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

LONGITUDE LICENSING LTD., and MARLIN SEMICONDUCTOR LIMITED, Plaintiffs, v. APPLE, INC., BROADCOM INC., and QUALCOMM INC., Defendants.	)	C.A. No. 1:25-cv-215 **JURY TRIAL DEMANDED**

LONGITUDE LICENSING LTD. AND MARLIN SEMICONDUCTOR LIMITED'S
COMPLAINT FOR PATENT INFRINGEMENT

Pursuant to Federal Rule of Civil Procedure 15(a)(1)(B), Plaintiffs Longitude Licensing Ltd. ("Longitude") and Marlin Semiconductor Limited ("Marlin") (collectively, "Plaintiffs") file this Complaint for patent infringement ("Complaint") and for jury trial against Defendants Apple, Inc. ("Apple"), Broadcom Inc. ("Broadcom"), and Qualcomm Inc. ("Qualcomm") (Apple, Broadcom, and Qualcomm together, "Defendants"). Plaintiffs allege as follows:

THE PARTIES

1. Plaintiff Longitude Licensing Ltd. ("Longitude") is an Irish limited liability company and has a principal place of business at Blanchardstown Corporate Park 2, Plaza 255, Suite 2A, Dublin D15 YH6H, Ireland.

2. Plaintiff Marlin Semiconductor Limited ("Marlin Semiconductor") is an Irish limited liability company and has a principal place of business at Blanchardstown Corporate Park 2, Plaza 255, Suite 2A, Dublin D15 YH6H, Ireland.

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3. Marlin Semiconductor is the owner by way of assignment of U.S. Patent No. 7,745,847 ("the '847 Patent), attached as Exhibit A, U.S. Patent No. 9,093,473 ("the '473 Patent), attached as Exhibit B, U.S. Patent No. 9,147,747 ("the '747 Patent), attached as Exhibit C, U.S. Patent No. 9,184,292 ("the '292 Patent), attached as Exhibit D, and U.S. Patent No. 9,953,880 ("the '880 Patent), attached as Exhibit E. All aforementioned patents are collectively the "Asserted Patents."

Apple

4. Apple Inc. ("Apple") is a corporation organized under the laws of the State of California and has regular and established places of business within this judicial District including at least the following locations: 6900 W Parmer Ln, Austin, TX 78729; 12545 Riata Vista Cir, Austin, TX 78727; 2901 S Capital of Texas Hwy, Austin, TX 78746; 3121 Palm Way, Austin, TX 78758; 13011 McCallen Pass, Austin, TX 78753; and 12801 Delcour Dr, Austin, TX 78727. Upon information and belief, Apple employs individuals in this judicial District involved in the research, development, sales, and marketing of its products and services that infringe the Asserted Patents.

5. Apple does business in Texas, directly and through intermediaries, and offers its products and/or services, including those accused herein of infringement, to customers and potential customers located in Texas, including in this judicial District.

6. Apple may be served with process through its registered agent, CT Corporation System at 1999 Bryan Street, Suite 900, Dallas, TX 75201.

Broadcom

7. Broadcom Inc. ("Broadcom") is a corporation organized under the laws of the State of Delaware and has regular and established place of business within this judicial District including at least the following locations: 6500 River Pl. Blvd., Buildings 5, 6, and 7, Austin, TX 78730. Upon information and belief, Broadcom employs individuals in this judicial District involved in

the research, development, sales, and marketing of its products and services that infringe the Asserted Patents.

8. Broadcom does business in Texas, directly and through intermediaries, and offers its products and/or services, including those accused herein of infringement, to customers and potential customers located in Texas, including in this judicial District.

9. Broadcom may be served with process through its registered agent Corporation Service Company d/b/a CSC-Lawyers Inc. at 211 E. 7th Street, Suite 620, Austin, TX 78701.

Qualcomm

10. Qualcomm Inc. ("Qualcomm") is a corporation organized under the laws of the State of Delaware and has regular and established places of business within this judicial District including at least the following location: 13929 Center Lake Dr Building 4.1, Suite 100, Austin, TX 78753 and 9600 N. Mopac, Ste 900, Stonebridge Plaza II, Austin TX 78759. Upon information and belief, Qualcomm employs individuals in this judicial District involved in the research, development, sales, and marketing of its products and services that infringe the Asserted Patents.

11. Qualcomm does business in Texas, directly and through intermediaries, and offers its products and/or services, including those accused herein of infringement, to customers and potential customers located in Texas, including in this judicial District.

12. Qualcomm may be served with process through its registered agent, Prentice Hall Corp. System, at 211 E. 7th Street, Suite 620, Austin, TX 78701.

THE ASSERTED PATENTS

13. The '847 Patent is entitled "Metal Oxide Semiconductor Transistor," and issued on June 29, 2010 to inventors Chu-Yin Tseng, Shih-Chieh Hsu, Chih-Chiang Wu, Shyh-Fann Ting, Po-Lun Cheng, and Hsuan-Hsu Chen. The '847 Patent issued from U.S. Patent Application No. 11/836,772, which was filed on Aug. 9, 2007.

14. The ’473 Patent is entitled “Method for Fabricating Metal-Oxide Semiconductor Transistor,” and issued on July 28, 2015 to inventors Ming-Te Wei, Wen-Chen Wu, Lung-En Kuo, and Po-Chao Tsao. The ’473 Patent issued from U.S. Patent Application No. 14/331,229, which was filed on July 15, 2014, and is a division of U.S. Patent Application No. 12/837,475, which was filed on July 15, 2010, now U.S. Patent No. 8,816,409.

15. The ’292 Patent is entitled “Semiconductor Structure with Different Fins of FinFETs,” and issued on Nov. 10, 2015 to inventors Chin-Fu Lin, Chin-Cheng Chien, Chun-Yuan Wu, Teng-Chun Tsai, and Chih-Chien Liu. The ’292 Patent issued from U.S. Patent Application No. 14/340,267, which was filed on July 24, 2014, and is a division of U.S. Patent Application No. 13/370,231, which was filed on Feb. 9, 2012, now U.S. Patent No. 8,822,284.

16. The ’747 Patent is entitled “Semiconductor Structure with Hard Mask Disposed on the Gate Structure,” and issued on Sept. 29, 2015 to inventors Ching-wen Hung and Chih-sen Huang. The ’747 Patent issued from U.S. Patent Application No. 13/875,293, which was filed on May 2, 2013.

17. The ’880 Patent is entitled “Semiconductor Device and Method for Fabricating The Same,” and issued on April 24, 2018 to inventors Chun-Hao Lin, Hsin-yu Chen, and Shou-Wei Hsieh. The ’880 patent issued from U.S. Patent Application No. 15/660,991, which was filed on July 27, 2017..

18. The Asserted Patents are each valid and enforceable.

JURISDICTION AND VENUE

19. This is an action for patent infringement under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

20. This Court has specific personal jurisdiction over Defendants, at least in part,

because Defendants conduct business in this judicial District, including the manufacture, use, sale, offer for sale, and/or importation of products that infringe, or that are made using processes that infringe, the Asserted Patents, and other activities related the design, manufacture, distribution, and/or support of those products and processes.

21. Plaintiffs' causes of action arise, at least in part, from Defendants' contacts with and activities in the State of Texas and this judicial District. Upon information and belief, each Defendant has committed acts of infringement within the State of Texas and this judicial District by, *inter alia*, directly and/or indirectly making, having made, using, selling, offering to sell, and/or importing products that infringe, or that are manufactured using processes that infringe, one or more claims of the Asserted Patents.

22. Defendants have committed acts within this judicial District giving rise to this action, and have established sufficient minimum contacts with the State of Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

23. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391 and 1400.

Apple

24. On information and belief, Apple has thousands of employees based in the Western District of Texas and does business in this judicial District and across the State of Texas.[1]

25. This Court has specific personal jurisdiction over Apple at least in part because Apple conducts business in this judicial District. Plaintiffs' causes of action arise, at least in part, from Apple's contacts with and activities in the State of Texas and this judicial District. On

[1] *See*, e.g., *The Economics of Apple in Austin*, published Dec. 31, 2020, available at https://angeloueconomics.com/the-economics-of-apple-in-austin/ (accessed Feb. 13, 2025); *In Austin, pride, growth and transit followed Apple investment*, published Apr. 26, 2021, available at https://www.wral.com/story/in-austin-pride-growth-and-transit-followed-apple-investment/19646982/ (accessed Feb. 13, 2025).

information and belief, Apple has committed acts of patent infringement within the State of Texas and this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe one or more claims of the Asserted Patents.

26. On information and belief, Apple conducts business in this judicial District and maintains regular and established places of business within this judicial District. For example, Apple has maintained regular and established places of business in this judicial District, including at least such offices and/or facilities at: 6900 W Parmer Ln, Austin, TX 78729; 12545 Riata Vista Cir, Austin, TX 78727; 2901 S Capital of Texas Hwy, Austin, TX 78746; 3121 Palm Way, Austin, TX 78758; 13011 McCallen Pass, Austin, TX 78753; and 12801 Delcour Dr, Austin, TX 78727. On information and belief, personnel working at these facilities in Austin engage in activities directly related to the products accused herein.

27. On information and belief, Apple's employees in this judicial District include, for example, hardware engineers, graphics power engineers, graphics power architects, silicon validation engineers, and circuit design engineers.[2] On information and belief, these personnel have expertise in, among other aspects of the accused products, semiconductors, integrated circuits, testing, validation, and qualification of semiconductors and integrated circuits. Accordingly, on information and belief, witnesses and documents relevant to this action are located in this judicial District.

28. On information and belief, Apple's Austin campus is second in size only to its Cupertino campus and is continuing to grow. Apple's Austin campus employs over 11,000 people

[2] *See*, e.g., https://jobs.apple.com/en-us/search?location=austin-AST (accessed Feb. 13, 2025).

while its Cupertino campus employes over 12,000 people.[3] In 2018, prior to building its new facilities, "[a]t 6,200 people, Austin already represents the largest population of Apple employees outside Cupertino" and the new facility was anticipated to accommodate "5,000 additional employees, with the capacity to grow to 15,000, and is expected to make Apple the largest private employer in Austin."[4] In 2020, "Apple already employ[ed] around 7,000 people in the [Austin] area" with the intention that the "new $1 billion campus [] will add 5,000 new jobs to the local economy."[5] This first phase of construction for Apple's Austin campus was completed in 2022.[6] In addition to this first phase, a second phase of construction in Austin was also announced, "[c]alled Capstone Phase Two AC09 and Capstone Phase Two AC07, the projects are a four-story and a five-story building, respectively. The two buildings will add 419,441 square feet of office space."[7] "Construction for both buildings will start on September 30, 2023, and have an estimated completion date of March 30, 2025."[8]

29. On information and belief, Apple has placed or contributed to placing infringing products, including the products accused herein, into the stream of commerce knowing or understanding that such products would be sold and used in the United States, including in this judicial District. For example, apart from other Apple activities within this judicial District described above, Apple also sells its products directly into the stream of commerce within this

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[3] *See* https://www.apple.com/newsroom/2018/12/apple-to-build-new-campus-in-austin-and-add-jobs-across-the-us/ (accessed Feb. 13, 2025); https://apple-store.ifuture.co.in/blog/apple-headquarters-apple-park (accessed Feb. 13, 2025).

[4] *See id; see also* https://www.apple.com/newsroom/2019/11/apple-expands-in-austin (accessed Feb. 13, 2025).

[5] *See* https://angeloueconomics.com/the-economics-of-apple-in-austin (accessed Feb. 13, 2025).

[6] *See* https://austin.culturemap.com/news/city-life/11-20-19-apple-campus-construction-opening-date/ (accessed Feb. 13, 2025).

[7] *See* https://appleinsider.com/articles/23/01/11/apple-spending-240m-to-expand-its-austin-texas-campus (accessed Feb. 13, 2025).

[8] *See id*.

judicial District including, at least, at the following Apple Store locations: 2901 S Capital of Texas Hwy, Austin, TX 78746 and 3121 Palm Way, Austin, TX 78758. In addition, Apple sells its products directly into the stream of commerce within this judicial District at Best Buy locations throughout the district including, at least, the following Best Buy locations: 4970 US-290, Austin, TX 78735, 9607 Research Blvd Ste 500, Austin, TX 78759, and 1201 Barbara Jordan Blvd Ste 100, Austin, TX 78723. Apple also sells its products directly into the stream of commerce within this judicial District using its website, apple.com, that is accessible within this judicial District.

30. On information and belief, Apple derives substantial revenues from infringing acts in this judicial District, including from the sale and use of infringing products including, but not limited to, those accused herein.

31. Apple has committed acts within this judicial District giving rise to this action, and have established sufficient minimum contacts with the State of Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

32. Venue in this judicial District is proper under 28 U.S.C §§ 1391(b), (c), and 1400 with respect to Apple because Apple (1) has committed and continues to commit acts of patent infringement in this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe (or products manufactured using infringing processes) one or more claims of the Asserted Patents, and (2) has done and continues to do business in this judicial District by maintaining regular and established places of business, including, at least, 6900 W Parmer Ln, Austin, TX 78729. *In re Cray Inc.*, 871 F.3d 1355, 1362-63 (Fed. Cir. 2017).

Broadcom

33. On information and belief, Broadcom has numerous employees based in the

Western District of Texas and does business in this judicial District and across the State of Texas.[9]

34. This Court has specific personal jurisdiction over Broadcom at least in part because Broadcom conducts business in this judicial District. Plaintiffs' causes of action arise, at least in part, from Broadcom's contacts with and activities in the State of Texas and this judicial District. On information and belief, Broadcom has committed acts of patent infringement within the State of Texas and this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe one or more claims of the Asserted Patents.

35. On information and belief, Broadcom conducts business in this judicial District and maintains regular and established places of business within this judicial District. For example, Broadcom has maintained regular and established places of business in this judicial District, including at least such offices and/or facilities at: 6500 River Pl. Blvd., Buildings 5, 6, and 7, Austin, TX 78730. On information and belief, personnel working at these facilities in Austin engage in activities directly related to the products accused herein.

36. On information and belief, Broadcom's employees in this judicial District include, for example, product marketing, R&D software engineers, package design engineers, IC verification engineers, product developers, and technical enablement specialists[10]. On information and belief, these personnel have expertise in, among other aspects of the accused products, semiconductors, integrated circuits, testing, validation, and qualification of semiconductors and

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[9] *See, e.g.,* https://www.broadcom.com/company/contact (accessed Feb. 13, 2025).

[10] *See*, e.g., https://broadcom.wd1.myworkdayjobs.com/External_Career?locations=877d747df71910021366662e2df00000&locations=877d747df719100213665b4fa1470000&locations=877d747df719100213664d7306c50000 (accessed Feb. 13, 2025); https://www.linkedin.com/jobs/view/ic-verification-engineer-at-broadcom-4130043661/ (accessed Feb. 13, 2025); https://www.linkedin.com/search/results/people/?currentCompany=%5B162592%2C10503206%2C2988%2C1372%2C1231%2C3072%5D&geoUrn=%5B%22104472865%22%2C%2290000064%22%5D&origin=FACETED_SEARCH&sid=emo (accessed Feb. 13, 2025).

integrated circuits. Accordingly, on information and belief, witnesses and documents relevant to this action are located in this judicial District.

37. On information and belief, Broadcom has placed or contributed to placing infringing products, including the products accused herein, into the stream of commerce knowing or understanding that such products would be sold and used in the United States, including in this judicial District. For example, apart from other Broadcom activities within this judicial District described above, Broadcom also sells its products (including, but not limited to, the accused Broadcom BCM4399Y die (which is, on information and belief, a standalone integrated circuit packaged in a Universal Scientific (USI) USI 339S01463 Wi-Fi 7/BT 5.4 Combo integrated circuit, which is in turn sold to Apple for incorporation in Apple's iPhone 16 Pro Max and fabricated by TSMC using TSMC's 7nm process node)) directly into the stream of commerce within this judicial District including, at least, at the following Apple Store locations: 2901 S Capital of Texas Hwy, Austin, TX 78746 and 3121 Palm Way, Austin, TX 78758. In addition, Broadcom sells its products directly into the stream of commerce within this judicial District at Best Buy locations throughout the district including, at least, the following Best Buy locations: 4970 US-290, Austin, TX 78735, 9607 Research Blvd Ste 500, Austin, TX 78759, and 1201 Barbara Jordan Blvd Ste 100, Austin, TX 78723.

38. On information and belief, Broadcom derives substantial revenues from infringing acts in this judicial District, including from the sale and use of infringing products including, but not limited to, those accused herein.

39. Broadcom has committed acts within this judicial District giving rise to this action, and have established sufficient minimum contacts with the State of Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

40. Venue in this judicial District is proper under 28 U.S.C §§ 1391(b), (c), and 1400 with respect to Broadcom because Broadcom (1) has committed and continues to commit acts of patent infringement in this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe (or products manufactured using infringing processes) one or more claims of the Asserted Patents, and (2) has done and continues to do business in this judicial District by maintaining regular and established places of business, including, at least, 6500 River Pl. Blvd., Buildings 5, 6, and 7, Austin, TX 78730. *In re Cray Inc.*, 871 F.3d 1355, 1362-63 (Fed. Cir. 2017).

Qualcomm

41. On information and belief, Qualcomm has thousands of employees based in the Western District of Texas and does business in this judicial District and across the State of Texas.[11]

42. This Court has specific personal jurisdiction over Qualcomm at least in part because Qualcomm conducts business in this judicial District. Plaintiffs' causes of action arise, at least in part, from Qualcomm's contacts with and activities in the State of Texas and this judicial District. On information and belief, Qualcomm has committed acts of patent infringement within the State of Texas and this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe one or more claims of the Asserted Patents.

43. On information and belief, Qualcomm conducts business in this judicial District and maintains a regular and established place of business within this judicial District. For example, Qualcomm has maintained regular and established places of business in this judicial District, including at least such offices and/or facilities at: 13929 Center Lake Dr Building 4.1, Suite 100, Austin, TX 78753 and 9600 N. Mopac, Ste 900, Stonebridge Plaza II, Austin TX 78759. On

[11] https://www.qualcomm.com/company/facilities/offices?country=USA&page=3 (accessed Feb. 13, 2025).

information and belief, personnel working at these facilities in Austin engage in activities directly related to the products accused herein.

44. On information and belief, Qualcomm's employees in this judicial District include, for example, CPU security architects, CPU power & performance analysis engineers, physical design engineers, SoC performance architects, FEA engineers, CPU verification engineers, and power integrity engineers.[12] On information and belief, these personnel have expertise in, among other aspects of the accused products, semiconductors, integrated circuits, testing, validation, and qualification of semiconductors and integrated circuits. Accordingly, on information and belief, witnesses and documents relevant to this action are located in this judicial District.

45. On information and belief, Qualcomm has placed or contributed to placing infringing products, including the products accused herein, into the stream of commerce knowing or understanding that such products would be sold and used in the United States, including in this judicial District. For example, apart from other Qualcomm activities within this judicial District described above, Qualcomm also sells its products (including, but not limited to, the accused Qualcomm Snapdragon X Elite (fabricated, on information and belief, by TSMC using TSMC's 4nm process node, and which is, on information and belief, incorporated into, at least, the Lenovo yoga Slim 7X laptop), Qualcomm Snapdragon 8 Elite (fabricated, on information and belief, by TSMC using TSMC's 3nm process node, and which is, on information and belief, incorporated into, at least, OnePlus 13 smartphone), Qualcomm Snapdragon 695 5G (fabricated, on information and belief, by TSMC using TSMC's 6nm process node, and which is, on information and belief, incorporated into, at least, OnePlus Nord M30 56 smartphone)), Qualcomm Snapdragon 8 Gen 3

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[12] *See*, e.g., https://careers.qualcomm.com/careers/*/austin_tx?query=%2A&location=austin%20tx&pid=446702355183&domain=qualcomm.com&sort_by=relevance.

(fabricated, on information and belief, by TSMC using TSMC's 4nm process node, and which is, on information and belief, incorporated into, at least, OnePlus 13R smartphone)) and Qualcomm Snapdragon 680 4G (fabricated, on information and belief, by TSMC using TSMC's 6nm process node, and which is, on information and belief, incorporated into, at least, Motorola Moto G Play smartphone)) directly into the stream of commerce within this judicial District including, at least, the following Best Buy locations: 4970 US-290, Austin, TX 78735, 9607 Research Blvd Ste 500, Austin, TX 78759, and 1201 Barbara Jordan Blvd Ste 100, Austin, TX 78723.

46. On information and belief, Qualcomm derives substantial revenues from infringing acts in this judicial District, including from the sale and use of infringing products including, but not limited to, those accused herein.

47. Qualcomm has committed acts within this judicial District giving rise to this action, and have established sufficient minimum contacts with the State of Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

48. Venue in this judicial District is proper under 28 U.S.C §§ 1391(b), (c), and 1400 with respect to Qualcomm because Qualcomm (1) has committed and continues to commit acts of patent infringement in this judicial District by, among other things, directly and/or indirectly using, selling, offering for sale, or importing products that infringe (or products manufactured using infringing processes) one or more claims of the Asserted Patents, and (2) has done and continues to do business in this judicial District by maintaining regular and established places of business, including, at least, 13929 Center Lake Dr Building 4.1, Suite 100, Austin, TX 78753 and 9600 N. Mopac, Ste 900, Stonebridge Plaza II, Austin TX 78759. *In re Cray Inc.*, 871 F.3d 1355, 1362-63 (Fed. Cir. 2017).

JOINDER

49. Joinder of Defendants is proper under 35 U.S.C. § 299. The allegations of patent

infringement contained herein arise out of the same series of transactions or occurrences relating to the making (or having made), using (or inducing the use of), selling, or offering for sale within the United States, or importing (or having imported) into the United States, several of the same infringing products, including, e.g., Apple's, Broadcom's and Qualcomm's products incorporating the semiconductor devices fabricated by TSMC at various TSMC process nodes, including 16nm and smaller process nodes.

50. Examples of such products include, Apple's T8301 integrated circuit (which is, on information and belief, fabricated by TSMC using TSMC's 7nm process node and, at least, packaged in an Apple S8 system in package (SiP), and is in turn incorporated into, at least, the Apple Watch SE (2nd Gen)),[13]Apple's A15 Bionic integrated circuit (which is, on information and belief, fabricated by TSMC using TSMC's 5nm process node and incorporated into, at least, the Apple iPhone 13),[14] Apple's A17 integrated circuit (which is, on information and belief, fabricated by TSMC using TSMC's 3nm process node and incorporated into, at least, the Apple iPhone 15 Pro),[15] Broadcom's BCM4399Y die (which is, on information and belief, fabricated by TSMC using TSMC's 7nm process node and, at least, packaged in a Universal Scientific (USI) USI 339S01463 Wi-Fi 7/BT 5.4 Combo integrated circuit, and is in turn incorporated into, at least, Apple's iPhone 16 Pro Max),[16] and Qualcomm's SDX55M 5G modem-RF system (which is, on information and belief, fabricated by TSMC using TSMC's 7nm process node and incorporated

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[13] *See* TechInsights Report for Apple A13 Bionic APL1W85 TSMC N7P FinFET Process (ACE-1909-801), at 4.

[14] *See* TechInsights Report for Apple APL1W07 A15 Bionic Processor TSMC N5P FinFET Process (ACE 2109-801), at 4.

[15] *See* TechInsights Report for Apple APL1V02 A17 Pro Processor TSMC 3nm FinFET Process (ACE-2307-803), at 4.

[16] *See* TechInsights Platform BFR-2401-803, Sharath Poikayil Satheesh, Broadcom BCM4399Y Wi-Fi 7/BT 5.4 Combo SoC Basic Floorplan Analysis BFR-2410-803 Report, at 4 (October 9, 2024).

into, at least, Apple's iPhone 12 and iPhone 12 Pro).[17] Therefore, Defendants' products, on information and belief, contain and/or consist of chips fabricated by TSMC for Apple, Broadcom, and Qualcomm and incorporated by Apple into Apple downstream products, and are designed, made, used, sold, offered for sale, and/or imported in this judicial District.

ALLEGATIONS OF PATENT INFRINGEMENT

51. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

52. As set forth below, the infringing products consist of and/or incorporate, without any license from Plaintiffs, semiconductor devices protected by patents owned by Plaintiffs. Plaintiffs respectfully seek relief from this Court for Defendants' infringement.

53. Plaintiffs are the sole and exclusive owner of all right, title, and interest in and to the Asserted Patents, and hold the exclusive right to take all actions necessary to enforce their rights to the Asserted Patents, including the filing of this action. Plaintiffs also have the right to recover all damages for past, present, and future infringement of the Asserted Patents.

54. Plaintiffs, the present owner of the Asserted Patents, and the prior owner of the Asserted Patents, have complied with 35 U.S.C. §§ 286 and 287(a), and are therefore entitled to past damages for Defendants' infringement beginning six years prior to the filing date of the present Complaint. Plaintiffs are also entitled to damages for Defendants' continuing infringement until the expiration of the last to expire of the Asserted Patents.

Apple

55. Apple has and continues to make, have made, use, sell, offer for sale, import, has

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[17] *See* https://www.ifixit.com/Teardown/iPhone+12+and+12+Pro+Teardown/137669 (accessed Feb. 13, 2025); https://wccftech.com/qualcomm-176-million-modems-ship-tsmc-apple/ (accessed Feb. 13, 2025); https://www.anandtech.com/show/13966/qualcomm-announces-x55-modem (accessed Feb. 13, 2025).

imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe (or that are manufactured by processes that infringe) the Asserted Patents.

56. Apple has directly infringed, and continues to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, having made, using, selling and/or offering for sale, in this District and elsewhere in the United States, and/or importing into this District and elsewhere in the United States, certain semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in further described in Counts I-V *infra*.

57. Prior to initiating litigation, since March 8, 2023, Plaintiffs sought to negotiate a license with Apple and its supplier TSMC. Subsequent to the first notice letter on March 8, 2023, Plaintiffs conducted extensive discussions with Apple and TSMC, to attempt to reach an amicable license. These discussions included at least seven virtual meetings, numerous email exchanges, and two in-person meetings in Hsinchu with TSMC. Neither Apple nor TSMC has ever made an offer to purchase a license to the Asserted Patents.

58. Specifically, on March 8, 2023, Plaintiffs sent a notice letter to Apple that its products infringe twelve of Marlin's patents, including the '847 patent and the '473 patent, based on its incorporation of infringing TSMC products. In a second notice letter dated December 7, 2023, Plaintiffs informed Apple that various Apple products infringed an additional twelve Marlin patents, including the '292 Patent.

59. Additionally, filing of this Complaint also constitutes notice of the Asserted Patents in accordance with 35 U.S.C. § 287.

60. Apple has also indirectly infringed, and continues to indirectly infringe the Asserted Patents under 35 U.S.C. § 271(b) and (c). Apple knew and intended to induce the infringement of

the Asserted Patents by its subsidiaries, affiliates, retail partners, customers, and/or other third parties. The infringing products (or products manufactured by infringing processes) have no substantially non-infringing use. After receiving actual notice of the Asserted Patents, Apple proceeded to actively induce infringement of the Asserted Patents by inducing its subsidiaries, affiliates, retail partners, customers, and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

61. Additionally, Apple has indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(c) by materially contributing to infringement of the Asserted Patents by making, using, selling, offering for sale, advertising, marketing, and/or importing semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

62. The scope of infringing products includes, but is not limited to, all Apple laptops, smartphones, tablets, and smartwatches, and other products, or products incorporating products, manufactured by TSMC using any of TSMC's 16nm and smaller process nodes (e.g., 16nm, 12nm, 7nm, 6nm, 5nm, 4nmm and 3 nm), including, to the extent TSMC does not manufacture the entire final integrated circuit, the substantial portion of those integrated circuits that TSMC does manufacture. *See*, e.g., https://www.tsmc.com/english/dedicatedFoundry/technology/logic/l_16_12nm (accessed Feb. 13, 2025).

63. Plaintiffs reserve the right to accuse any forthcoming Apple technology or products not yet commercially available, and any products about which it learns additional relevant information.

64. On information and belief, using an infringing 7nm/6nm process node, TSMC fabricates Apple's S8 System in Package (SiP) and T8301 integrated circuit contained therein which is incorporated into the Apple Watch SE (2nd Gen) smartwatch, sold throughout the United States. The T8301 integrated circuit, on information and belief, manufactured by TSMC using the 7nm variation of the TSMC 7nm/6nm process node. TSMC also manufactures other devices incorporated into Apple products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

65. On information and belief, using an infringing 5nm/4nm process node, TSMC fabricates the Apple's A15 Bionic integrated circuit, incorporated into the Apple iPhone 13, sold throughout the United States. The Apple A15 Bionic integrated circuit, on information and belief, manufactured by TSMC using the 5nm variation of the TSMC 5nm/4nm process node. TSMC also manufactures other devices incorporated into Apple products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

66. On information and belief, using an infringing 3nm process node, TSMC fabricates the Apple's A17 integrated circuit, incorporated into the Apple iPhone 15 Pro, sold throughout the United States. TSMC also manufactures other devices incorporated into Apple products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

67. In particular, on information and belief, all devices manufactured by TSMC at a given "process node" are the same or essentially the same, and are created in the same or essentially the same way, with respect to aspects relevant to the claims of the Asserted Patents. If one product using a TSMC-based integrated circuit or other product manufactured by TSMC at a given process

node infringes one of the Asserted Patents, as described in detail in Counts I-V *infra*, all other devices manufactured by TSMC at that process node infringe that Asserted Patent. Plaintiffs reserve the right to identify additional products that are produced at accused nodes, and to add nodes, as it learns more information.

68. Apple's acts of infringement have caused damage to Plaintiffs. Plaintiffs are entitled to recover from Apple the damages incurred by Plaintiffs as a result of Apple's wrongful acts.

69. Apple's acts of direct and indirect infringement are willful, and have caused and will continue to cause substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law. Apple performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the Asserted Patents. Notwithstanding Apple's knowledge of the Asserted Patents and Apple's infringement thereof since before, and no later than the filing of, the present Complaint, Apple has and continues to willfully infringe the Asserted Patents.

Broadcom

70. Broadcom has and continues to make, have made, use, sell, offer for sale, import, has imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe (or that are manufactured by processes that infringe) the Asserted Patents.

71. Broadcom has directly infringed, and continues to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, having made, using, selling and/or offering for sale, in this district and elsewhere in the United States, and/or importing into this district and elsewhere in the United States, certain semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in further described in Counts I-V *infra*.

72. Prior to initiating litigation, Plaintiffs sought to negotiate a license with Broadcom without litigation. Accordingly, on April 2, 2024, Plaintiffs sent a notice letter to Broadcom that its products infringe fifteen of Marlin's patents, including the '847 patent and the '473 patent, based on its incorporation of infringing TSMC products. However, Broadcom chose not to respond to Plaintiffs letter.

73. Additionally, filing of this Complaint also constitutes notice of the Asserted Patents in accordance with 35 U.S.C. § 287.

74. With notice of the Asserted Patents, Broadcom has proceeded to directly infringe by making, having made, using, testing, designing, selling, offering for sale, and/or importing in this district and elsewhere in the United States, semiconductor devices that infringe the Asserted Patents (or that are made using infringing processes). Broadcom has been placed on actual notice of the Asserted Patents at least as early as the filing of this Complaint, which constitutes notice of the Asserted Patents in accordance with 35 U.S.C. § 287.

75. Broadcom has also indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(b) and (c). Broadcom knew and intended to induce the infringement of the Asserted Patents by its subsidiaries, affiliates, retail partners, customers, and/or other third parties. The infringing products (or products manufactured by infringing processes) have no substantially non-infringing use. After receiving actual notice of the Asserted Patents, Broadcom proceeded to actively induce infringement of the Asserted Patents by inducing its subsidiaries, affiliates, retail partners, customers, and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

76. Additionally, Broadcom has indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(c) by materially contributing to infringement of the Asserted Patents by making, using, selling, offering for sale, advertising, marketing, and/or importing semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

77. The scope of infringing products includes, but is not limited to, all Broadcom semiconductor devices, integrated circuits, and other products manufactured by TSMC using any of TSMC's 16nm and smaller process nodes nodes (e.g., 16nm, 12nm, 10nm, 7nm, 6nm, 5nm, 4nm and 3 nm), including, to the extent TSMC does not manufacture the entire final integrated circuit, the substantial portion of those integrated circuits that TSMC does manufacture. See, e.g., https://www.tsmc.com/english/dedicatedFoundry/technology/logic/l_16_12nm (accessed Feb. 13, 2025).

78. Plaintiffs reserve the right to accuse any forthcoming Broadcom technology or products not yet commercially available, and any products about which it learns additional relevant information.

79. On information and belief, using an infringing 16nm/12nm process node, TSMC fabricates the Broadcom BCM5608 die, incorporated into, at least, the Broadcom BCM56980B0KFSBG 12.8 Tb/s StrataXGS Tomahawk 3 Ethernet switch, sold throughout the United States. The Broadcom BCM5608 die is, on information and belief, manufactured by TSMC using the 16nm variation of the TSMC 16nm/12nm process node. TSMC also manufactures other Broadcom devices using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

80. On information and belief, using an infringing 7nm/6nm process node, TSMC

fabricates the Broadcom BCM4399Y die, incorporated into the USI 339S01463 Wi-Fi 7/BT 5.4 Combo SoC and further incorporated into the Apple iPhone 16 Pro Max, sold throughout the United States. The Broadcom BCM4399Y die, on information and belief, manufactured by TSMC using the 7nm variation of the TSMC 7nm/6nm process node. TSMC also manufactures other Broadcom devices using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

81. On information and belief, using an infringing 5nm/4nm process node, TSMC fabricates the Broadcom BCM57608 integrated circuit, incorporated into the BCM957608 network unit, sold throughout the United States. The Broadcom BCM57608 integrated circuit, on information and belief, manufactured by TSMC using the 5nm variation of the TSMC 5nm/4nm process node. TSMC also manufactures other Broadcom devices using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

82. On information and belief, using an infringing 3nm process node, TSMC fabricates "Broadcom's next-generation XPUs" and "Baltra" AI server chips, that are sold and/or offered for sale throughout the United States. https://www.theregister.com/2024/12/13/broadcom_q4_fy_2024_vmware/ (accessed Feb. 13, 2025); https://www.notebookcheck.net/Apple-is-making-its-own-AI-server-chip-with-Broadcom.931535.0.html (accessed Feb. 13, 2025). TSMC also manufactures other Broadcom devices using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

83. In particular, on information and belief, all devices manufactured by TSMC at a given "process node" are the same or essentially the same, and are created in the same or essentially

the same way, with respect to aspects relevant to the claims of the Asserted Patents. If one product using a TSMC-based integrated circuit or other product manufactured by TSMC at a given process node infringes one of the Asserted Patents, as described in detail in Counts I-V *infra*, all other devices manufactured by TSMC at that process node infringe that Asserted Patent. Plaintiffs reserve the right to identify additional products that are produced at accused nodes, and to add nodes, as it learns more information.

84. Broadcom's acts of infringement have caused damage to Plaintiffs. Plaintiffs are entitled to recover from Broadcom the damages incurred by Plaintiffs as a result of Broadcom's wrongful acts.

85. Broadcom's acts of direct and indirect infringement are willful, and have caused and will continue to cause substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law. Broadcom performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the Asserted Patents. Notwithstanding Broadcom's knowledge of the Asserted Patents and Broadcom's infringement thereof since before, and no later than the filing of, the present Complaint, Broadcom has and continues to willfully infringe the Asserted Patents.

Qualcomm

86. Qualcomm has and continues to make, have made, use, sell, offer for sale, import, has imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe (or that are manufactured by processes that infringe) the Asserted Patents.

87. Qualcomm has directly infringed, and continues to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, having made, using, selling and/or offering

for sale, in this district and elsewhere in the United States, and/or importing into this district and elsewhere in the United States, certain semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in further described in Counts I-V *infra*.

88. Qualcomm has been placed on actual notice of the Asserted Patents at least as early as the filing of this Complaint, which constitutes notice of the Asserted Patents in accordance with 35 U.S.C. § 287.

89. Qualcomm has also indirectly infringed, and continues to indirectly infringe the Asserted Patents under 35 U.S.C. § 271(b) and (c). Qualcomm knew and intended to induce the infringement of the Asserted Patents by its subsidiaries, affiliates, retail partners, customers, and/or other third parties. The infringing products (or products manufactured by infringing processes) have no substantially non-infringing use. After receiving actual notice of the Asserted Patents, Qualcomm proceeded to actively induce infringement of the Asserted Patents by inducing its subsidiaries, affiliates, retail partners, customers, and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

90. Additionally, Qualcomm has indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(c) by materially contributing to infringement of the Asserted Patents by making, using, selling, offering for sale, advertising, marketing, and/or importing semiconductor devices that infringe (or that are manufactured by processes that infringe) the Asserted Patents, as described in detail in Counts I-V *infra*.

91. The scope of infringing products includes, but is not limited to, all Qualcomm

semiconductor devices, integrated circuits, and other products, or products incorporating products, manufactured by TSMC using any of TSMC's 16nm and smaller process nodes (e.g., 16nm, 12nm, 7nm, 6nm, 5nm, 4nmm and 3 nm), including, to the extent TSMC does not manufacture the entire final integrated circuit, the substantial portion of those integrated circuits that TSMC does manufacture. *See, e.g.*, https://www.tsmc.com/english/dedicatedFoundry/technology/logic/l_16_12nm (accessed Feb. 13, 2025).

92. Plaintiffs reserve the right to accuse any forthcoming TSMC technology or products not yet commercially available, and any products about which it learns additional relevant information.

93. On information and belief, using an infringing 7nm/6nm process node, TSMC fabricates Qualcomm's Snapdragon 680 4G integrated circuit which is incorporated into the Motorola Moto G Play smartphone, sold throughout the United States. The Qualcomm Snapdragon 680 4G integrated circuit, on information and belief, manufactured by TSMC using the 6nm variation of the TSMC 7nm/6nm process node. On information and belief, using an infringing 7nm/6nm process node, TSMC fabricates Qualcomm's Snapdragon 695 5G integrated circuit which is incorporated into the OnePlus Nord N30 5G smartphone, sold throughout the United States. The Qualcomm Snapdragon 695 5G integrated circuit, on information and belief, manufactured by TSMC using the 6nm variation of the TSMC 7nm/6nm process node. TSMC also manufactures other devices incorporated into Qualcomm products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

94. On information and belief, using an infringing 5nm/4nm process node, TSMC

fabricates the Qualcomm Snapdragon X Elite integrated circuit, incorporated into the Lenovo Yoga Slim 7X laptop, sold throughout the United States. The Qualcomm Snapdragon X Elite integrated circuit, on information and belief, manufactured by TSMC using the 4nm variation of the TSMC 5nm/4nm process node. On information and belief, using an infringing 5nm/4nm process node, TSMC fabricates the Qualcomm Snapdragon 8 Gen 3 integrated circuit, incorporated into the OnePlus 13R smartphone, sold throughout the United States. The Qualcomm Snapdragon 8 Gen 3 integrated circuit, on information and belief, manufactured by TSMC using the 4nm variation of the TSMC 5nm/4nm process node. TSMC also manufactures other devices incorporated into Qualcomm products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

95. On information and belief, using an infringing 3nm process node, TSMC fabricates the Qualcomm Snapdragon 8 Elite integrated circuit, incorporated into the OnePlus 13 smartphone, sold throughout the United States. TSMC also manufactures other devices incorporated into Qualcomm products using this process node, which thus infringe and are incorporated into other electronic devices sold to end user customers in the United States.

96. In particular, on information and belief, all devices manufactured by TSMC at a given "process node" are the same or essentially the same, and are created in the same or essentially the same way, with respect to aspects relevant to the claims of the Asserted Patents. If one product using a TSMC-based integrated circuit or other product manufactured by TSMC at a given process node infringes one of the Asserted Patents, as described in detail in Counts I-V *infra*, all other devices manufactured by TSMC at that process node infringe that Asserted Patent. Plaintiffs reserve the right to identify additional products that are produced at accused nodes, and to add nodes, as it learns more information.

97. Qualcomm's acts of infringement have caused damage to Plaintiffs. Plaintiffs are entitled to recover from Qualcomm the damages incurred by Plaintiffs as a result of Qualcomm's wrongful acts.

98. Qualcomm's acts of direct and indirect infringement are willful and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law. Qualcomm performed and continues to perform the acts that constitute direct and/or indirect infringement, with knowledge or willful blindness that the acts would constitute direct and/or indirect infringement of the Asserted Patents. Notwithstanding Qualcomm's knowledge of the Asserted Patents since at least as early as the filing of the present Complaint, Qualcomm has and continues to willfully infringe the Asserted Patents.

COUNT I

Infringement of the '847 Patent

99. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

100. Defendants have directly and indirectly infringed, and continue to directly and indirectly infringe, the '847 Patent by making, having made, using, selling, offering for sale, and/or importing into the United States products that infringe (or that are manufactured using processes that infringe) the '847 Patent including, but not limited to semiconductor devices manufactured using TSMC's 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. The products that infringe one or more claims of the '847 Patent include, but are not limited to, at least the products identified herein. Further discovery may reveal additional infringing products and/or models.

101. For example, and without limitation, the infringing products infringe one or more claims of the '847 Patent, including but not limited to claim 1. The infringing products fall within

the scope of and include, either literally or under the doctrine of equivalents, all of the elements of at least claim 1 of the ’847 Patent.

102. The infringing products include all the limitations of at least claim 1 of the ’847 Patent. Specifically, the ’847 Patent claims, e.g., A MOS transistor structure, comprising: a gate formed on a semiconductor substrate; two raised epitaxial layers positioned respectively in the semiconductor substrate next to the relative sides of the gate and above the surface of the semiconductor substrate; a spacer formed on the sidewall of the gate and extending laterally upon a portion of the raised epitaxial layers, and a contact surface of the raised epitaxial layers and a bottom of the spacer is above the surface of the semiconductor substrate; and two doped region formed respectively in the semiconductor substrate next to the relative sides of the gate.

103. Defendants have, and continue to, indirectly infringe the ’847 Patent by actively inducing and contributing to the infringement of the ’847 Patent by others, such as fabless companies, original equipment manufacturers, customers, resellers, and retailers who, for example, incorporating products that infringe (or that are manufactured using processes that infringe) into downstream products made, sold, offered for sale, and/or imported throughout the United States, including in this judicial District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this judicial District. On information and belief, these sales and/or marketing activities are targeted to original equipment manufacturers, including original equipment manufacturers based in the United States.

104. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the ’847 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the products that infringe (or that are manufactured using processes that infringe) such that they would

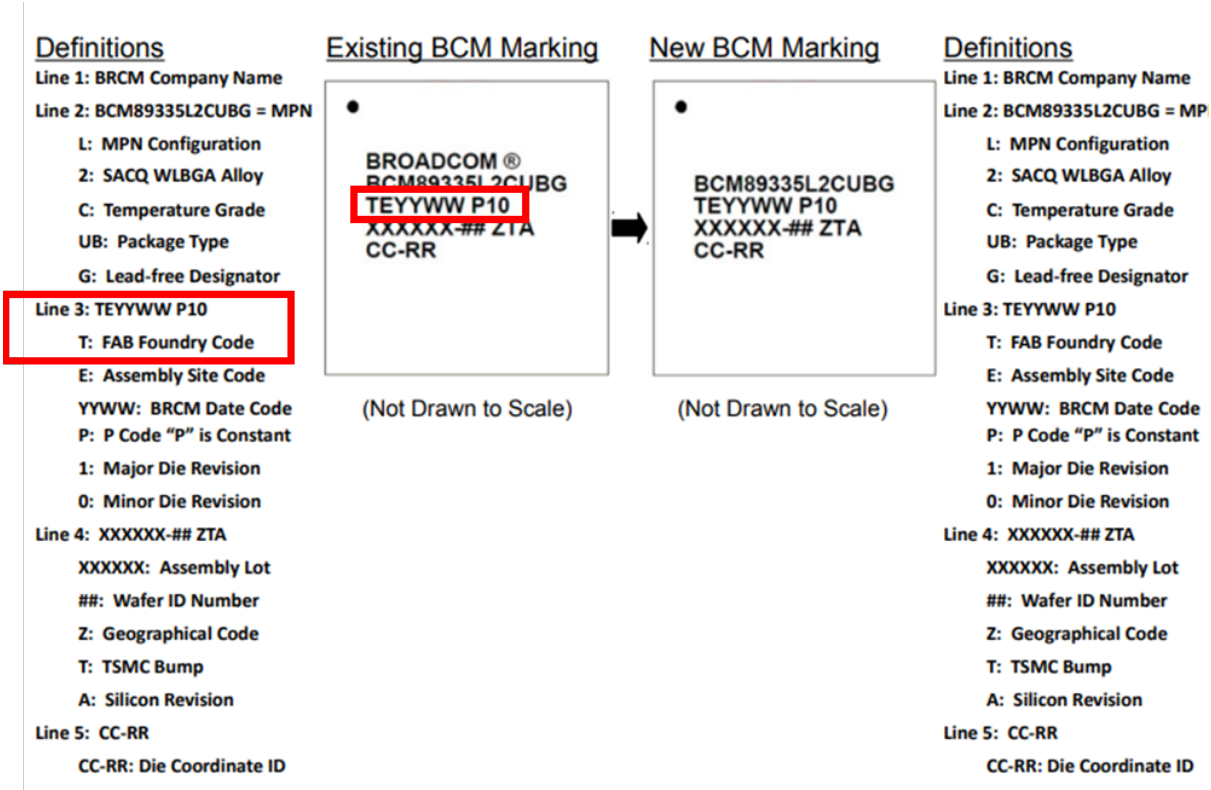
each infringe the ’847 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, products that infringe (or that are manufactured using processes that infringe) to others, such as, but not limited to, customers, knowing and intending that those others would use, sell, offer for sale, and/or import in and into the United States downstream products that include the products that infringe (or that are manufactured using processes that infringe), thereby directly infringing one or more claims of the ’847 Patent.

105. The products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses and are a material part of the invention. Any manufacture, use, sale, offer for sale, or importation in or into the United States of a product that infringes (or that is manufactured using processes that infringe) or a downstream product incorporating a product that infringes (or that is manufactured using processes that infringe) infringes the ’847 Patent. The products that infringe (or that are manufactured using processes that infringe) are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The products that infringe (or that are manufactured using processes that infringe) cannot be used without being incorporated into a downstream product. Thus, the products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses. Moreover, because the products that infringe (or that are manufactured using processes that infringe) provide vital functionality to the downstream products, the products that infringe (or that are manufactured using processes that infringe) constitute a material part of the invention claimed in the ’847 Patent.

106. With respect to exemplary devices, the Apple iPhone 13, made or sold by Apple, incorporating the TSMC-made Apple A15 Bionic integrated circuit, the Broadcom BCM957608 network units, made or sold by Broadcom, incorporating the TSMC-made Broadcom BCM957608

integrated circuit, and the Snapdragon X Elite integrated circuit, made or sold by Qualcomm, incorporating the TSMC-made semiconductor die, directly infringe at least claim 1 of the '847 Patent.

107. On information and belief, the exemplary devices incorporate a semiconductor die that TSMC manufactures using its 5nm/4nm process node. For example, the Apple A15 bionic integrated circuit is manufactured by TSMC using its 5nm process node. *See* TechInsights Report for Apple APL1W07 A15 Bionic Processor TSMC N5P FinFET Process (ACE 2109-801), at 4. The Broadcom BCM57608 integrated circuit is manufactured by TSMC using its 5 nm process node. *See Broadcom Claims First 5nm Ethernet Adapter for AI Networking*, at https://www.flywing-tech.com/blog/broadcom-claims-first-5-nm-ethernet-adapter-for-ai-networking?srsltid=AfmBOoohvuw6ATyPwpDf1nZqCDxAZpEr4fWBtwfY6C70y-AVbnsUW1A3 (accessed Feb. 13, 2025). Further, upon information and belief, Broadcom uses a part making scheme where the foundry a die is manufactured is identified on the product. For example, the "T" code on Line 3 of the part marking identifies the "FAB Foundry Code".



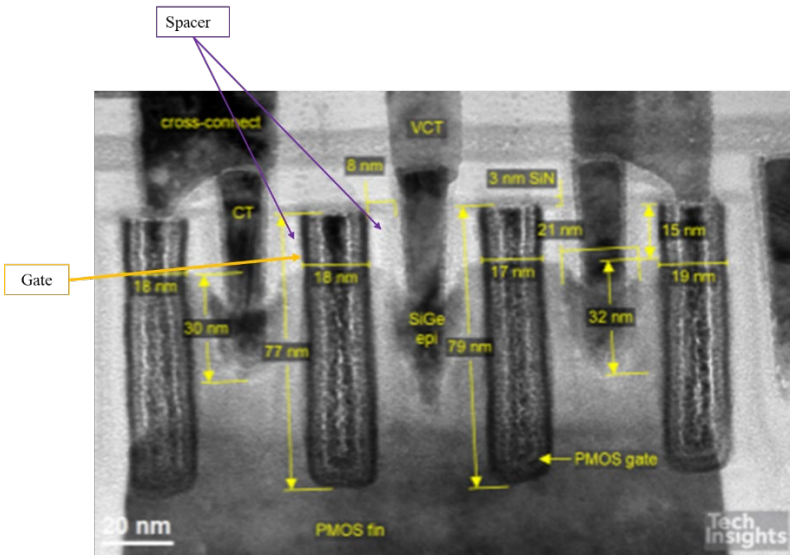
See Product Change Notification, Addendum to PCN165006: Removal of Broadcom Logo and Complant Name for Automotive IoT Products, at https://www.mouser.com/PCN/Cypress_Semiconductor_PCN165006A.pdf?srsltid=AfmBOoqAFZTj2HXEdumx9emkMSsx0SKRT87VBpn23LdYYwUxGkWFZ_Je (annotated) (accessed Feb. 13, 2025). Upon information and belief, the "T" on Line 3 representing "FAB Foundry Code" is used when a product is manufactured at a TSMC foundry. For example, the Broadcom Tomahawk 5 is manufactured at a TSMC foundry. *See* TechInsights.com, Broadcom BCM78900 StrataXGS Tomahawk 5 Ethernet Switch TSMC N5 HPC FinFET Process Digital Floorplan Analysis, at https://www.techinsights.com/blog/broadcom-bcm78900-strataxgs-tomahawk-5-ethernet-switch-tsmc-n5-hpc-finfet-process-digital (accessed Feb. 13, 2025). This is further supported by the "FAB Foundry Code" on the Tomahawk 5.

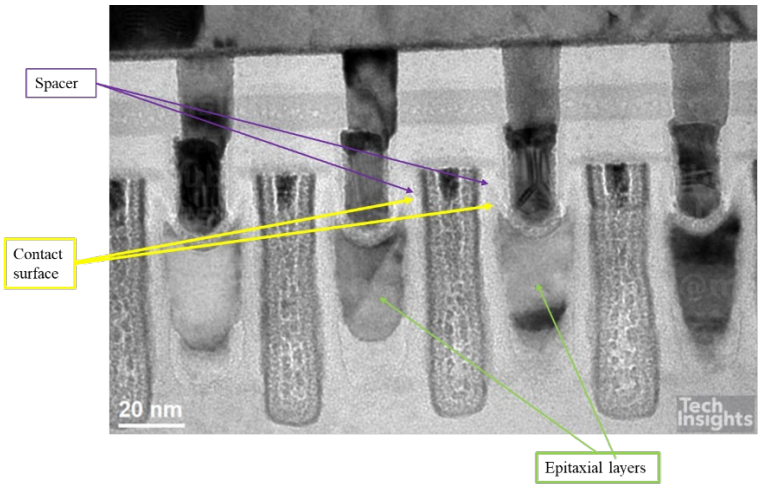
See LinkedIn.com, *Chips and Salsa: An Introduction to the Broadcom Tomahawk 5 ...Just for Fun!*, at https://www.linkedin.com/pulse/chips-salsa-introduction-broadcom-tomahawk-5-just-fun-murphy/ (annotated) (accessed Feb. 13, 2025). Similarly, the Broadcom BCM57608 integrated circuit includes a "T" code on Line 3 of the part marking identifies the "FAB Foundry Code," indicating it is manufactured by TSMC.

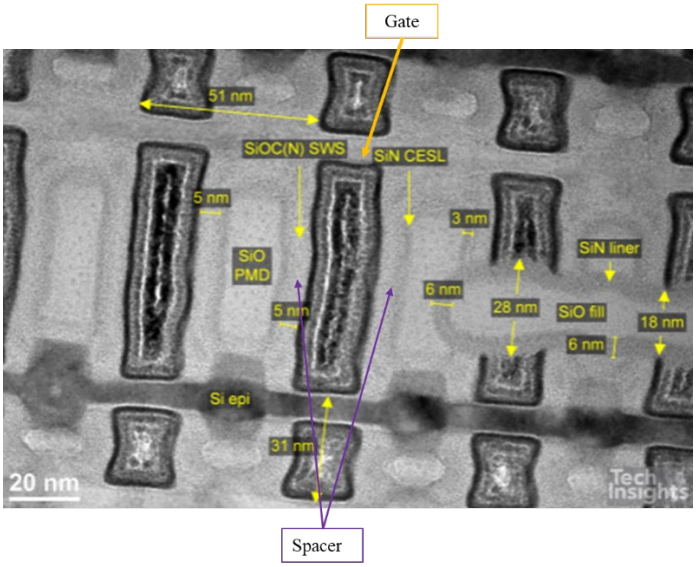
See Broadcom BCM957608 Ethernet Network Interface Card, IMG_2631.jpg (annotated). The Qualcomm Snapdragon X Elite integrated circuit is manufactured by TSMC using its 4 nm process

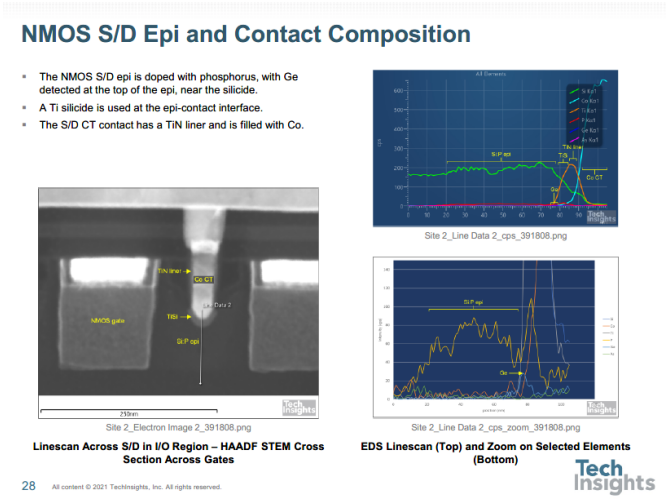
node. *See* Tomshardware.com, *Qualcomm Snapdragon X die shot reveals massive CPU cores with huge caches,* available at: https://www.tomshardware.com/pc-components/cpus/qualcomm-snapdragon-x-die-shot-reveals-massive-cpu-cores-with-huge-caches (accessed Feb. 13, 2025).

108. Upon information and belief, these exemplary devices are substantially similar in materials, structures, and features as all other semiconductor dies that TSMC manufactures using its 5nm process node, which is representative of the exemplary devices and other semiconductor devices manufactured using TSMC's 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. Furthermore, as shown in the images below of a representative semiconductor die made using TSMC's 5 nm process node (a TSMC 5 nm semiconductor die incorporated in an Apple A15 Bionic APLW07 integrated circuit), the representative semiconductor die comprises all elements of claim 1 of the '847 Patent.









109. The other products produced by TSMC at the same node size also infringe for the same reasons as above, as explained in ¶¶ 66, 82, 95 *supra*. Upon information and belief, the 5 nm

process node is representative of TSMC's other process nodes at 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm.

110. As a result of Defendants' infringement of the '847 Patent, Plaintiffs are entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

111. Defendants' acts of direct and indirect infringement of the '847 Patent are deliberate and willful, and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law.

COUNT II

Infringement of the '473 Patent

112. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

113. Defendants have directly and indirectly infringed, and continue to directly and indirectly infringe, the '473 Patent by making, having made, using, selling, offering for sale, and/or importing into the United States products that infringe the '473 Patent including, but not limited to semiconductor devices manufactured using TSMC's 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. The products that infringe one or more claims of the '473 Patent include, but are not limited to, at least the products identified herein. Further discovery may reveal additional infringing products and/or models.

114. For example, and without limitation, the infringing products infringe one or more claims of the '473 Patent, including but not limited to claim 1. The infringing products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of at least claim 1 of the '473 Patent.

115. The infringing products include all the limitations of at least claim 1 of the ’473 Patent. Specifically, the ’473 Patent claims, e.g., a method for fabricating a metal-oxide semiconductor (MOS) transistor, comprising: providing a semiconductor substrate; forming a silicon layer on the semiconductor substrate; performing a first photo-etching process on the silicon layer for forming a gate pattern; forming an epitaxial layer in the semiconductor substrate adjacent to two sides of the gate pattern; and after forming the epitaxial layer, performing a second photo-etching process on the gate pattern to form a slot in the gate pattern while using the gate pattern to physically separate the gate pattern into two gates.

116. Defendants have, and continue to, indirectly infringe the ’473 Patent by actively inducing and contributing to the infringement of the ’473 Patent by others, such as fabless companies, original equipment manufacturers, customers, resellers, and retailers who, for example, incorporating products that infringe (or that are manufactured using processes that infringe) into downstream products made, sold, offered for sale, and/or imported throughout the United States, including in this judicial District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this judicial District. On information and belief, these sales and/or marketing activities are targeted to original equipment manufacturers, including original equipment manufacturers based in the United States.

117. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the ’473 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the products that infringe (or that are manufactured using processes that infringe) such that they would each infringe the ’473 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, products that infringe (or that are manufactured

using processes that infringe) to others, such as, but not limited to, customers, knowing and intending that those others would use, sell, offer for sale, and/or import in and into the United States downstream products that include the products that infringe (or that are manufactured using processes that infringe), thereby directly infringing one or more claims of the ’473 Patent.

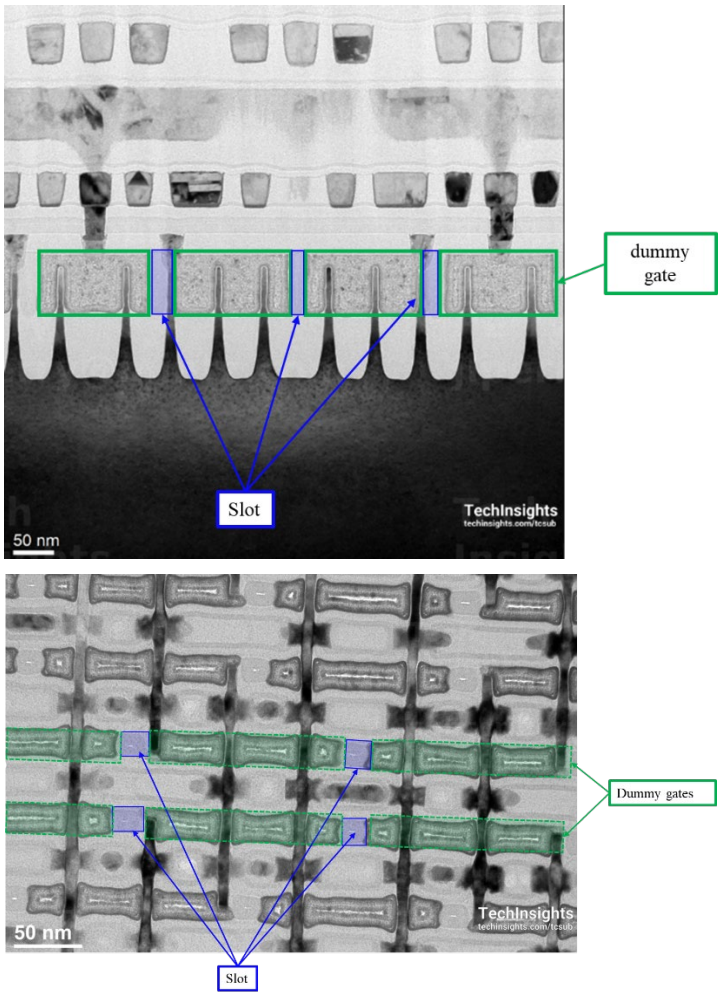
118. The products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses and are a material part of the invention. Any manufacture, use, sale, offer for sale, or importation in or into the United States of a product that infringes (or that is manufactured using processes that infringe) or a downstream product incorporating a product that infringes (or that is manufactured using processes that infringe) infringes the ’473 Patent. The products that infringe (or that are manufactured using processes that infringe) are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The products that infringe (or that are manufactured using processes that infringe) cannot be used without being incorporated into a downstream product. Thus, the products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses. Moreover, because the products that infringe (or that are manufactured using processes that infringe) provide vital functionality to the downstream products, the products that infringe (or that are manufactured using processes that infringe) constitute a material part of the invention claimed in the ’473 Patent.

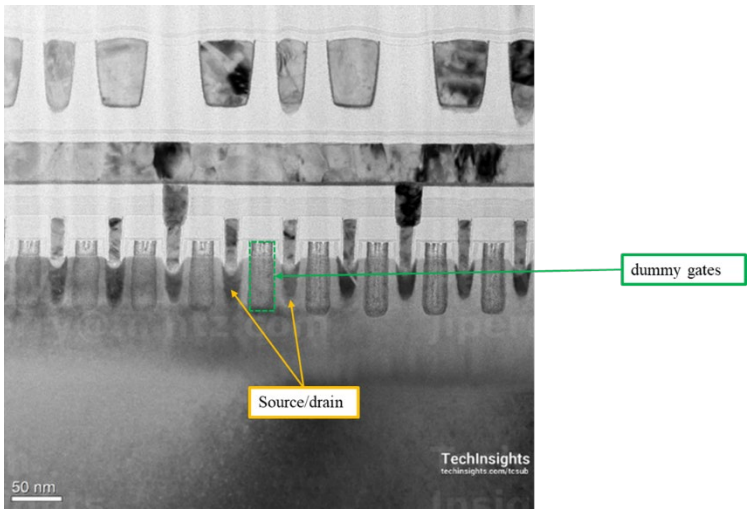
119. With respect to an exemplary device, the Apple Watch SE (2nd Gen) smartwatch, made or sold by Apple, incorporating the TSMC-made Apple T8301 integrated circuit, the Broadcom BCM4399Y die, the Qualcomm Snapdragon 680 4G integrated circuit, and the Qualcomm Snapdragon 695 5G integrated circuit, directly infringe at least claim 1 of the ’473 Patent. To the extent that there is any difference between the TSMC integrated circuit and the final

semiconductor device provided to Apple, Broadcom, Qualcomm, and/or their downstream customers, the TSMC-made chip directly infringes at least the same claim as well.

120. On information and belief, the exemplary devices incorporate a semiconductor die that TSMC manufactures using its 7nm/6nm process node. For example, the Apple S8 System in Package (SiP) and T8301 integrated circuit contained therein is manufactured by TSMC using its 7nm process node. *See* https://www.macrumors.com/2022/09/12/apple-watch-s8-chip-features-same-cpu-as-s6-and-s7/ (accessed Feb. 13, 2025); https://www.powerpage.org/rumor-tsmcs-next-gen-apple-product-roadmap-on-schedule/ (accessed Feb. 13, 2025); https://www.apple.com/newsroom/2020/09/apple-watch-series-6-delivers-breakthrough-wellness-and-fitness-capabilities/ (accessed Feb. 13, 2025); TechInsights Report for Apple A13 Bionic APL1W85 TSMC N7P FinFET Process (ACE-1909-801), at 4. The Broadcom BCM4399Y die, incorporated into the USI 339S01463 Wi-Fi 7/BT 5.4 Combo SoC and further incorporated into the Apple iPhone 16 Pro Max, is manufactured by TSMC using its 7nm process node. *See* TechInsights Platform BFR-2401-803, Sharath Poikayil Satheesh, Broadcom BCM4399Y Wi-Fi 7/BT 5.4 Combo SoC Basic Floorplan Analysis BFR-2410-803 Report, at 4 (October 9, 2024). The Qualcomm Snapdragon 695 5G is manufactured by TSMC using its 6nm process node. *See* https://nanoreview.net/en/soc/qualcomm-snapdragon-695 (accessed Feb. 13, 2025). The Qualcomm Snapdragon 680 4G is manufactured by TSMC using its 6nm process node. *See* GMS Arena, Motorola Moto G Play, at https://www.gsmarena.com/motorola_moto_g_play_(2024)-12798.php (accessed Feb. 13, 2025); Gizmochina.com, *New Qualcomm mid-range chips on the way, will support 144Hz refresh rate*, at https://www.gizmochina.com/2021/09/11/new-qualcomm-mid-range-chips-on-the-way-will-support-144hz-refresh-rate/ (accessed Feb. 13, 2025).

121. Upon information and belief, these exemplary devices are substantially similar in materials, structures, and features as all other semiconductor dies that TSMC manufactures using its 7nm process node, which is representative of the exemplary devices and other semiconductor devices manufactured using TSMC's 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. Furthermore, as shown in the images below of a representative semiconductor die made using TSMC's 7 nm process node (a TSMC 7 nm semiconductor die incorporated in an Apple A13 Bionic APL1W85 integrated circuit), the representative semiconductor die comprises all elements of claim 1 of the '473 Patent.





122. The other products produced by TSMC at the same node size also infringe for the same reasons as above, as explained in ¶¶ 66, 82, 95 *supra*. Upon information and belief, the 5 nm process node is representative of TSMC's other process nodes at 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm.

123. As a result of Defendants' infringement of the '473 Patent, Plaintiffs are entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

124. Defendants' acts of direct and indirect infringement of the '473 Patent are deliberate and willful, and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law.

COUNT III

Infringement of the '292 Patent

125. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

126. Defendants have directly and indirectly infringed, and continue to directly and indirectly infringe, the '292 Patent by making, having made, using, selling, offering for sale, and/or

importing into the United States products that infringe the ’292 Patent including but not limited to semiconductor devices manufactured using TSMC’s 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. The products that infringe one or more claims of the ’292 Patent include, but are not limited to, at least the products identified herein. Further discovery may reveal additional infringing products and/or models.

127. For example, and without limitation, the infringing products infringe one or more claims of the ’292 Patent, including but not limited to claim 1. The infringing products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of at least claim 1 of the ’292 Patent.

128. The infringing products include all the limitations of at least claim 1 of the ’292 Patent. Specifically, the ’292 Patent claims, e.g., A semiconductor structure for forming FinFETs, comprising: a semiconductor substrate, wherein a top portion of the semiconductor substrate comprises a semiconductor material; a plurality of odd fins of the FinFETs on the semiconductor substrate, being defined from the semiconductor substrate and being formed of the semiconductor material; and a plurality of even fins of the FinFETs on the semiconductor substrate between the odd fins of the FinFETs, being different from the odd fins of the FinFETs in at least one of width and material, wherein the plurality of even fins are in direct contact with the semiconductor material.

129. Defendants have, and continue to, indirectly infringe the ’292 Patent by actively inducing and contributing to the infringement of the ’292 Patent by others, such as fabless companies, original equipment manufacturers, customers, resellers, and retailers who, for example, incorporating products that infringe (or that are manufactured using processes that infringe) into downstream products made, sold, offered for sale, and/or imported throughout the United States,

including in this judicial District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this judicial District. On information and belief, these sales and/or marketing activities are targeted to original equipment manufacturers, including original equipment manufacturers based in the United States.

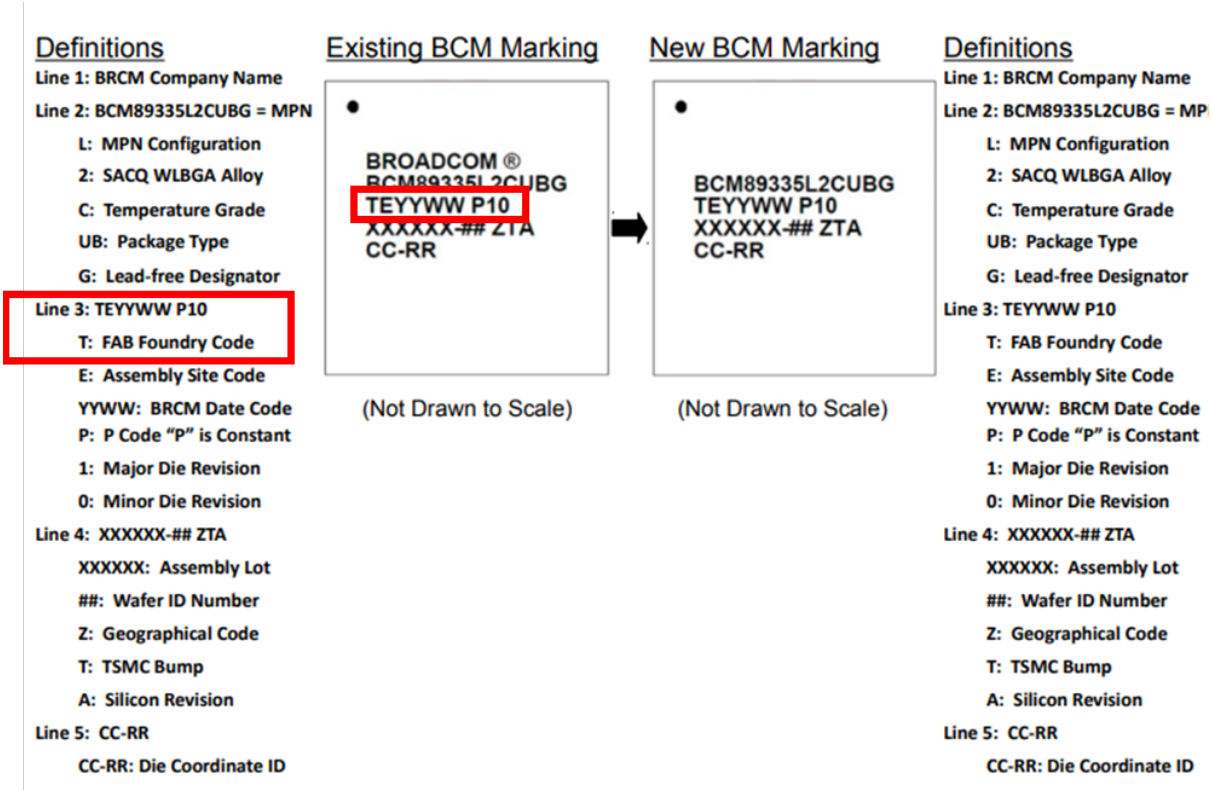
130. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the ’292 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the products that infringe (or that are manufactured using processes that infringe) such that they would each infringe the ’292 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, products that infringe (or that are manufactured using processes that infringe) to others, such as, but not limited to, customers, knowing and intending that those others would use, sell, offer for sale, and/or import in and into the United States downstream products that include the products that infringe (or that are manufactured using processes that infringe), thereby directly infringing one or more claims of the ’292 Patent.

131. The products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses and are a material part of the invention. Any manufacture, use, sale, offer for sale, or importation in or into the United States of a product that infringes (or that is manufactured using processes that infringe) or a downstream product incorporating a product that infringes (or that is manufactured using processes that infringe) infringes the ’292 Patent. The products that infringe (or that are manufactured using processes that infringe) are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The products that infringe (or that are manufactured using processes that infringe) cannot be used without being incorporated into a downstream product. Thus, the products that infringe

(or that are manufactured using processes that infringe) have no substantial non-infringing uses. Moreover, because the products that infringe (or that are manufactured using processes that infringe) provide vital functionality to the downstream products, the products that infringe (or that are manufactured using processes that infringe) constitute a material part of the invention claimed in the ’292 Patent.

132. With respect to exemplary devices, the Apple iPhone 13, made or sold by Apple, incorporating the TSMC-made Apple A15 Bionic integrated circuit, the Broadcom BCM957608 network units, made or sold by Broadcom, incorporating the TSMC-made Broadcom BCM957608 integrated circuit, and the Snapdragon X Elite integrated circuit, made or sold by Qualcomm, incorporating the TSMC-made semiconductor die, directly infringe at least claim 1 of the ’292 Patent.

133. On information and belief, the exemplary devices incorporate a semiconductor die that TSMC manufactures using its 5nm/4nm process node. For example, the Apple A15 bionic integrated circuit is manufactured by TSMC using its 5nm process node. *See* TechInsights Report for Apple APL1W07 A15 Bionic Processor TSMC N5P FinFET Process (ACE 2109-801), at 4. The Broadcom BCM57608 integrated circuit is manufactured by TSMC using its 5 nm process node. *See Broadcom Claims First 5nm Ethernet Adapter for AI Networking*, at https://www.flywing-tech.com/blog/broadcom-claims-first-5-nm-ethernet-adapter-for-ai-networking?srsltid=AfmBOoohvuw6ATyPwpDf1nZqCDxAZpEr4fWBtwfY6C70y-AVbnsUW1A3 (accessed Feb. 13, 2025). Further, upon information and belief, Broadcom uses a part making scheme where the foundry a die is manufactured is identified on the product. For example, the “T” code on Line 3 of the part marking identifies the “FAB Foundry Code”.



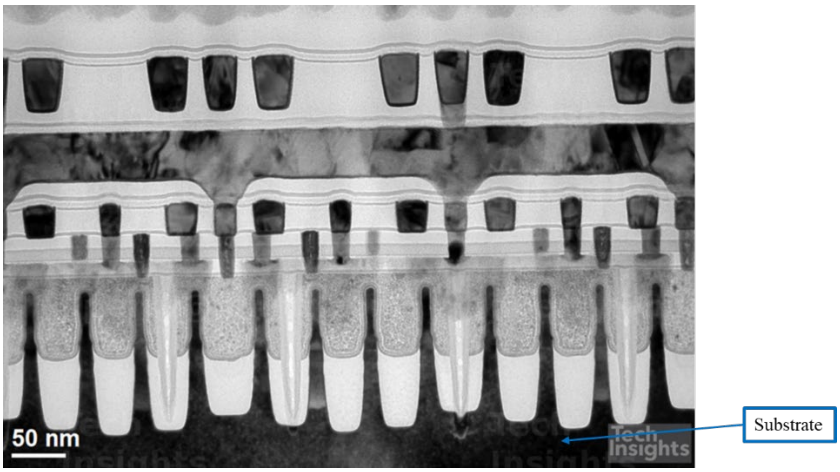
See Product Change Notification, Addendum to PCN165006: Removal of Broadcom Logo and Complant Name for Automotive IoT Products, at https://www.mouser.com/PCN/Cypress_Semiconductor_PCN165006A.pdf?srsltid=AfmBOoqAFZTj2HXEdumx9emkMSsx0SKRT87VBpn23LdYYwUxGkWFZ_Je (annotated) (accessed Feb. 13, 2025). Upon information and belief, the "T" on Line 3 representing "FAB Foundry Code" is used when a product is manufactured at a TSMC foundry. For example, the Broadcom Tomahawk 5 is manufactured at a TSMC foundry. *See* TechInsights.com, *Broadcom BCM78900 StrataXGS Tomahawk 5 Ethernet Switch TSMC N5 HPC FinFET Process Digital Floorplan Analysis*, at https://www.techinsights.com/blog/broadcom-bcm78900-strataxgs-tomahawk-5-ethernet-switch-tsmc-n5-hpc-finfet-process-digital (accessed Feb. 13, 2025). This is further supported by the "FAB Foundry Code" on the Tomahawk 5.

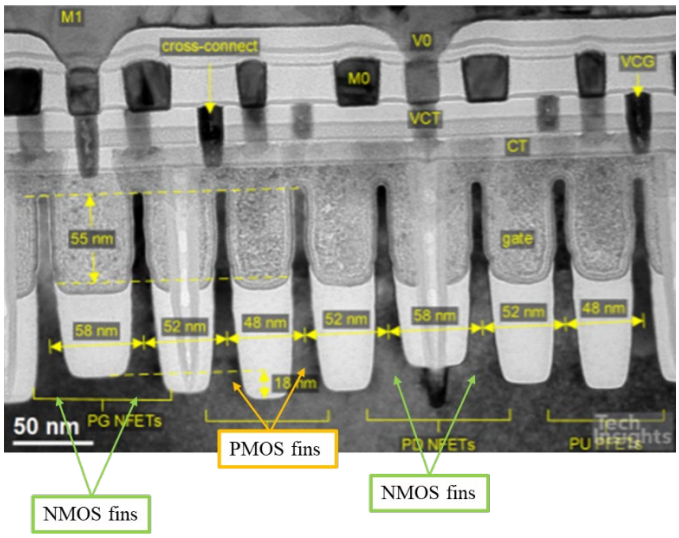
See LinkedIn.com, *Chips and Salsa: An Introduction to the Broadcom Tomahawk 5 ...Just for Fun!*, at https://www.linkedin.com/pulse/chips-salsa-introduction-broadcom-tomahawk-5-just-fun-murphy/ (annotated) (accessed Feb. 13, 2025). Similarly, the Broadcom BCM57608 integrated circuit includes a "T" code on Line 3 of the part marking identifies the "FAB Foundry Code," indicating it is manufactured by TSMC.

See Broadcom BCM957608 Ethernet Network Interface Card, IMG_2631.jpg (annotated). The Qualcomm Snapdragon X Elite integrated circuit is manufactured by TSMC using its 4 nm process

node. *See* Tomshardware.com, *Qualcomm Snapdragon X die shot reveals massive CPU cores with huge caches,* available at: https://www.tomshardware.com/pc-components/cpus/qualcomm-snapdragon-x-die-shot-reveals-massive-cpu-cores-with-huge-caches (accessed Feb. 13, 2025).

134. Upon information and belief, these exemplary devices are substantially similar in materials, structures, and features as all other semiconductor dies that TSMC manufactures using its 5nm process node, which is representative of the exemplary devices and other semiconductor devices manufactured using TSMC's 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm process nodes. Furthermore, as shown in the images below of a representative semiconductor die made using TSMC's 5 nm process node (a TSMC 5 nm semiconductor die incorporated in an Apple A15 Bionic APLW07 integrated circuit), the representative semiconductor die comprises all elements of claim 1 of the '292 Patent.





135. The other products produced by TSMC at the same node size also infringe for the same reasons as above, as explained in ¶¶ 66, 82, 95 *supra*. Upon information and belief, the 5 nm process node is representative of TSMC's other process nodes at 16nm, 12nm, 7nm, 6nm, 5nm, 4nm, and 3nm.

136. As a result of Defendants' infringement of the '292 Patent, Plaintiffs are entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

137. Defendants' acts of direct and indirect infringement of the '292 Patent are deliberate and willful, and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law.

COUNT IV

Infringement of the '747 Patent

138. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

139. Plaintiff Marlin Semiconductor is the assignee and lawful owner of all rights, title,

and interest in and to the ’747 Patent. The ’747 Patent is valid and enforceable.

140. The ’747 Patent is entitled “Semiconductor Structure with Hard Mask Disposed on the Gate Structure,” and issued on Sept. 29, 2015 to inventors Ching-wen Hung and Chih-sen Huang. The ’747 Patent issued from U.S. Patent Application No. 13/875,293, which was filed on May 2, 2013.

141. Defendants have directly and indirectly infringed, and continue to directly and indirectly infringe, the ’747 Patent by making, having made, using, selling, offering for sale, and/or importing into the United States products that infringe the ’747 Patent including, but not limited to semiconductor devices manufactured using TSMC’s 3nm process node. The products that infringe one or more claims of the ’747 Patent include, but are not limited to, at least the products identified herein. Further discovery may reveal additional infringing products and/or models.

142. For example, and without limitation, the infringing products infringe one or more claims of the ’747 Patent, including but not limited to claim 1. The infringing products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of at least claim 1 of the ’747 Patent.

143. The infringing products include all the limitations of at least claim 1 of the ’747 Patent. Specifically, the ’747 Patent claims, e.g., a semiconductor structure, comprising: a substrate; a first dielectric layer disposed on the substrate; at least two metal gates disposed in the first dielectric layer; a spacer disposed on two sides of the metal gate, wherein the spacer has a truncated top surface; a source/drain region (S/D region) disposed between two metal gates; a plurality of first contacts disposed in the first dielectric layer that are electrically connected to parts of the S/D region; a plurality of second contacts disposed in the first dielectric layer that are electrically connected to one of the metal gates, wherein at least one of the first contacts directly connects at

least one of the second contacts; and a hard mask disposed on one of the metal gates, wherein the top surface of the hard mask and the top surface of the first dielectric layer are on the same level.

144. Defendants have, and continue to, indirectly infringe the ’747 Patent by actively inducing and contributing to the infringement of the ’747 Patent by others, such as fabless companies, original equipment manufacturers, customers, resellers, and retailers who, for example, incorporating products that infringe (or that are manufactured using processes that infringe) into downstream products made, sold, offered for sale, and/or imported throughout the United States, including in this judicial District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this judicial District. On information and belief, these sales and/or marketing activities are targeted to original equipment manufacturers, including original equipment manufacturers based in the United States.

145. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the ’747 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the products that infringe (or that are manufactured using processes that infringe) such that they would each infringe the ’747 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, products that infringe (or that are manufactured using processes that infringe) to others, such as, but not limited to, customers, knowing and intending that those others would use, sell, offer for sale, and/or import in and into the United States downstream products that include the products that infringe (or that are manufactured using processes that infringe), thereby directly infringing one or more claims of the ’747 Patent.

146. The products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses and are a material part of the invention. Any manufacture,

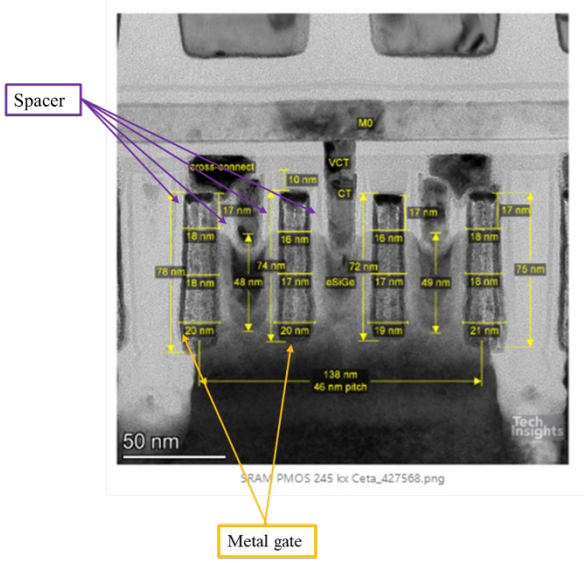
use, sale, offer for sale, or importation in or into the United States of a product that infringes (or that is manufactured using processes that infringe) or a downstream product incorporating a product that infringes (or that is manufactured using processes that infringe) infringes the ’747 Patent. The products that infringe (or that are manufactured using processes that infringe) are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The products that infringe (or that are manufactured using processes that infringe) cannot be used without being incorporated into a downstream product. Thus, the products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses. Moreover, because the products that infringe (or that are manufactured using processes that infringe) provide vital functionality to the downstream products, the products that infringe (or that are manufactured using processes that infringe) constitute a material part of the invention claimed in the ’747 Patent.

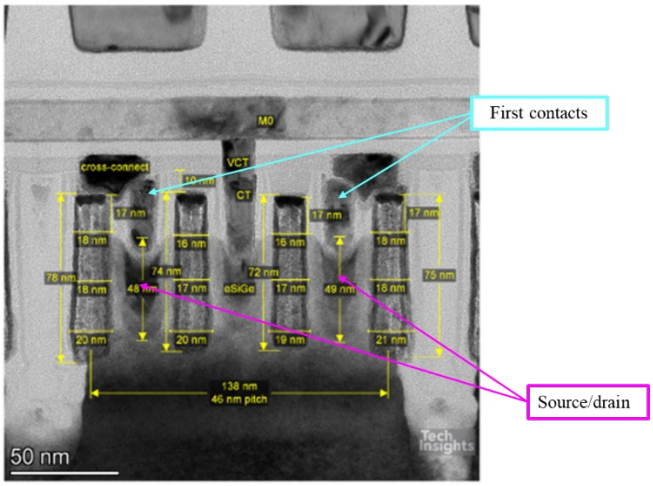
147. With respect to an exemplary devices, the Apple iPhone 15 Pro, made or sold by Apple, incorporating the TSMC-made Apple A17 integrated circuit and the TSMC-made Qualcomm Snapdragon 8 Elite integrated circuit directly infringe at least claim 1 of the ’747 Patent. To the extent that there is any difference between the TSMC integrated circuit and the final semiconductor device provided to Apple, the TSMC-made chip directly infringes at least the same claim as well.

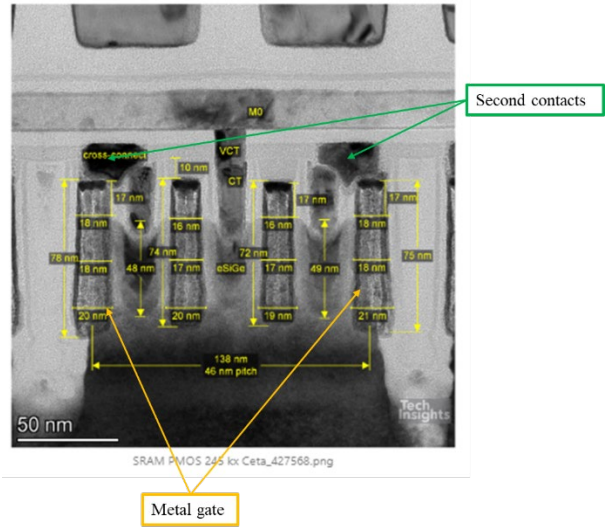
148. On information and belief, the exemplary devices incorporate a semiconductor die that TSMC manufactures using its 3nm process node, Tor example, the Apple A17 integrated circuit, incorporated into the Apple iPhone 15 Pro, is manufactured by TSMC using its 3nm process node. *See* TechInsights Report for Apple APL1V02 A17 Pro Processor TSMC 3nm FinFET Process (ACE-2307-803), at 4. The Qualcomm Snapdragon 8 Elite integrated circuit is

manufactured by TSMC using tis 3nm process node. *See* NSane Forums, *Qualcomm announces Snapdragon 8 Elite flagship smartphone SoC with major improvements*, at https://nsaneforums.com/news/mobile-news/qualcomm-announces-snapdragon-8-elite-flagship-smartphone-soc-with-major-improvements-r26125/ (accessed Feb. 13, 2025).

149. Upon information and belief, these exemplary devices are substantially similar in materials, structures, and features as all other semiconductor dies that TSMC manufactures using its 3nm process node, which is representative of the exemplary devices and other semiconductor devices manufactured using TSMC's 3nm process node. Furthermore, as shown in the images below of a representative semiconductor die made using TSMC's 3nm process node (a TSMC 3nm semiconductor die incorporated in an Apple A17 APL1V02 integrated circuit), the representative semiconductor die comprises all elements of claim 1 of the '747 Patent.







150. The other products produced by TSMC at the same node size also infringe for the same reasons as above, as explained in ¶¶ 66, 82, 95 *supra*.

151. As a result of Defendants' infringement of the '747 Patent, Plaintiffs are entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

152. Defendants' acts of direct and indirect infringement of the '747 Patent are deliberate and willful, and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law.

COUNT V

Infringement of the ’880 Patent

153. Plaintiffs incorporate the allegations of all of the foregoing paragraphs as if fully restated herein.

154. Defendants have directly and indirectly infringed, and continue to directly and indirectly infringe, the ’880 Patent by making, having made, using, selling, offering for sale, and/or importing into the United States products that infringe the ’880 Patent including, but not limited to semiconductor devices manufactured using TSMC’s 3nm process node. The products that infringe one or more claims of the ’880 Patent include, but are not limited to, at least the products identified herein. Further discovery may reveal additional infringing products and/or models.

155. For example, and without limitation, the infringing products infringe one or more claims of the ’880 Patent, including but not limited to claim 1. The infringing products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of at least claim 1 of the ’880 Patent.

156. The infringing products include all the limitations of at least claim 1 of the ’880 Patent. Specifically, the ’880 Patent claims, *e.g.*, a method for fabricating semiconductor device, comprising: forming a fin-shaped structure on a substrate; forming a shallow trench isolation (STI) around the fin-shaped structure; forming a gate layer on the fin-shaped structure and the STI; removing part of the gate layer, part of the fin-shaped structure, and part of the STI to form a trench; forming a dielectric layer into the trench to form a single diffusion break (SDB) structure; and after forming the SDB structure forming an interlayer dielectric (ILD) layer on the SDB structure.

157. Defendants have, and continue to, indirectly infringe the ’880 Patent by actively inducing and contributing to the infringement of the ’880 Patent by others, such as fabless companies, original equipment manufacturers, customers, resellers, and retailers who, for example,

incorporating products that infringe (or that are manufactured using processes that infringe) into downstream products made, sold, offered for sale, and/or imported throughout the United States, including in this judicial District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this judicial District. On information and belief, these sales and/or marketing activities are targeted to original equipment manufacturers, including original equipment manufacturers based in the United States.

158. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the ’880 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the products that infringe (or that are manufactured using processes that infringe) such that they would each infringe the ’880 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, products that infringe (or that are manufactured using processes that infringe) to others, such as, but not limited to, customers, knowing and intending that those others would use, sell, offer for sale, and/or import in and into the United States downstream products that include the products that infringe (or that are manufactured using processes that infringe), thereby directly infringing one or more claims of the ’880 Patent.

159. The products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses and are a material part of the invention. Any manufacture, use, sale, offer for sale, or importation in or into the United States of a product that infringes (or that is manufactured using processes that infringe) or a downstream product incorporating a product that infringes (or that is manufactured using processes that infringe) infringes the ’880 Patent. The products that infringe (or that are manufactured using processes that infringe) are semiconductor devices and integrated circuits that provide vital functionality to downstream

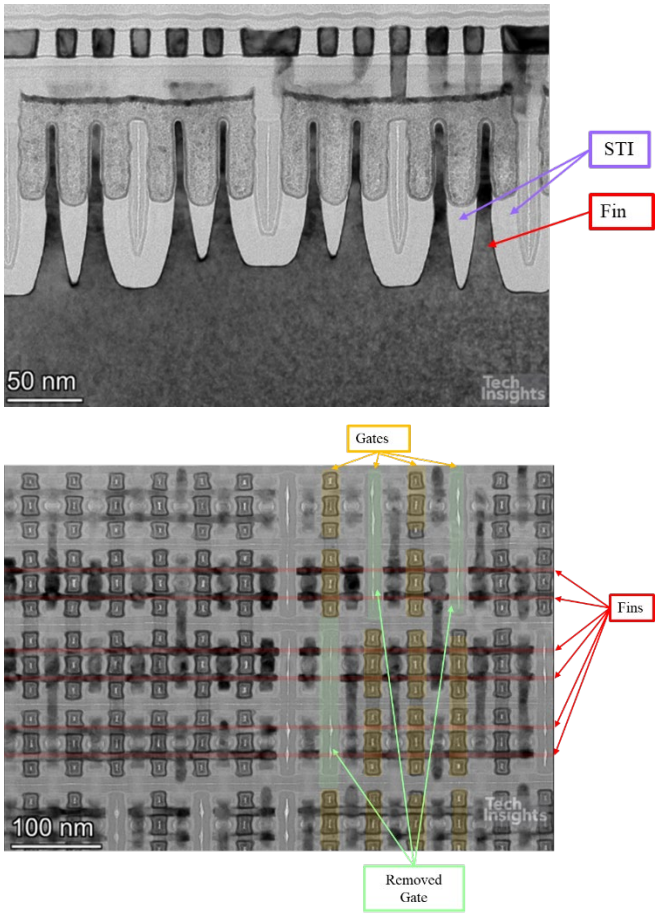
products. The products that infringe (or that are manufactured using processes that infringe) cannot be used without being incorporated into a downstream product. Thus, the products that infringe (or that are manufactured using processes that infringe) have no substantial non-infringing uses. Moreover, because the products that infringe (or that are manufactured using processes that infringe) provide vital functionality to the downstream products, the products that infringe (or that are manufactured using processes that infringe) constitute a material part of the invention claimed in the ’880 Patent.

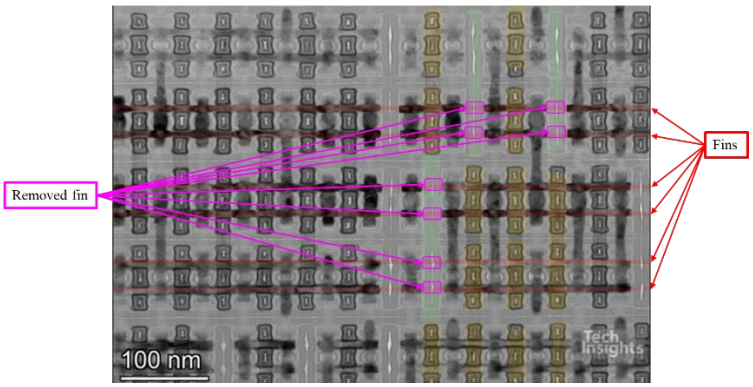
160. With respect to an exemplary devices, the Apple iPhone 15 Pro, made or sold by Apple, incorporating the TSMC-made Apple A17 integrated circuit and the TSMC-made Qualcomm Snapdragon 8 Elite integrated circuit directly infringe at least claim 1 of the ’880 Patent. To the extent that there is any difference between the TSMC integrated circuit and the final semiconductor device provided to Apple, the TSMC-made chip directly infringes at least the same claim as well.

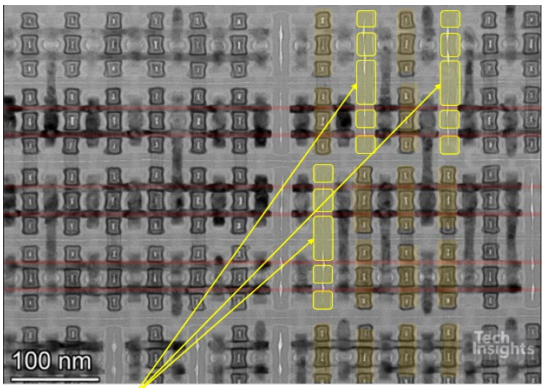
161. On information and belief, the exemplary devices incorporate a semiconductor die that TSMC manufactures using its 3nm process node, Tor example, the Apple A17 integrated circuit, incorporated into the Apple iPhone 15 Pro, is manufactured by TSMC using its 3nm process node. *See* TechInsights Report for Apple APL1V02 A17 Pro Processor TSMC 3nm FinFET Process (ACE-2307-803), at 4. The Qualcomm Snapdragon 8 Elite integrated circuit is manufactured by TSMC using tis 3nm process node. *See* NSane Forums, *Qualcomm announces Snapdragon 8 Elite flagship smartphone SoC with major improvements*, at https://nsaneforums.com/news/mobile-news/qualcomm-announces-snapdragon-8-elite-flagship-smartphone-soc-with-major-improvements-r26125/ (accessed Feb. 13, 2025).

162. Upon information and belief, these exemplary devices are substantially similar in

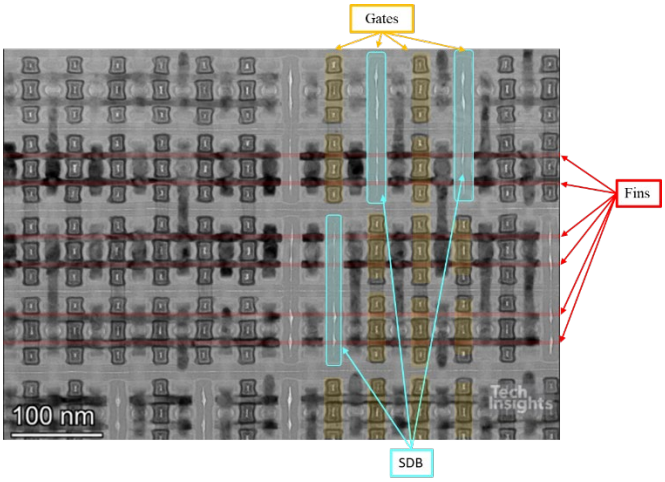
materials, structures, and features as all other semiconductor dies that TSMC manufactures using its 3nm process node, which is representative of the exemplary devices and other semiconductor devices manufactured using TSMC's 3nm process node. Furthermore, as shown in the images below of a representative semiconductor die made using TSMC's 3nm process node (a TSMC 3nm semiconductor die incorporated in an Apple A17 APL1V02 integrated circuit), the representative semiconductor die comprises all elements of claim 1 of the '880 Patent.

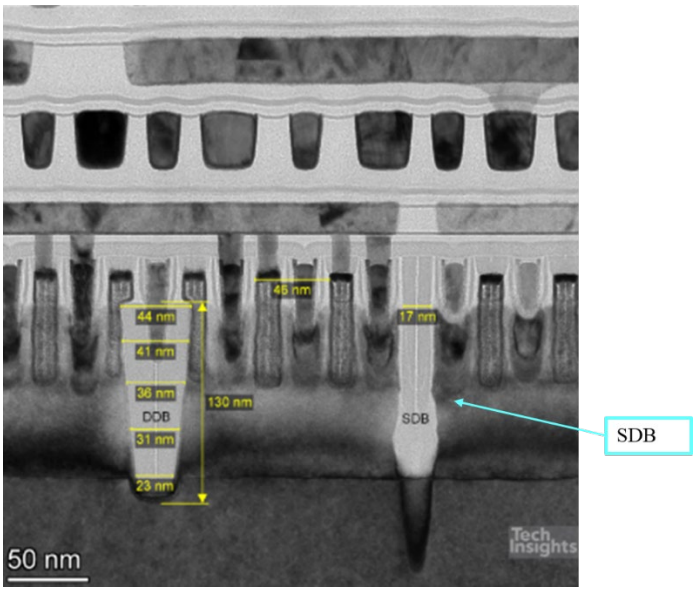



Removed fin
Fins
100 nm
Tech Insights


100 nm
Tech Insights

STI removed


Gates
Fins
100 nm
Tech Insights
SDB



163. The other products produced by TSMC at the same node size also infringe for the same reasons as above, as explained in ¶¶ 66, 82, 95 *supra*.

164. As a result of Defendants' infringement of the '880 Patent, Plaintiffs are entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

165. Defendants' acts of direct and indirect infringement of the '880 Patent are deliberate and willful, and have caused, and will continue to cause, substantial damage and irreparable harm to Plaintiffs, and Plaintiffs have no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs request the Court grant the relief set forth below:

a. Enter a judgment that the Defendants have directly or indirectly infringed, and continue to directly or indirectly infringe one or more claims of each of the Asserted Patents;

b. Enter a judgment that Defendants' acts of patent infringement are willful;

c. Order Defendants to account for and pay damages caused to Plaintiffs by

Defendants' unlawful acts of patent infringement;

d. Award Plaintiffs increased damages and attorney fees pursuant to 35 U.S.C. §§ 284 and 285;

e. Award Plaintiffs the interest and costs incurred in action; and

f. Grant Plaintiffs other and further relief, including equitable relief, as the Court finds just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Fed. R. Civ. P. 38, Plaintiffs hereby demand a jury trial for all claims and issues deemed to be triable by a jury.

Dated: February 13, 2025

Respectfully submitted,

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