717.

4. On information and belief, NVIDIA designs, develops, manufactures, sells, offers to sell, and imports GPUs, systems-on-chips (“SoCs”), and graphics cards for a wide range of products, devices, systems, and/or components of systems, including mobile devices (e.g., mobile phones and personal laptops), desktops, and workstations. NVIDIA additionally creates and provides reference graphics card designs for third parties to use when incorporating NVIDIA GPUs into third-party graphics cards. On information and belief, NVIDIA designs and develops GPUs, SoCs, graphics cards and other products that infringe the patents asserted in this action (as described further herein) in this District.

5. On information and belief, NVIDIA additionally manufactures, or contracts third parties to manufacture, mobile processors for smartphones, tablets, and other devices. NVIDIA also sells tablet computers and other devices under the “SHIELD” brand name and provides them to third parties that, in this District, develop, manufacture, sell, and offer to sell tablets, mobile, and desktop devices.

6. On information and belief, NVIDIA conducts a significant amount of business in Texas and this District through online sales and advertisements directly to consumers, through product sales by NVIDIA’s distributors and resellers, and in concert and partnership with third parties who sell graphics cards, personal computers, servers, and notebook computers.

7. Vantage Micro is the assignee and owner of the patents at issue in this action: U.S. Patents Nos. 6,678,838, 7,414,606, 6,351,684, 9,959,593, and 6,469,703 (collectively, the

“Asserted Patents”). Vantage Micro holds all substantial rights and interest in the Asserted Patents, as described below, including the exclusive right to sue NVIDIA for infringement and recover damages.

8. Vantage Micro seeks monetary damages and prejudgment interest for NVIDIA’s past and ongoing direct and indirect infringement of the Asserted Patents.

JURISDICTION AND VENUE

9. This action for patent infringement arises under the patent laws of the United States, Title 35 of the United States Code.

10. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

11. This Court has personal jurisdiction over NVIDIA because NVIDIA conducts substantial business in Texas and in this District, including establishment of a regional office at 11001 Lakeline Blvd., Building 2, Suite 100, Austin, TX 78717 (*see, e.g.*, <https://nvidia.weebly.com/contact-us.html> (last accessed and downloaded on July 30, 2019)). NVIDIA makes, uses, sells, offers to sell, and/or imports its systems and components, including systems and components that infringe one or more claims of the Asserted Patents, within the state of Texas and in this District. Such business conducted in this District includes, for example, selling and offering to sell NVIDIA systems and components to consumers in this District. NVIDIA derives substantial revenue from the sale of such systems and components that are distributed within the District, including to consumers, and/or NVIDIA expects or should reasonably expect its actions to have consequences within the District and derives substantial revenue from interstate and international commerce. NVIDIA has committed and continues to commit acts of patent infringement, including making, using, selling, offering to sell, and/or importing within this District systems and/or components that infringe one or more claims of the Asserted Patents.

12. Furthermore, personal jurisdiction over NVIDIA in this action comports with due process. NVIDIA has conducted and regularly conducts business within the United States and this District. NVIDIA has purposefully availed itself of the privileges of conducting business in the United States, and more specifically in the State of Texas and this District. NVIDIA has sought protection and benefit from the laws of the State of Texas by placing infringing products into the stream of commerce through an established distribution channel with the awareness and/or intent that they will be purchased by consumers in this District. Having purposefully availed itself of the privilege of conducting business within this District, NVIDIA should reasonably and fairly anticipate being brought into court here.

13. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400(b). Defendant NVIDIA is subject to personal jurisdiction in this District and a substantial part of the events giving rise to Vantage Micro's claims against NVIDIA occurred and continue to occur in this District. NVIDIA has a regular and established place of business in this district—including at least its regional office at 11001 Lakeline Blvd., Building 2, Suite 100, Austin, TX 78717—and its acts of infringement have taken place and are continuing to take place in this District.

14. On information and belief, NVIDIA employs engineers in this District to design and develop products, devices, systems, and/or components of systems that are accused of infringing or more claims of the Asserted Patents. On information and belief, NVIDIA conducts software and hardware development, marketing, and promotion activities with respect to NVIDIA products that infringe one or more claims of the Asserted Patents.

15. Further, NVIDIA has regularly made new product announcements in the state of Texas and this District. For example, on May 6, 2016, NVIDIA selected a forum in this judicial district to announce and offer for sale certain NVIDIA graphics cards, which upon information

and belief infringe at least one claim of at least one of the Asserted Patents. Specifically, NVIDIA's co-founder and CEO Jensen Huang promoted NVIDIA products, including the NVIDIA GeForce GTX 1080 graphics card, at the Austin Convention Center located at 500 East Cesar Chavez Street, Austin, TX, 78701, in this judicial district. Mr. Huang demonstrated and touted the capabilities of the GeForce GTX 1080 product. NVIDIA also demonstrated for the first time another infringing product (GeForce GTX 1070).

16. Additionally, NVIDIA—directly or through intermediaries (including distributors, retailers, and others), subsidiaries, alter egos, and/or agents—ships, distributes, offers for sale, and/or sells its products in the United States and this District. NVIDIA has purposefully and voluntarily placed one or more of its infringing products into the stream of commerce with the awareness and/or intent that they will be purchased by consumers in this District. On information and belief, NVIDIA knowingly and purposefully ships infringing products into, and within, this District through an established distribution channel. These infringing products have been, and continue to be, purchased by consumers and businesses in this District.

THE ASSERTED PATENTS

17. On January 13, 2004, the United States Patent and Trademark Office (“USPTO”) duly and legally issued U.S. Patent No. 6,678,838 (“the ’838 Patent”), entitled “Method to Track Master Contribution Information in a Write Buffer.” A copy of the ’838 Patent is attached hereto as Exhibit 1.

18. Vantage Micro owns all substantial right, title, and interest in the ’838 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

19. On August 19, 2008, the USPTO duly and legally issued U.S. Patent No. 7,414,606 (“the ’606 Patent”), entitled “Method and Apparatus for Detecting a Flat Panel Display Monitor.” A copy of the ’606 Patent is attached hereto as Exhibit 2.

20. Vantage Micro owns all substantial right, title, and interest in the ’606 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

21. On February 26, 2002, the USPTO duly and legally issued U.S. Patent No. 6,351,684 (“the ’684 Patent”), entitled “Mask Identification Database Server.” A copy of the ’684 Patent is attached hereto as Exhibit 3.

22. Vantage Micro owns all substantial right, title, and interest in the ’684 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

23. On May 1, 2018, the USPTO duly and legally issued U.S. Patent No. 9,959,593 (“the ’593 Patent”), entitled “Memory Controller Having Plurality of Channels That Provides Simultaneous Access to Data When Accessing Unified Graphics Memory.” A copy of the ’593 Patent is attached hereto as Exhibit 4.

24. Vantage Micro owns all substantial right, title, and interest in the ’593 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

25. On January 13, 2004, the United States Patent and Trademark Office (“USPTO”) duly and legally issued U.S. Patent No. 6,469,703 (“the ’703 Patent”), entitled “System of Accessing Data in a Graphics System and Method Thereof.” A copy of the ’703 Patent is attached hereto as Exhibit 5.

26. Vantage Micro owns all substantial right, title, and interest in the ’703 Patent, and holds the right to sue and recover damages for infringement thereof, including past infringement.

COUNT I - INFRINGEMENT OF U.S. PATENT NO. 6,678,838

27. Vantage Micro incorporates and realleges the preceding paragraphs as if fully set forth herein.

28. At least as of May 14, 2019, Vantage Micro placed NVIDIA on actual notice of the '838 Patent and actual notice that its actions constituted and continued to constitute infringement of the '838 Patent. NVIDIA has had actual knowledge of the '838 Patent and its own infringement of the '838 Patent since at least that time.

29. NVIDIA has infringed one or more claims of the '838 Patent, including but not limited to Claim 11, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, at least by making, using, selling, importing, and/or offering to sell electronic products wherein multiple masters (including but not limited to computer processors, processor cores, graphics processors, and noncore master peripherals) write data to a memory (including but not limited to shared memory), where the memory includes information to associate a master with the data (“'838 Infringing Products”).

30. Discovery is expected to uncover the full extent of NVIDIA's infringement of the '838 Patent beyond the '838 Infringing Products already identified through public information.

31. Attached hereto as Exhibit 6, and incorporated by reference herein, is a claim chart detailing how each element of independent Claim 11 of the '838 Patent is found in the Jetson Nano, which is an example of an '838 Infringing Product. On information and belief, any use of the Jetson Nano necessarily practices the method of Claim 11 of the '838 Patent.

32. On information and belief, NVIDIA has induced infringement of one or more claims of the '838 Patent, including but not limited to Claim 11, pursuant to 35 U.S.C. § 271(b), by encouraging its customers of the '838 Infringing Products and other third parties (including, *inter alia*, the downstream customers of its customers) to make, use, sell, offer to sell, and/or

import in the United States without authorization the '838 Infringing Products (or products of which the '838 Infringing Products are components). NVIDIA has engaged in acts of inducement with the knowledge (at least as of May 14, 2019) that such actions constituted infringement of one or more claims of the '838 Patent and the specific intent to encourage that infringement.

33. NVIDIA's acts of inducement include, *inter alia*: providing the '838 Infringing Products to its customers and other third parties and intending them to use the '838 Infringing Products; providing information, advertising, and instructions for these products through its own and third-party websites (*see, e.g.*, <https://developer.nvidia.com/embedded/jetson-tx1>); providing potential customers with instructions on how to obtain these products and warranting the products when obtained through authorized distribution networks (*see, e.g.*, https://developer.nvidia.com/buy-jetson?product=jetson_tx1&location=US); and providing support and training to enable customers to use the products in an infringing way (*see, e.g.*, <https://developer.nvidia.com/embedded/downloads/archive>).

34. On information and belief, NVIDIA has contributed to infringement of one or more claims of the '838 Patent under 35 U.S.C. § 271(c), including but not limited to Claim 11, by offering to sell or selling within the United States and/or importing into the United States without authorization one or more components of the '838 Infringing Products (or products of which the '838 Infringing Products are components) with the knowledge (at least as of May 14, 2019) that such component(s) are especially made or especially adapted for use in an infringement of the '838 Patent and are not staple articles of commerce suitable for substantial non-infringing use.

35. NVIDIA has directly and indirectly infringed the '838 Patent and is thus liable for infringement of the '838 Patent pursuant to 35 U.S.C. § 271.

36. Vantage Micro has suffered, and continues to suffer, damages as a result of NVIDIA's infringement of the '838 Patent.

37. NVIDIA continued to infringe the '838 Patent from at least May 14, 2019 until its expiration, despite being on notice of the '838 Patent and its infringement. NVIDIA has therefore infringed the '838 Patent knowingly, willfully, deliberately, and in disregard of Plaintiff's patent rights since at least May 14, 2019, at least by infringing with actual knowledge of its direct and indirect infringement or while remaining willfully blind to the fact of its direct and indirect infringement. As a result of at least this conduct, Vantage Micro is entitled to enhanced damages under 35 U.S.C. § 284 and to attorneys' fees and costs under 35 U.S.C. § 285.

38. Vantage Micro reserves the right to modify its infringement theories as discovery progresses in this case. Vantage Micro shall not be estopped for purposes of its infringement contentions or its claim constructions by the claim charts that it provides with this Complaint. Vantage Micro intends the claim chart (Exhibit 6) for the '838 Patent to satisfy the notice requirements of Rule 8(a)(2) of the Federal Rule of Civil Procedure. The claim chart is not Vantage Micro's preliminary or final infringement contentions or preliminary or final claim construction positions.

COUNT II - INFRINGEMENT OF U.S. PATENT NO. 7,414,606

39. Vantage Micro incorporates and realleges the preceding paragraphs as if fully set forth herein.

40. At least as of May 14, 2019, Vantage Micro placed NVIDIA on actual notice of the '606 Patent and actual notice that its actions constituted and continue to constitute infringement of the '606 Patent.

41. NVIDIA has infringed and continues to infringe one or more claims of the '606 Patent, including but not limited to Claim 6, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing in the United States without authority, microprocessors and graphics processing units ("GPUs"), systems-on-chips ("SoCs"), graphics cards, and similar products, devices, systems, and/or components of systems that detect, or support the detection of, monitors, including but not limited to Liquid Crystal Display ("LCD"), Light-Emitting Diode ("LED"), and Plasma Display Panel ("PDP") monitors using various connection interfaces or "ports," including but not limited to High-Definition Multimedia Interface ("HDMI"), DisplayPort ("DP"), and/or Digital Visual Interface ("DVI") connections that support or comply with the HDMI, DP, and/or DVI specification ("'606 Infringing Products"). The '606 Infringing Products include, without limitation, at least NVIDIA's Jetson Nano, Jetson AGX Xavier, Jetson TX2, DGX Series (e.g., DGX Station), Titan Series (e.g., Titan RTX, Titan V, and Titan Xp), Quadro Series (e.g., Quadro RTX 8000, Quadro RTX 6000, Quadro RTX 5000, GV100, GP100, P6000, P5000, P4000, P2200, P2000, P1000, P620, P600, P400), NVS series (e.g., NVS 810, NVS 510, and NVS 310), GeForce RTX series (e.g., RTX 20 series such as RTX 2080), GeForce GTX series (e.g., GTX 9 series such as GTX 980, GTX 10 series such as GTX 1080, and GTX 16 series such as GTX 1660), GT series (e.g., GT 1030), Tegra series (e.g., Tegra X1, Tegra K1, and Tegra 4 series), GeForce Gaming laptops (e.g., Max-Q and Studio laptops), NVIDIA SHIELD Android TV, and NVIDIA SHIELD tablets.

42. Discovery is expected to uncover the full extent of NVIDIA's infringement of the '606 Patent beyond the '606 Infringing Products already identified through public information.

43. Attached hereto as Exhibit 7, and incorporated by reference herein, is a claim chart detailing how a '606 Infringing Product, the NVIDIA GeForce RTX 2080 graphics card, satisfies each element of independent Claim 6 of the '606 Patent.

44. On information and belief, NVIDIA has induced and continues to induce infringement of one or more claims of the '606 Patent, including, but not limited to, Claim 6, pursuant to 35 U.S.C. § 271(b) by encouraging its customers and other third parties such as users, distributors, wholesalers, and retailers of the '606 Infringing Products to make, use, sell, offer to sell, and/or import in the United States without authorization the '606 Infringing Products (or products of which the '606 Infringing Products are components). NVIDIA has engaged in acts of inducement with the knowledge (at least as of May 14, 2019) that such actions constituted infringement of one or more claims of the '606 Patent and the specific intent to encourage that infringement.

45. NVIDIA's acts of inducement include, without limitation: providing the '606 Infringing Products to its customers and other third parties and intending them to use the '606 Infringing Products with hardware, software, and other infrastructure that enable and/or make use of these products; providing information, advertising, and instructions for these products through its own and third-party websites (*see, e.g.*, <https://www.nvidia.com/en-us/geforce/graphics-cards/rtx-2080-ti/080Ti>, regarding one of the '606 Infringing Products) and <https://www.nvidia.com/en-us/design-visualization/where-to-buy-quadro/> (advertising and selling the '606 Infringing Products, including Quadro workstations and GPUs)); encouraging customers and other third parties to communicate directly with NVIDIA representatives about these products for purposes of technical assistance and repair as well as sales and marketing (*see, e.g.*, <https://www.nvidia.com/object/support.html>; [- 11 -](https://www.nvidia.com/object/nv-uefi-</p></div><div data-bbox=)

update-x64.html); encouraging customers and other third parties to use the '606 Infringing Products (*see, e.g.*, https://nvidia.custhelp.com/app/answers/detail/a_id/4449/~nvidia-recommended-display-adapters) (assisting customers with HDMI, DP, and/or DVI connection(s), for use with the GeForce and Quadro series through various “recommended display adapters”)); and providing instructions on how to use HDMI with the '606 Infringing Products (*see, e.g.*, https://nvidia.custhelp.com/app/answers/detail/a_id/3567/kw/HDMI; https://nvidia.custhelp.com/app/answers/detail/a_id/2593/~how-do-i-setup-my-nvidia-based-graphics-card-to-work-with-my-hdtv).

46. For example, NVIDIA’s technical documentation supplied with a '606 Infringing Product, the NVIDIA 2080Ti graphics card, instructs users to configure the NVIDIA 2080Ti graphics card for use with HDMI, DisplayPort, and/or DVI connections, and thus to detect a HDMI-compliant, DisplayPort-compliant, and/or DVI-compliant monitor (*see, e.g.*, “Configuring HDMI,” pages 6, 11, and 16, GeForce RTX 2080Ti User Guide, *available at* https://www.nvidia.com/content/force-gtx/GEFORCE_RTX_2080Ti_User_Guide.pdf (last accessed July 30, 2019)).

47. On information and belief, NVIDIA has contributed to, and continues to contribute to, infringement of one or more claims of the '606 Patent, including but not limited to Claim 6, pursuant to 35 U.S.C. § 271(c) by offering to sell or selling within the United States, importing and/or supplying in the United States without authority one or more components of the '606 Infringing Products (or products of which the '606 Infringing Products are components) with the knowledge (at least as of May 14, 2019) that such components are especially made or especially adapted for use in an infringement of the '606 Patent and are not staple articles of commerce suitable for substantial non-infringing use.

48. NVIDIA has directly and indirectly infringed the '606 Patent and is thus liable for infringement of the '606 Patent pursuant to 35 U.S.C. § 271.

49. Vantage Micro has suffered, and continues to suffer, damages as a result of NVIDIA's infringement of the '606 Patent.

50. NVIDIA has continued to infringe the '606 Patent since at least May 14, 2019, despite being on notice of the '606 Patent and its infringement. NVIDIA has therefore infringed the '606 Patent knowingly, willfully, deliberately, and in disregard of Plaintiff's patent rights since at least May 14, 2019, at least by infringing with actual knowledge of its direct and indirect infringement or while remaining willfully blind to the fact of its direct and indirect infringement. As a result of at least this conduct, Vantage Micro is entitled to enhanced damages under 35 U.S.C. § 284 and to attorneys' fees and costs under 35 U.S.C. § 285.

51. Vantage Micro reserves the right to modify its infringement theories as discovery progresses in this case. Vantage Micro shall not be estopped for purposes of its infringement contentions or its claim constructions by the claim charts that it provides with this Complaint. Vantage Micro intends the claim chart (Exhibit 7) for the '606 Patent to satisfy the notice requirements of Rule 8(a)(2) of the Federal Rule of Civil Procedure. The claim chart is not Vantage Micro's preliminary or final infringement contentions or preliminary or final claim construction positions.

COUNT III - INFRINGEMENT OF U.S. PATENT NO. 6,351,684

52. Vantage Micro incorporates and realleges the preceding paragraphs as if fully set forth herein.

53. At least as of the filing and service of this Complaint, Vantage Micro placed NVIDIA on actual notice of the '684 Patent and actual notice that its actions constituted and

continue to constitute infringement of the '684 Patent. NVIDIA has had actual knowledge of the '684 Patent and its own infringement of the '684 Patent since at least that time.

54. NVIDIA has infringed and continues to infringe one or more claims of the '684 Patent, literally or under the doctrine of equivalents, by importing into the United States, and/or using, selling, and/or offering to sell in the United States without authority integrated circuits manufactured using a mask movement tracking process and products containing these integrated circuits ("'684 Infringing Products"). The '684 Infringing Products include, without limitation, NVIDIA's GeForce series (e.g., GeForce RTX 2080 Ti) and Quadro series (e.g., Quadro RTX 6000 and Quadro T1000). The '684 Infringing Products are fabricated using, for example, Taiwan Semiconductor Manufacturing Company's ("TSMC") 12nm process node, which employs a mask movement tracking process. As an example, NVIDIA's GeForce RTX 2080Ti graphics cards are made using TSMC's 12nm FinFET technology. *See, e.g.*, NVIDIA Turing GPU Architecture ("GPU Architecture"), *available at* <https://www.nvidia.com/content/dam/en-zz/Solutions/design-visualization/technologies/turing-architecture/NVIDIA-Turing-Architecture-Whitepaper.pdf> (last accessed Aug. 6, 2019) ("The high-end TU102 GPU includes 18.6 billion transistors fabricated on TSMC's 12 nm FFN (FinFET NVIDIA) high-performance manufacturing process" and "we focus on the architecture and capabilities of NVIDIA's flagship Turing GPU, which is codenamed TU102 and will be shipping in the GeForce RTX 2080 Ti and Quadro RTX 6000.").

55. NVIDIA has directly infringed and continues to infringe Claim 1 of the '684 Patent, literally or under the doctrine of equivalents, by importing into the United States and/or selling and/or offering for sale in the United States, without authority or license, the '684 Infringing Products, in violation of 35 U.S.C. §§ 271 (g). On information and belief, NVIDIA

imports the '684 Infringing Products into the United States for assembly, testing, evaluation, development, sales, and distribution to customers located in the United States and worldwide.

56. By using, offering for sale, selling and/or importing into the United States the '684 Infringing Products, NVIDIA has injured Vantage Micro and is liable to Vantage Micro for infringement of the '684 Patent.

57. Attached hereto as Exhibit 8, and incorporated by reference herein, is a claim chart detailing how a '684 Infringing Product, the GeForce RTX 2080 graphics card, satisfies each element of independent Claim 1 of the '684 Patent. On information and belief, the '684 Infringing Products are neither materially changed by subsequent process nor become trivial and nonessential components of another product.

58. On information and belief, NVIDIA has induced and continues to induce infringement of one or more claims of the '684 Patent by, among other things, knowingly and with intent, actively encouraging its foundries, suppliers, original equipment manufacturers ("OEMs"), contract equipment manufacturers ("CEMs"), contract manufactures ("CMs"), original device manufacturers ("ODMs"), customers, resellers, and retailers to use, sell, offer for sale, and import the '684 Infringing Products as well as products containing the '684 Infringing Products in a manner that constitutes infringement of one or more claims of the '684 Patent.

59. Further, on information and belief, NVIDIA actively entices its OEMs, CEMs, CMs, ODMs, customers, resellers, and retailers through advertising, marketing and sales activity to use the '684 Infringing Products or to incorporate the '684 Infringing Products part of their own infringing products and to sell, offer for sale, and import their own infringing products into the United States.

60. On information and belief, NVIDIA intended such other parties, such as OEMs, CEMs, CMs, ODMs, customers, resellers, and retailers to directly infringe the '684 Patent by using, selling, offering for sale, and importing in the United States the '684 Infringing Products as well as products containing the '684 Infringing Products, and knew that these other parties perform acts that constituted direct infringement.

61. On information and belief, NVIDIA's inducing activity is ongoing and has not stopped since at least the commencement of this action and by the filing and service of this complaint.

62. As a result of NVIDIA's direct and indirect infringement of the '684 Patent, Vantage Micro has suffered and will continue to suffer damage. Vantage Micro is entitled to recover from NVIDIA the damages adequate to compensate for such infringement, which have yet to be determined.

63. NVIDIA has continued to infringe the '684 Patent since at least since the filing and service of this complaint, despite being on notice of the '684 Patent and its infringement.

64. Vantage Micro reserves the right to modify its infringement theories as discovery progresses in this case. Vantage Micro shall not be estopped for purposes of its infringement contentions or its claim constructions by the claim charts that it provides with this Complaint. Vantage Micro intends the claim chart (Exhibit 8) for the '684 Patent to satisfy the notice requirements of Rule 8(a)(2) of the Federal Rule of Civil Procedure. The claim chart is not Vantage Micro's preliminary or final infringement contentions or preliminary or final claim construction positions.

COUNT IV - INFRINGEMENT OF U.S. PATENT NO. 9,959,593

65. Vantage Micro incorporates and realleges the preceding paragraphs as if fully set forth herein.

66. At least as of May 14, 2019, Vantage Micro placed NVIDIA on actual notice of the '593 Patent and actual notice that its actions constituted and continued to constitute infringement of the '593 Patent. NVIDIA has had actual knowledge of the '593 Patent and its own infringement of the '593 Patent since at least that time.

67. NVIDIA has infringed one or more claims of the '593 Patent, including but not limited to Claim 1, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, selling, offering to sell, and/or importing in the United States without authority, microprocessors and GPUs, SoCs, graphics cards, and similar products, devices, systems, and/or components of systems that control, or include a memory controller that controls, memory channels to provide simultaneous access to data for CPU and data for clients in a unified system/graphics memory ("593 Infringing Products"). The '593 Infringing Products include, without limitation, at least NVIDIA's Titan Series (e.g., Titan RTX, Titan V, and Titan Xp) and Tesla series (e.g., Tesla P100, V100, and T4) products.

68. Discovery is expected to uncover the full extent of NVIDIA's infringement of the '593 Patent beyond the '593 Infringing Products already identified through public information.

69. Attached hereto as Exhibit 9, and incorporated by reference herein, is a claim chart detailing how a '593 Infringing Product, NVIDIA's Tesla P100, satisfies each element of independent Claim 1 of the '593 Patent. On information and belief, any use of the Tesla P100 necessarily practices the claimed method of at least one claim of the '593 Patent.

70. On information and belief, NVIDIA has induced infringement of one or more claims of the '593 Patent, including but not limited to Claim 1, pursuant to 35 U.S.C. § 271(b), by encouraging its customers and other third parties (including, *inter alia*, the downstream customers of its customers) such as users, distributors, wholesalers, and retailers of the '593 Infringing Products to make, use, sell, offer to sell, and/or import in the United States without authorization the '593 Infringing Products (or products of which the '593 Infringing Products are components). NVIDIA has engaged in acts of inducement with the knowledge (at least as of May 14, 2019) that such actions constituted infringement of one or more claims of the '593 Patent and the specific intent to encourage that infringement.

71. NVIDIA's acts of inducement include, without limitation: providing the '593 Infringing Products to its customers and other third parties and intending them to use the '593 Infringing Products; providing information, advertising, and instructions for these products through its own and third-party websites (*see, e.g.*, <https://www.nvidia.com/en-us/data-center/tesla/tesla-qualified-servers-catalog/> (identifying third parties through which the '593 Infringing Products, including Tesla GPUs, are sold)); encouraging customers and other third parties to communicate directly with NVIDIA representatives about these products for purposes of technical assistance and repair as well as sales and marketing (*see, e.g.*, <https://www.nvidia.com/object/support.html> (providing consumers with a "Knowledge Base," "User Forums," "Live Chat" with a NVIDIA support agent, and "Ask Us a Question" to address technical concerns); *see also* <https://www.nvidia.com/Download/index.aspx?lang=en-us> (providing drivers updates and downloads for the '593 Infringing Products including Tesla P100)); encouraging customers and other third parties to use the '593 Infringing Products (*e.g.*, [- 18 -](https://www.nvidia.com/content/dam/en-zz/Solutions/Data-Center/tesla-product-</p></div><div data-bbox=)

literature/nvidia-teslap100-techoverview.pdf and <https://images.nvidia.com/content/pdf/tesla/whitepaper/pascal-architecture-whitepaper.pdf> (recommending consumers to use the '593 Infringing Products *see also* <http://images.nvidia.com/content/tesla/pdf/316028-ApplicationPerformanceGuide-A4-NV-v10-WEB.pdf> (offering a performance guide on memory performance; <https://www.nvidia.com/en-us/data-center/tesla-product-literature/> (providing “Tesla Customer Success Stories” for the '593 Infringing Products)); and providing instructions on how to use the '593 Infringing Products (e.g., <https://devblogs.nvidia.com/unified-memory-cuda-beginners/> (offering instructions on how to use the '593 Infringing Products with Unified Memory) (offering examples on how to optimize the '593 Infringing Products with Unified Memory)).

72. For example, NVIDIA’s technical documentation (NVIDIA Tesla P100 White paper, *available at* <https://images.nvidia.com/content/pdf/tesla/whitepaper/pascal-architecture-whitepaper.pdf>) supplied with a '593 Infringing Product, NVIDIA Tesla P100, instructs users to configure the NVIDIA Tesla P100 for use with Unified Memory (*see, e.g.*, “Figure 19. CUDA 6 Unified Memory,” which “shows an example of how Unified Memory in CUDA 6 simplifies porting of code to the GPU by providing a single pointer to data”).

73. On information and belief, NVIDIA has contributed to infringement of one or more claims of the '593 Patent, including but not limited to Claim 1, pursuant to 35 U.S.C. § 271(c) by offering to sell or selling within the United States and/or importing into the United States without authorization one or more components of the '593 Infringing Products (or products of which the '593 Infringing Products are components) with the knowledge (at least as of May 14, 2019) that such components are especially made or especially adapted for use in an

infringement of the '593 Patent and are not staple articles of commerce suitable for substantial non-infringing use.

74. NVIDIA has directly and indirectly infringed the '593 Patent and is thus liable for infringement of the '593 Patent pursuant to 35 U.S.C. § 271.

75. Vantage Micro has suffered, and continues to suffer, damages as a result of NVIDIA's infringement of the '593 Patent.

76. NVIDIA has continued to infringe the '593 Patent since at least May 14, 2019, despite being on notice of the '593 Patent and its infringement. NVIDIA has therefore infringed the '593 Patent knowingly, willfully, deliberately, and in disregard of Plaintiff's patent rights since at least May 14, 2019, at least by infringing with actual knowledge of its direct and indirect infringement or while remaining willfully blind to the fact of its direct and indirect infringement. As a result of at least this conduct, Vantage Micro is entitled to enhanced damages under 35 U.S.C. § 284 and to attorneys' fees and costs under 35 U.S.C. § 285.

77. Vantage Micro reserves the right to modify its infringement theories as discovery progresses in this case. Vantage Micro shall not be estopped for purposes of its infringement contentions or its claim constructions by the claim charts that it provides with this Complaint. Vantage Micro intends the claim chart (Exhibit 9) for the '593 Patent to satisfy the notice requirements of Rule 8(a)(2) of the Federal Rule of Civil Procedure. The claim chart is not Vantage Micro's preliminary or final infringement contentions or preliminary or final claim construction positions.

COUNT V - INFRINGEMENT OF U.S. PATENT NO. 6,469,703

78. Vantage Micro incorporates and realleges the preceding paragraphs as if fully set forth herein.

79. At least as of May 14, 2019, Vantage Micro placed NVIDIA on actual notice of the '703 Patent and actual notice that its actions constituted and continued to constitute infringement of the '703 Patent. NVIDIA has had actual knowledge of the '703 Patent and its own infringement of the '703 Patent since at least that time.

80. NVIDIA has infringed one or more claims of the '703 Patent, including but not limited to Claim 1, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, at least by using products wherein multiple masters access graphics data in unified memory via multiple channels and wherein data migration between masters is supported ("'703 Infringing Products"). The '703 Infringing Products include, for example, the NVIDIA Quadro GP100 and Quadro P6000.

81. Discovery is expected to uncover the full extent of NVIDIA's infringement of the '703 Patent beyond the '703 Infringing Products already identified through public information.

82. Attached hereto as Exhibit 10, and incorporated by reference herein, is a claim chart detailing how the NVIDIA Quadro GP100, which is one of the '703 Infringing Products, satisfies each element of independent Claim 1 of the '703 Patent. On information and belief, any use of the NVIDIA Quadro GP100 necessarily practices the method of claim 1 of the '703 Patent.

83. On information and belief, NVIDIA has induced infringement of one or more claims of the '703 Patent, including but not limited to Claim 1, pursuant to 35 U.S.C. § 271(b), by encouraging its customers of the '703 Infringing Products and other third parties (including, *inter alia*, the downstream customers of its customers) to make, use sell, offer to sell, and/or import in the United States without authorization the '703 Infringing Products (or products of which the '703 Infringing Products are components). NVIDIA has engaged in acts of inducement

with the knowledge that such actions constituted infringement of one or more claims of the '703 Patent and the specific intent to encourage that infringement.

84. NVIDIA's acts of inducement include, *inter alia*: providing the '703 Infringing Products to its customers and other third parties and intending them to use the '703 Infringing Products; advertising these products through its own and third-party websites (*see, e.g.*, <https://www.pny.com/nvidia-quadro-gp100>; <https://www.nvidia.com/content/dam/en-zz/Solutions/design-visualization/documents/quadro-pascal-gpu-render-data-sheet-redshift-us-nv-HR-FINAL.pdf>); providing potential customers with instructions on how to obtain these products and warranting the products when obtained through authorized distribution networks (*see, e.g.*, <https://www.nvidia.com/en-us/design-visualization/where-to-buy-quadro/>); and providing support and training to enable customers to use the products in an infringing way (*see, e.g.*, NVIDIA, NVIDIA Tesla P100 (WP-08019-001_v01.1) at 9, *available at* <https://images.nvidia.com/content/pdf/tesla/whitepaper/pascal-architecture-whitepaper.pdf>; Nikolay Sakharnykh, Unified Memory on Pascal and Volta 54 (May 10, 2017), <http://on-demand.gputechconf.com/gtc/2017/presentation/s7285-nikolay-sakharnykh-unified-memory-on-pascal-and-volta.pdf>; Mark Harris, *Cuda 8 and Beyond*, YOUTUBE (Sep. 28, 2016), <https://www.youtube.com/watch?v=1rchhZTBqKk>; <https://developer.nvidia.com/cuda-gpus>).

85. On information and belief, NVIDIA has contributed to infringement of one or more claims of the '703 Patent under 35 U.S.C. § 271(c), including but not limited to Claim 1, by offering to sell or selling within the United States and/or importing into the United States without authorization one or more components of the '703 Infringing Products (or products of which the '703 Infringing Products are components) with the knowledge (at least as of May 14, 2019) that such component(s) are especially made or especially adapted for use in an

infringement of the '703 Patent and are not staple articles of commerce suitable for substantial non-infringing use.

86. On information and belief, for at least the six years preceding the filing of this Complaint, NVIDIA has had actual knowledge of the '703 Patent and its own infringement of the '703 Patent. This actual knowledge is evidenced by at least the prosecution of its own patents. The '703 Patent is cited on the face of at least nine patents issued from February 8, 2005 to December 11, 2012 and assigned to NVIDIA. NVIDIA cited the '703 Patent as relevant prior art in the prosecution of multiple NVIDIA patents.

87. NVIDIA has directly and indirectly infringed the '703 Patent and is thus liable for infringement of the '703 Patent pursuant to 35 U.S.C. § 271.

88. Vantage Micro has suffered, and continues to suffer, damages as a result of NVIDIA's infringement of the '703 Patent.

89. NVIDIA continued to infringe the '703 Patent from the time of its knowledge of the '703 Patent until its expiration. NVIDIA has been on notice of the '703 Patent and the accused infringement at least as early as May 14, 2019. NVIDIA has therefore infringed the '703 Patent knowingly, willfully, deliberately, and in disregard of Plaintiff's patent rights, at least by infringing with actual knowledge of its direct and indirect infringement or while remaining willfully blind to the fact of its direct and indirect infringement. As a result of at least this conduct, Vantage Micro is entitled to enhanced damages under 35 U.S.C. § 284 and to attorneys' fees and costs under 35 U.S.C. § 285.

90. Vantage Micro reserves the right to modify its infringement theories as discovery progresses in this case. Vantage Micro shall not be estopped for purposes of its infringement contentions or its claim constructions by the claim charts that it provides with this Complaint.

Vantage Micro intends the claim chart (Exhibit 10) for the '703 Patent to satisfy the notice requirements of Rule 8(a)(2) of the Federal Rule of Civil Procedure. The claim chart is not Vantage Micro's preliminary or final infringement contentions or preliminary or final claim construction positions.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Vantage Micro demands judgment for itself and against NVIDIA as follows:

- a. A judgment that NVIDIA has infringed, and continues to infringe, one or more claims of the Asserted Patents;
- b. A judgment that NVIDIA has induced infringement, and continues to induce infringement, of one or more claims of the Asserted Patents;
- c. A judgment that NVIDIA has contributed to, and continues to contribute, to the infringement of one or more claims of the Asserted Patents;
- d. A judgment that NVIDIA has willfully infringed one or more claims of one or more of the Asserted Patents;
- e. A judgment awarding Vantage Micro all damages adequate to compensate for NVIDIA's infringement, and in no event less than a reasonable royalty for NVIDIA's acts of infringement, including all pre-judgment and post-judgment interest at the maximum rate allowed by law;
- f. A judgment awarding Vantage Micro treble damages pursuant to 35 U.S.C. § 284 as a result of NVIDIA's willful conduct;
- g. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding Vantage Micro its reasonable attorneys' fees; and

h. A judgment awarding Vantage Micro such other relief as the Court may deem just and equitable.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff Vantage Micro demands a trial by jury of this action.

Dated: October 8, 2019

DEVLIN LAW FIRM LLC

/s/ Alex Chan

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