

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

_____	:	
ADVANCED SILICON TECHNOLOGIES, LLC,	:	
Plaintiff,	:	
	:	
v.	:	Civil Action No.
	:	
NVIDIA CORPORATION,	:	Jury Trial Demanded
Defendant.	:	
_____	:	

**COMPLAINT FOR PATENT INFRINGEMENT**

Advanced Silicon Technologies, LLC (“Advanced Silicon” or “Plaintiff”), brings this action for patent infringement against Defendant NVIDIA Corporation (“NVIDIA” or “Defendant”), and alleges as follows:

**NATURE OF THE ACTION**

1. This is an action for patent infringement under the patent laws of the United States, Title 35 of the United States Code. Advanced Silicon seeks remedies for Defendant’s infringement of Advanced Silicon’s U.S. Patent Nos. 6,339,428 (“the ’428 Patent”), 6,546,439 (“the ’439 Patent”), 6,630,935 (“the ’935 Patent”), and 8,933,945 (“the ’945 Patent”) (collectively, the “Patents-in-Suit”).

**THE PARTIES**

2. Advanced Silicon is a Delaware limited liability company, with a principal place of business at 118 Maplewood Avenue Unit C-2/Box 8, Portsmouth, NH 03801.

3. Upon information and belief, NVIDIA is a Delaware corporation headquartered at 2701 San Tomas Expressway, Santa Clara, California 95050.

**JURISDICTION AND VENUE**

4. This action arises under the Patent Act, 35 U.S.C. § 1 *et seq.*

5. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338.

6. Venue in this district is proper under 28 U.S.C. §§ 1400(b) and 1391(b) and (c).

7. This Court has personal jurisdiction over NVIDIA by virtue of, *inter alia*, (i) being incorporated in this jurisdiction; (ii) committing at least a portion of the infringements alleged herein within this district; and (iii) regularly doing business or soliciting business, engaging in other persistent courses of conduct and/or deriving substantial revenue from good and services provided to individuals in this district.

### **THE PATENTS**

8. United States Patent No. 6,339,428 is entitled “Method and Apparatus for Compressed Texture Caching in a Video Graphics System,” and issued January 15, 2002 to inventors Mark C. Fowler, Paul Vella, and Michael T. Wright. The ’428 Patent issued from United States Patent Application No. 09/356,398 filed on July 16, 1999. A copy of the ’428 Patent is attached hereto as Exhibit A.

9. United States Patent No. 6,546,439 is entitled “Method and System for Improved Data Access,” and issued April 8, 2003 to inventors Geoffrey S. Strongin and Qadeer A. Qureshi. The ’439 Patent issued from United States Patent Application No. 09/207,970 filed on December 9, 1998. A copy of the ’439 Patent is attached hereto as Exhibit B.

10. United States Patent No. 6,630,935 is entitled “Geometric Engine Including a Computational Module for use in a Video Graphics Controller,” and issued October 7, 2003 to inventors Ralph Clayton Taylor, Michael Andrew Mang, and Michael Mantor. The ’935 Patent issued from United States Patent Application No. 09/556,474 filed on April 21, 2000. A copy of the ’935 Patent is attached as Exhibit C.

11. United States Patent No. 8,933,945 is entitled “Dividing Work Among Multiple Graphics Pipelines Using a Super-Tiling Technique,” and issued January 13, 2015 to inventors Mark M. Leather and Eric Demers. The ’945 Patent issued from United States Patent Application No. 10/459,797 filed on June 12, 2003. The ’945 Patent claims priority to U.S. provisional application serial number 60/429,641 filed on November 27, 2002. A copy of the ’945 Patent is attached as Exhibit D.

12. Advanced Silicon is the lawful assignee and owner of all right, title and interest in and to the ’428 Patent, the ’439 Patent, the ’935 Patent, and the ’945 Patent.

### **INFRINGEMENT OF THE PATENTS-IN-SUIT**

13. NVIDIA has infringed and continues to infringe at least four of Advanced Silicon’s patents that cover important aspects of automotive infotainment systems, head-end units, navigation systems, graphics processors, microprocessors, integrated circuits, and other computing and graphics-capable electronic devices, and automobiles containing such components, including, at least, the integrated circuits containing one or more microprocessors and/or graphics processors and other products containing the same, including, without limitation, the NVIDIA Tegra Series integrated circuits, the NVIDIA Shield, and the NVIDIA EMP9 graphics processor (the “Exemplary NVIDIA Products”).

14. Advanced Silicon incorporates by reference in its allegations herein certain claim charts comparing the exemplary independent claims of the Patents-in-Suit to certain Accused Products as used in automotive infotainment systems and the automobiles containing same.

15. Specifically, Exhibits E, H, and I are exemplary charts comparing the exemplary independent claims of the Patents-in-Suit to the exemplary product BMW i8 Infotainment

system, which includes an NVIDIA EMP9 graphics processor, and 2015 BMW i8 vehicles containing the same.

16. Exhibits F, G, and J include charts comparing the exemplary independent claims of the Patents-in-Suit to the exemplary products Audi TT Infotainment system, which includes an NVIDIA Tegra 3 integrated circuit, and 2016 Audi TT vehicles containing the same.

17. As set forth in Exhibits E through J, the Exemplary NVIDIA Products provide highly relevant circuitry and functionality that practices, in whole or in material part, the technology claimed by the Patents-in-Suit. Advanced Silicon believes that the NVIDIA Tegra series integrated circuit and EMP9 graphics processor exemplary of numerous other products that include Exemplary NVIDIA Products made, used, sold, imported, and offered for sale by NVIDIA because such other products feature the same or substantially similar infringing functionality. Accordingly, on information and belief, numerous other devices that infringe the claims of the Patents-in-Suit have been made, used, sold, imported, and offered for sale by NVIDIA and/or its customers.

**COUNT I**  
**(NVIDIA's Infringement of the '428 Patent)**

18. Paragraphs 1 through 17 are incorporated by reference as if fully restated herein.

19. Advanced Silicon is the assignee and lawful owner of all right, title and interest in and to the '428 Patent.

20. The '428 Patent is valid and enforceable.

21. NVIDIA has infringed, and is still infringing, the '428 Patent in at least this District by making, using, offering to sell, selling and/or importing the Exemplary NVIDIA Products that infringe at least exemplary claims 1-6, 8-9, 10-14, 16-17, and 25-29 of the '428 Patent (the "Exemplary '428 Patent Claims") literally or by the doctrine of equivalence. For

example, the Exemplary NVIDIA Products are application processors, graphics processors, and products containing the same such as but not limited to NVIDIA's Tegra Series integrated circuits, the NVIDIA Shield, and the NVIDIA EMP9 graphics processor and other similar devices directly infringe the Exemplary '428 Patent Claims.

22. On information and belief, NVIDIA directly infringes, and is contributing to and/or inducing the infringement of the '428 Patent by, at least, BMW and Audi in the exemplary products 2015 BMW 428i Infotainment system and the 2016 Audi TT Infotainment system. On information and belief, NVIDIA designs, manufactures, and sells the Exemplary NVIDIA Products which directly infringe and, if used for their normal and intended purpose, lead to direct infringement of the invention claimed in the '428 Patent. NVIDIA actively, knowingly, and intentionally induced, and continues to actively, knowingly, and intentionally induce infringement of the '428 Patent by manufacturing and selling the Exemplary NVIDIA Products, for example but without limitation, graphics processors and integrated circuits, which if used for their normal and intended purpose lead to direct infringement of the invention claimed in the '428 Patent. There are no substantial noninfringing uses of the Exemplary NVIDIA Products. NVIDIA knows and intends that the Accused Products will be used in their ordinary and customary manner for their intended purpose, namely to facilitate graphics rendering, as evidenced by at least product literature distributed in connection with the subject products by NVIDIA.

23. Prior to the filing of this complaint, NVIDIA had actual knowledge of the '428 Patent and that its Accused Products and the products incorporating them are imported into, sold, offered for sale, and used in the United States. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015.

24. In addition to actual knowledge of the '428 Patent, prior to the filing of this complaint, NVIDIA also had knowledge that use of the Exemplary NVIDIA Products in devices by, among others, BMW and Audi, and the use by consumers of the devices into which such the Exemplary NVIDIA Products are incorporated, in the customary and intended manner, is likely to infringe the '428 Patent. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015. On information and belief, NVIDIA has continued to sell the Exemplary NVIDIA Products and distribute product literature and website materials inducing BMW, Audi, and others to use its products in the customary and intended manner which infringes the '428 Patent. Thus, on information and belief, NVIDIA is contributing to and/or inducing the infringement of the '428 Patent.

25. Exhibit E includes charts comparing exemplary independent claims 1, 10, and 25 of the '428 Patent to the BMW i8 Infotainment system, which includes an NVIDIA EMP9 graphics processor, and the 2015 BMW i8 vehicles containing the same. Exhibit F includes charts comparing exemplary independent claims 1, 10, and 25 of the '428 Patent to the Audi TT Infotainment system, which includes an NVIDIA Tegra 3 integrated circuit, and 2016 Audi TT vehicles containing the same. As set forth in these charts, the Exemplary NVIDIA Products provide highly relevant circuitry and functionality that practices, in whole or in material part, the technology claimed by the '428 Patent. Accordingly, the Exemplary NVIDIA Products incorporated in the charted systems satisfy one or all elements of exemplary claims 1, 10, and 25 of the '428 Patent.

26. Advanced Silicon is entitled to recover damages adequate to compensate for NVIDIA's infringement.

**COUNT II**  
**(NVIDIA's Infringement of the '439 Patent)**

27. Paragraphs 1 through 26 are incorporated by reference as if fully restated herein.

28. Advanced Silicon is the assignee and lawful owner of all right, title and interest in and to the '439 Patent.

29. The '439 Patent is valid and enforceable.

30. NVIDIA has infringed, and is still infringing, the '439 Patent in at least this District by making, using, offering to sell, selling and/or importing Accused Products that infringe at least claims 1 – 11, and 14 – 16 of the '439 Patent (the “Exemplary '439 Patent Claims”) literally or by the doctrine of equivalence. For example, the Exemplary NVIDIA Products, NVIDIA Tegra Series integrated circuits, the NVIDIA Shield, and the NVIDIA EMP9 graphics processor, infringe the Exemplary '439 Patent Claims.

31. On information and belief, NVIDIA directly infringes, and is contributing to and/or inducing the infringement of the '428 Patent by, at least, BMW and Audi in the 2015 BMW 428i Infotainment system and the 2016 Audi Infotainment system products. On information and belief, NVIDIA designs, manufactures, and sells the Exemplary NVIDIA Products which directly infringe and, if used for their normal and intended purpose, lead to direct infringement of the invention claimed in the '439 Patent. NVIDIA actively, knowingly, and intentionally induced, and continues to actively, knowingly, and intentionally induce infringement of the '439 Patent by manufacturing and selling the Exemplary NVIDIA Products, for example but without limitation, graphics processors and integrated circuits, which if used for their normal and intended purpose lead to direct infringement of the invention claimed in the '439 Patent. There are no substantial noninfringing uses of these the Exemplary NVIDIA Products. NVIDIA knows and intends that the Accused Products will be used in their ordinary and customary manner for their intended purpose, namely to facilitate graphics rendering, as

evidenced by at least product literature distributed in connection with the subject products by NVIDIA.

32. Prior to the filing of this complaint, NVIDIA had actual knowledge of '439 Patent and that the Exemplary NVIDIA Products and the products incorporating them are imported into, sold, offered for sale, and used in the United States. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015.

33. In addition to actual knowledge of the '439 Patent, prior to the filing of this complaint, NVIDIA also had knowledge that use of the Exemplary NVIDIA Products in devices by, among others, BMW and Audi, and the use by consumers of the devices into which such Exemplary NVIDIA Products are incorporated, in the customary and intended manner, is likely to infringe the '439 Patent. *See* Exhibit K, Letter to NVIDIA dated December 8, 2015. On information and belief, NVIDIA has continued to sell the Exemplary NVIDIA Products and distribute product literature and website materials inducing BMW, Audi, and others to use its products in the customary and intended manner which infringes the '439 Patent. Thus, on information and belief, NVIDIA is contributing to and/or inducing the infringement of the '439 Patent.

34. Exhibit G includes charts comparing exemplary independent claim 1 of the '439 Patent to the Audi TT Infotainment system, NVIDIA Tegra 3 integrated circuit thereof, and Audi TT vehicles containing the same. As set forth in these charts, the Exemplary NVIDIA Products provide highly relevant circuitry and functionality that practices, in whole or in material part, the technology claimed by the '439 Patent. Accordingly, the Audi TT Infotainment system and vehicles containing the same infringe at least exemplary independent claim 1 of the '439 Patent



and the Exemplary NVIDIA Products incorporated in the charted systems satisfy one or more elements of claim 1 of the '439 Patent.

35. Advanced Silicon is entitled to recover damages adequate to compensate for NVIDIA's infringement.

**COUNT III**  
**(NVIDIA's Infringement of the '935 Patent)**

36. Paragraphs 1 through 35 are incorporated by reference as if fully restated herein.

37. Advanced Silicon is the assignee and lawful owner of all right, title and interest in and to the '935 Patent.

38. The '935 Patent is valid and enforceable.

39. NVIDIA has infringed, and is still infringing, the '935 Patent in at least this District by making, using, offering to sell, selling and/or importing the Exemplary NVIDIA Products at least claims 1, 2, and 4 – 8 of the '935 Patent (the "Exemplary '935 Patent Claims") literally or by the doctrine of equivalence. For example, the Exemplary NVIDIA Products , NVIDIA Tegra Series integrated circuits, the NVIDIA Shield, and the NVIDIA EMP9 graphics processor, infringe the Asserted '935 Patent Claims.

40. On information and belief, NVIDIA directly infringes, and is contributing to and/or inducing the infringement of the '935 Patent by, at least, BMW as seen in the 2015 BMW 428i Infotainment system. On information and belief, NVIDIA designs, manufactures, and sells the Exemplary NVIDIA Products which directly infringe and, if used for their normal and intended purpose, lead to direct infringement of the invention claimed in the '935 Patent. NVIDIA actively, knowingly, and intentionally induced, and continues to actively, knowingly, and intentionally induce infringement of the '935 Patent by manufacturing and selling the Exemplary NVIDIA Products, for example but without limitation, graphics processors and

integrated circuits, which if used for their normal and intended purpose lead to direct infringement of the invention claimed in the '935 Patent. There are no substantial noninfringing uses of these the Exemplary NVIDIA Products. NVIDIA knows and intends that the Exemplary NVIDIA Products will be used in their ordinary and customary manner for their intended purpose, namely to facilitate graphics rendering, as evidenced by at least product literature distributed in connection with the subject products by NVIDIA.

41. Prior to the filing of this complaint, NVIDIA had actual knowledge of the '935 Patent and that the Exemplary NVIDIA Products and the products incorporating them are imported into, sold, offered for sale, and used in the United States. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015.

42. In addition to actual knowledge of the '935 Patent, prior to the filing of this complaint, NVIDIA also had knowledge that use of the Exemplary NVIDIA Products in devices by, among others, BMW, and the use by consumers of the devices into which such Exemplary NVIDIA Products are incorporated, in the customary and intended manner, infringes the '935 Patent. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015. On information and belief, NVIDIA has continued to sell the Exemplary NVIDIA Products and distribute product literature and website materials inducing BMW and others to use its products in the customary and intended manner which infringes the '935 Patent. Thus, on information and belief, NVIDIA is contributing to and/or inducing the infringement of the '935 Patent.

43. Exhibit H includes charts comparing exemplary independent claim 1 of the '935 Patent to the BMW i8 Infotainment system, NVIDIA EMP9 graphics processor thereof, and 2015 BMW i8 vehicles containing the same. As set forth in these charts, the Exemplary NVIDIA Products provide highly relevant circuitry and functionality that practices, in whole or

in material part, the technology claimed by the '935 Patent. Accordingly, the Exemplary NVIDIA Products incorporated in the charted systems satisfy one or more elements of claim 1 of the '935 Patent.

44. Advanced Silicon is entitled to recover damages adequate to compensate for NVIDIA's infringement.

**COUNT IV**  
**(NVIDIA's Infringement of the '945 Patent)**

45. Paragraphs 1 through 44 are incorporated by reference as if fully restated herein.

46. Advanced Silicon is the assignee and lawful owner of all right, title and interest in and to the '945 Patent.

47. The '945 Patent is valid and enforceable.

48. NVIDIA has infringed, and is still infringing, the '945 Patent in at least this District by making, using, offering to sell, selling and/or importing products that infringe at least claims 1 – 11 and 21 of the '945 Patent (the "Exemplary '945 Patent Claims") literally or by the doctrine of equivalence. For example, the Exemplary NVIDIA Products, NVIDIA Tegra Series integrated circuits, the NVIDIA Shield, and the NVIDIA EMP9 graphics processor, infringe the Exemplary '945 Patent Claims.

49. On information and belief, NVIDIA directly infringes, and is contributing to and/or inducing the infringement of the '945 Patent by, at least, BMW and Audi as seen in the 2015 BMW 428i Infotainment system and the 2016 Audi TT Infotainment system. On information and belief, NVIDIA designs, manufactures, and sells one or more Exemplary NVIDIA Product which, if used for their normal and intended purpose, lead to direct infringement of the invention claimed in the '945 Patent. NVIDIA actively, knowingly, and intentionally induced, and continues to actively, knowingly, and intentionally induce

infringement of the '945 Patent by manufacturing and selling the Exemplary NVIDIA Products, for example but without limitation, graphics processors and integrated circuits, which if used for their normal and intended purpose lead to direct infringement of the invention claimed in the '945 Patent. There are no substantial noninfringing uses of these Exemplary NVIDIA Products. NVIDIA knows and intends that the Exemplary NVIDIA Products will be used in their ordinary and customary manner for their intended purpose, namely to facilitate graphics rendering, as evidenced by at least product literature distributed in connection with the subject products by NVIDIA.

50. Prior to the filing of this complaint, NVIDIA had actual knowledge of the '945 Patent and that Exemplary NVIDIA Products and the products incorporating them are imported into, sold, offered for sale, and used in the United States. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015.

51. In addition to actual knowledge of the '945 Patent, prior to the filing of this complaint, NVIDIA also had knowledge that use of its Exemplary NVIDIA Products in devices by, among others, BMW and Audi, and the use by consumers of the devices into which such Exemplary NVIDIA Products are incorporated, in the customary and intended manner, infringes the '945 Patent. *See* Exhibit K, Letter to NVIDIA dated December 18, 2015. On information and belief, NVIDIA has continued to sell the Exemplary NVIDIA Products and distribute product literature and website materials inducing BMW, Audi, and others to use its products in the customary and intended manner which infringes the '945 Patent. Thus, on information and belief, NVIDIA is contributing to and/or inducing the infringement of the '945 Patent.

52. Exhibit I includes charts comparing exemplary independent claims 1 and 21 of the '945 Patent to the BMW i8 Infotainment system, NVIDIA EMP9 graphics processor thereof, and

2015 BMW i8 vehicles containing the same. Exhibit J includes charts comparing exemplary independent claims 1 and 21 of the '945 Patent to the Audi TT Infotainment system, which includes an NVIDIA Tegra 3 integrated circuit thereof, and 2016 Audi TT vehicles containing the same. As set forth in these charts, the Exemplary NVIDIA Products provide highly relevant circuitry and functionality that practices, in whole or in material part, the technology claimed by the '945 Patent. Accordingly, the Exemplary NVIDIA Products incorporated in the charted systems satisfy one or all elements of claims 1 and 21 of the '945 Patent.

53. Advanced Silicon is entitled to recover damages adequate to compensate for NVIDIA's infringement.

#### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiff respectfully requests the following relief:

- a) A judgment that the '428 Patent, the '439 Patent, the '935 Patent, and the '945 Patent are valid and enforceable.
- b) A judgment that Defendant has infringed, contributorily infringed, and/or induced infringement of one or more claims of the '428 Patent;
- c) A judgment that Defendant has infringed, contributorily infringed, and/or induced infringement of one or more claims of the '439 Patent;
- d) A judgment that Defendant has infringed, contributorily infringed, and/or induced infringement of one or more claims of the '935 Patent;
- e) A judgment that Defendant has infringed, contributorily infringed, and/or induced infringement of one or more claims of the '945 Patent; and

g) A judgment that awards Plaintiff all appropriate damages under 35 U.S.C. § 284 for Defendant's past infringement, and any continuing or future infringement of the Patents-in-Suit, up until the date such judgment is entered, including pre or post judgment interest, costs, and disbursements as justified under 35 U.S.C. § 284 and, if necessary, to adequately compensate Plaintiff for Defendant's infringement, an accounting:

- i. that this case be declared exceptional within the meaning of 35 U.S.C. § 285 and that Plaintiff be awarded its reasonable attorneys' fees against Defendant that it incurs in prosecuting this action;
- ii. that Plaintiff be awarded costs, and expenses that it incurs in prosecuting this action; and
- iii. that Plaintiff be awarded such further relief at law or in equity as the Court deems just and proper.

**DEMAND FOR JURY TRIAL**

Plaintiff hereby demands trial by jury on all claims and issues so triable.

Dated: December 21, 2015

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