

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

CONTINENTAL CIRCUITS OF TEXAS  
LLC and CONTINENTAL CIRCUITS LLC,

Plaintiffs,

v.

APPLE INC.,

Defendant.

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Case No. 6:21-cv-01049

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiffs Continental Circuits of Texas LLC (“Continental Texas”) and Continental Circuits LLC (“Continental LLC”) (collectively, “Continental Circuits” or “Plaintiffs”) file this original Complaint against Defendant Apple, Inc. (“Apple” or “Defendant”), for patent infringement under 35 U.S.C. § 271 and allege as follows:

**THE PARTIES**

1. Plaintiff Continental Circuits of Texas LLC is a limited liability company organized and existing under the laws of the State of Texas, with its principal place of business located at 100 W. Houston Street, Marshall, Texas 75670.

2. Plaintiff Continental Circuits LLC is a limited liability company organized and existing under the laws of the State of Arizona, with its principal place of business located at 16800 East El Lago Boulevard, Unit 2042, Fountain Hills, Arizona 85268.

3. Defendant Apple, Inc. is a corporation organized and existing under the laws of the State of California, with one or more regular and established places of business in this District at least at 12545 Riata Vista Circle, Austin, Texas 78727; 12801 Delcour Drive, Austin, Texas

78727; 6800 West Parmer Lane, Austin, Texas 78729, and 3121 Palm Way, Austin, Texas 78758. Apple may be served with process through its registered agent, the CT Corp System, at 1999 Bryan Street, Suite 900 Dallas, Texas 75201-3136. In November 2019, Apple stated that it had approximately 7,000 employees in Austin and that it expected to open, in 2022, a \$1 billion, 3 million-square-foot campus with capacity for 15,000 employees. *See* <https://www.apple.com/newsroom/2019/11/apple-expands-in-austin/>. Apple is registered to do business in the State of Texas and has been since at least May 16, 1980.

### **JURISDICTION AND VENUE**

4. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.* This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331, 1332, 1338, and 1367.

5. This Court has specific personal jurisdiction over Defendant consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. Upon information and belief, Defendant has sufficient minimum contacts with the forum because Defendant has physical locations and transacts substantial business in the State of Texas and in this Judicial District. Further, Defendant has, directly or through subsidiaries or intermediaries, committed and continues to commit acts of patent infringement in the State of Texas and in this Judicial District as alleged in this Complaint, as alleged more particularly below.

6. Venue is proper in this Judicial District pursuant to 28 U.S.C. §§ 1400(b) and 1391(b) and (c) because Defendant is subject to personal jurisdiction in this Judicial District, has committed acts of patent infringement in this Judicial District, and has a regular and established place of business in this Judicial District. Defendant, through its own acts, makes, uses, sells, and/or offers to sell infringing products within this Judicial District, regularly does and solicits business in this Judicial District, and has the requisite minimum contacts with the Judicial District

such that this venue is a fair and reasonable one.

**PATENTS-IN-SUIT**

7. On March 10, 2009, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,501,582 (the “’582 Patent”) entitled “Electrical Device and Method for Making Same.” A true and correct copy of the ’582 Patent is available at: <https://pdfpiw.uspto.gov/.piw?Docid=07501582>.

8. On October 2, 2012, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,278,560 (the “’560 Patent”) entitled “Electrical Device with Teeth Joining Layers and Method for Making the Same.” A true and correct copy of the ’560 Patent is available at: <https://pdfpiw.uspto.gov/.piw?Docid=08278560>.

9. On November 12, 2013, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 8,581,105 (the “’105 Patent”) entitled “Electrical Device with Teeth Joining Layers and Method for Making the Same.” A true and correct copy of the ’105 Patent is available at: <https://pdfpiw.uspto.gov/.piw?Docid=08581105>.

10. On June 21, 2016, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,374,912 (the “’912 Patent”) entitled “Electrical Device with Teeth Joining Layers and Method for Making the Same.” A true and correct copy of the ’912 Patent is available at: <https://pdfpiw.uspto.gov/.piw?Docid=09374912>.

11. Continental LLC is the sole and exclusive owner of all right, title, and interest of the ’582, ’560, ’105, and ’912 Patents (collectively, the “Patents-in-Suit”). Continental Texas is the exclusive licensee with respect to the Patents-in-Suit in Texas and holds the exclusive right to take all actions necessary to enforce its rights to the Patents-in-Suit in Texas, including the filing of this patent infringement lawsuit. Continental Texas has the right to recover all damages for past

infringement of the Patents-in-Suit in the State of Texas as appropriate under the law. Continental LLC has the right to recover all damages for past infringement of the Patents-in-Suit except in the State of Texas as appropriate under the law.

12. Continental Circuits has at all times complied with the marking provisions of 35 U.S.C. § 287 with respect to the Patents-in-Suit. On information and belief, prior assignees and licensees have also complied with the marking provisions of 35 U.S.C. § 287.

### **FACTUAL ALLEGATIONS**

13. The Patents-in-Suit generally cover systems and methods for multilayer electrical devices, such as a circuit board, having a roughened surface structure for joining at least one of the layers. The inventions described in the Patents-in-Suit were developed by Brian McDermott, Daniel McGown, Ralph Leo Spotts, Jr., and Sid Tryzbiak, employees of Continental Circuits Inc. For example, this technology is implemented in processors. Infringing products include processors and/or associated methods of making processors for use in smartphones and other devices including, but not limited to, the Apple A11 processor, the Apple A10X Fusion processor, the Apple A10 processor, the Apple A9 processor, the Apple A9X processor, the Apple A8 processor, and the Apple A8X processor (the “Accused Products”).

14. Apple does not manufacture its own processors. Apple outsources and outsourced manufacturing of at least the Accused Products to TSMC during the terms of the Patents-in-Suit.<sup>1</sup>

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<sup>1</sup> <https://appleinsider.com/articles/14/09/19/tsmc-confirmed-as-manufacturer-of-apples-20nm-a8-processor>; <https://appleinsider.com/articles/20/02/22/a8-a8x-how-apples-custom-silicon-hit-samsung-with-a-one-two-punch>; <https://www.tomshardware.com/news/iphone-6s-a9-samsung-vs-tsmc,30306.html>; <https://arstechnica.com/gadgets/2015/11/apples-a9x-has-a-12-core-gpu-and-is-made-by-tsmc/>; <https://www.macrumors.com/2016/08/10/tsmc-info-wlp-apple-exclusivity/>; <https://www.anandtech.com/show/11596/techinsights-confirms-apple-a10x-soc-10nm-tsmc>; <https://9to5mac.com/2017/03/27/tsmc-to-start-mass-production-of-apple-a11-chip-in-april-ahead-of-iphone-8-10-nm-process/>

Upon information and belief, Apple uses and used TSMC's standard processes to manufacture its semiconductors during the terms of the Patents-in-Suit.<sup>2</sup>

15. Upon information and belief, all products made by TSMC are and were made using the same processes with respect to removing dielectric material, depositing or building up conductive layers, and roughening surfaces.

16. Apple has infringed the Patents-in-Suit by making, using, selling, offering to sell, and/or importing, and by actively inducing others to make, use, sell, offer to sell, and/or import processors, such as SoCs, that infringe the Patents-in-Suit. Upon information and belief, Apple processors were used in cellphones, tablets, and other devices during the terms of the Patents-in-Suit.

17. For example, infringing A11 Processors were used in iPhone 8, iPhone 8 Plus, iPhone X cellphones during the terms of the Patents-in-Suit:<sup>3</sup>

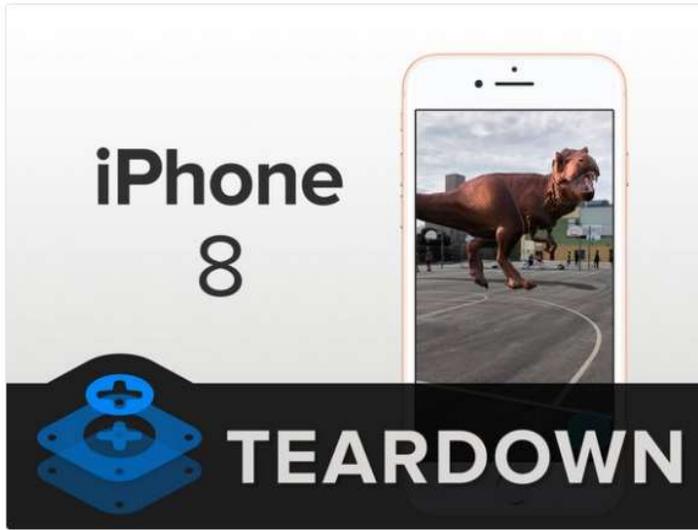
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<sup>2</sup> *Id.*

<sup>3</sup> <https://www.ifixit.com/Teardown/iPhone+8+Teardown/97481>

Step 1 iPhone 8 Teardown

Edit



- The 8 has some slick new tech, but is it enough to warrant the upgraded digit? You be the judge:
  - A11 Bionic chip with embedded M11 motion coprocessor
  - 64 or 256 GB onboard storage capacity
  - 4.7-inch IPS multitouch Retina HD display with 1334 × 750 resolution (326 ppi)
  - 12 MP camera with *f*/1.8 aperture, optical image stabilization, and 5x digital zoom
  - 7 MP FaceTime HD camera with *f*/2.2 aperture and 1080p HD recording capability
  - Support for fast-charge and Qi wireless charging
  - 802.11a/b/g/n/ac Wi-Fi w/MIMO + Bluetooth 5.0 + NFC

18. For example, infringing A10X Processors were used in iPad Pro tablets and Apple TV devices during the terms of the Patents-in-Suit:<sup>4</sup>

Step 1 iPad Pro 10.5" Teardown

Edit



- You can relax now—this iPad is a *professional*. All kidding aside though, this thing boasts some impressive specs:
  - Fully laminated, 10.5", LED-backlit, Oxide TFT "True Tone" display with 2224 × 1668 resolution (264 ppi), featuring ProMotion Technology
  - 4th-generation 64-bit Apple A10X custom processor, with M10 motion coprocessor
  - 12 MP OIS rear camera with 4K video recording at 30 fps, and 7 MP FaceTime camera with 1080p video
  - Self-balancing, four-speaker audio

<sup>4</sup> <https://www.ifixit.com/Teardown/iPad+Pro+10.5-Inch+Teardown/92534>

19. For example, infringing A10 Processors were used in iPhone 7 cellphones during the terms of the Patents-in-Suit:<sup>5</sup>

Step 1 iPhone 7 Teardown



Let's get into this iPhone 7! Before diving in, here are the tech specs:

- Apple A10 Fusion processor with embedded M10 motion coprocessor
- 32, 128, or 256 GB onboard storage capacity
- 4.7-inch IPS multitouch Retina HD display with 1334 × 750 pixels (326 ppi)
- 12 MP camera with *f*/1.8 aperture, optical image stabilization, and 5x digital zoom
- 7 MP FaceTime HD camera with *f*/2.2 aperture and 1080p HD recording capability
- Non-mechanical Touch ID home button driven by new Taptic Engine
- 802.11a/b/g/n/ac Wi-Fi + MIMO Bluetooth 4.2 + NFC

20. For example, infringing A9 Processors were used in iPhone 6S and 6S Plus cellphones during the terms of the Patents-in-Suit:<sup>6</sup>

Step 1 iPhone 6s Teardown



The 6s may look the same as last year's iPhone, but there are plenty of new features in this phone:

- Apple A9 processor with embedded M9 motion coprocessor
- 16, 64, or 128 GB of storage
- 4.7-inch 1334 × 750 pixels (326 ppi) Retina HD display with 3D Touch
- 12 MP iSight camera supporting 4K video recording with 1.22 μ pixels, and a 5 MP FaceTime HD camera
- 7000 Series aluminum enclosure and Ion-X Glass
- 802.11a/b/g/n/ac Wi-Fi with MIMO + Bluetooth 4.2 + NFC + 23-band LTE
- Taptic Engine

<sup>5</sup> <https://www.ifixit.com/Teardown/iPhone+7+Teardown/67382>

<sup>6</sup> <https://www.ifixit.com/Teardown/iPhone+6s+Teardown/48170>

21. For example, infringing A9X Processors were used in iPad Pro tablets during the terms of the Patents-in-Suit:<sup>7</sup>

**Step 1** iPad Pro 9.7" Teardown



Edit

- Apple may have let all the Air out of the iPad line, but they didn't skimp on the 9.7" Pro's specs:
  - Fully laminated, 9.7", LED-backlit, Oxide TFT "True Tone" display with 2048 x 1536 resolution (264 ppi)
  - 3rd generation 64-bit Apple A9X custom processor, with M9 motion coprocessor
  - 12 MP rear iSight camera with 4K video recording at 30 fps, and 5 MP FaceTime camera with 720p video
  - Self-balancing, four-speaker audio
  - Touch ID sensor, 2 microphones, 2 ambient light sensors, accelerometer, barometer, and 3-axis gyro

22. For example, infringing A8 Processors were used in iPhone 6 and iPhone 6 Plus during the terms of the Patents-in-Suit:<sup>8</sup>

<sup>7</sup> <https://www.ifixit.com/Teardown/iPad+Pro+9.7-Inch+Teardown/60939>

<sup>8</sup> <https://www.ifixit.com/Teardown/iPhone+6+Teardown/29213>

### Step 1 iPhone 6 Teardown

Edit



• It's iPhone 6 time! Let's check out some tech specs:

- Apple A8 processor with 64-bit architecture
- M8 second-generation motion coprocessor
- 16, 64, or 128 GB onboard storage capacity
- 4.7-inch 1334x750 pixels (326 ppi) Retina HD display
- 8 MP iSight camera (with 1.5µ pixels and phase-detection autofocus) and a 1.2 MP FaceTime camera

23. For example, infringing A8X Processors were used in iPad Air tablets during the terms of the Patents-in-Suit.<sup>9</sup>

### Step 1 iPad Air 2 Teardown

Edit



• Just add air? That would be too easy. Apple has packaged all kinds of revised hardware into its thinnest tablet yet:

- Fully laminated, 9.7" IPS Multi-Touch LCD with a 2,048 x 1,536 resolution at 264 ppi and antireflective coating
- A8X 64-bit CPU (rumored to be a triple-core, 1.5 GHz SoC) paired with 2 GB RAM and M8 motion coprocessor
- 8-megapixel rear iSight camera capable of recording 1080p/30fps or 720p/120fps video + 1.2-megapixel 720p front-facing camera
- Touch ID fingerprint sensor + barometer + dual microphones + 3-axis gyro + accelerometer + ambient light sensor

<sup>9</sup> <https://www.ifixit.com/Teardown/iPad+Air+2+Teardown/30592>

**COUNT I**  
**(Infringement of the '582 Patent)**

24. Paragraphs 1 through 23 are incorporated by reference as if fully set forth herein.

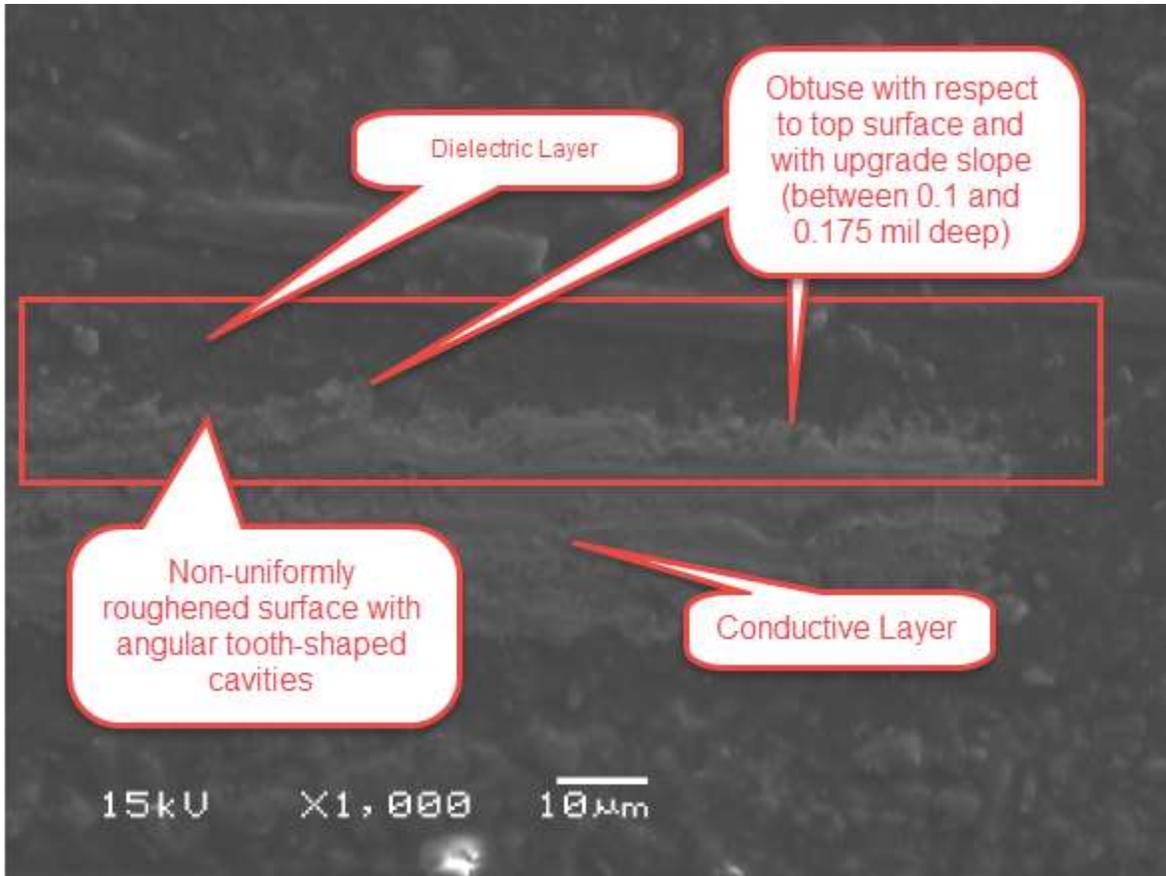
25. Continental Circuits has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '582 Patent.

26. Defendant has directly infringed the '582 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '582 Patent. Such products include but are not limited to processors and SoCs manufactured by TSMC for Defendant, that were included in multilayer electric devices, products, and/or a circuit board.

27. For example, Defendant has infringed at least claim 83 of the '582 Patent by making, using, offering to sell, selling, and/or importing into the United States the Accused Products which comprise electrical devices included in multilayer electric devices, products, and/or circuit boards.

28. Upon information and belief, each Accused Product comprises a dielectric material comprising a surface with cavities remaining from removal of a portion of the dielectric material.

29. Upon information and belief, each Accused Product comprises a conductive layer built up on the dielectric material that fills the cavities and forms teeth set in and under the surface of the dielectric material.



SEM image of example A10 Processor with exemplary annotations

30. Upon information and belief, the conductive layer comprises a portion of the circuitry of an electrical device, and a plurality of the cavities are obtuse with respect to the top surface and are at least 1 tenth of a mil deep to 1.75 tenths of a mil deep.

31. Upon information and belief at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

32. Because of Defendant's infringement of the '582 Patent, Continental Circuits has suffered damages in an amount to be proved at trial.

**COUNT II**  
**(Infringement of the '560 Patent)**

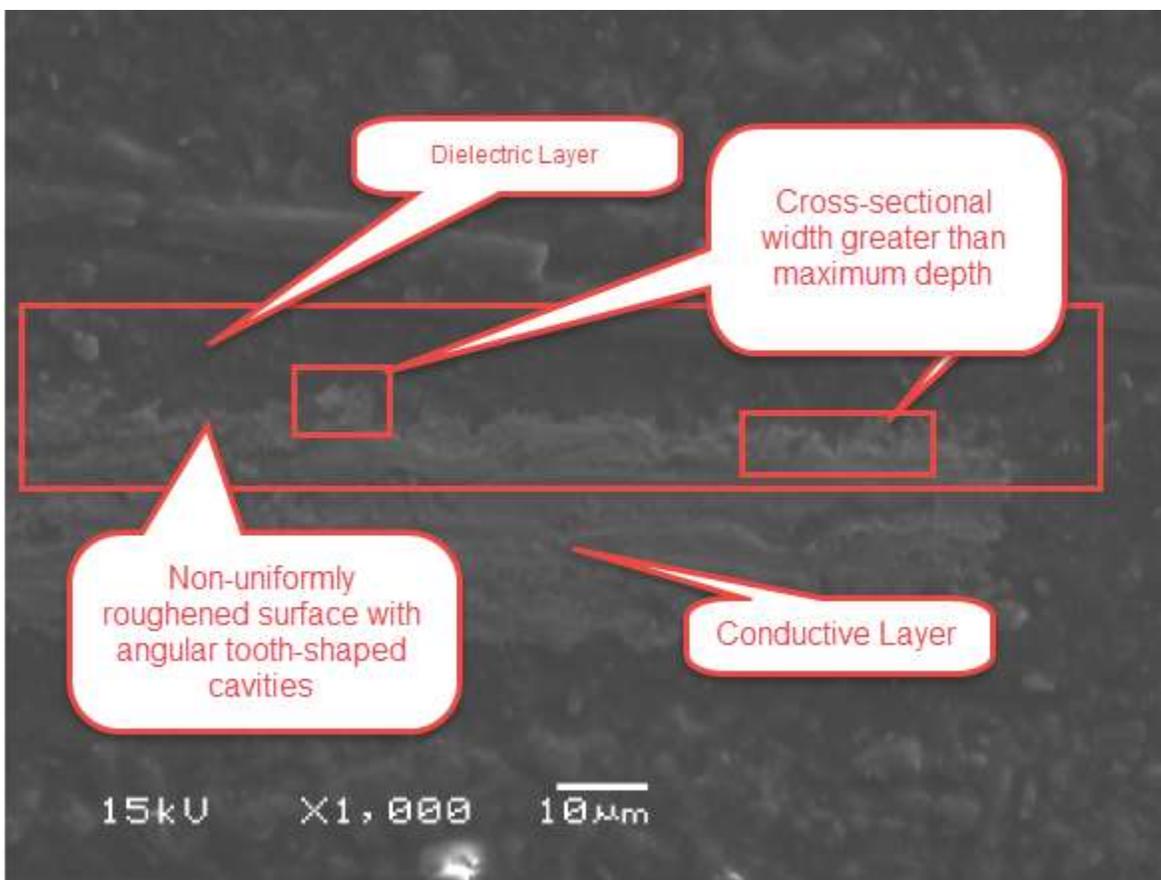
33. Paragraphs 1 through 23 are incorporated by reference as if fully set forth herein.

34. Continental Circuits has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '560 Patent.

35. Defendant has directly infringed the '560 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '560 Patent. Such products include but are not limited to processors and SoCs manufactured by TSMC for Defendant, that were included in multilayer electric devices, products, and/or a circuit board.

36. For example, Defendant has directly infringed at least claim 1 of the '560 Patent by making, using, offering to sell, selling, and/or importing into the United States the Accused Products which comprise an article of manufacture.

37. Upon information and belief, the Accused Products comprise an epoxy dielectric material delivered with solid content sufficient that etching the epoxy forms a non-uniformly roughened surface of angular tooth-shaped cavities located in and underneath an initial surface of the dielectric material, sufficient that the etching of the epoxy uses non-homogeneity with the solid content in bringing about formation of the non-uniformly roughened surface of the angular tooth-shaped cavities and sufficient that the etching of the epoxy is such that a plurality of the cavities have a cross-sectional width that is greater than a maximum depth with respect to the initial surface, wherein the etching forms the non-uniformly roughened surface of angular tooth-shaped cavities, and a conductive material, a portion of the conductive material in the cavities thereby forming angular teeth in the cavities, and wherein the conductive material forms a portion of the circuitry of an electrical device.



SEM image of example A10 Processor with exemplary annotations

38. Because of Defendant's infringement of the '560 Patent, Continental Circuits has suffered damages in an amount to be proved at trial.

**COUNT III**  
**(Infringement of the '105 Patent)**

39. Paragraphs 1 through 23 are incorporated by reference as if fully set forth herein.

40. Continental Circuits has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '105 Patent.

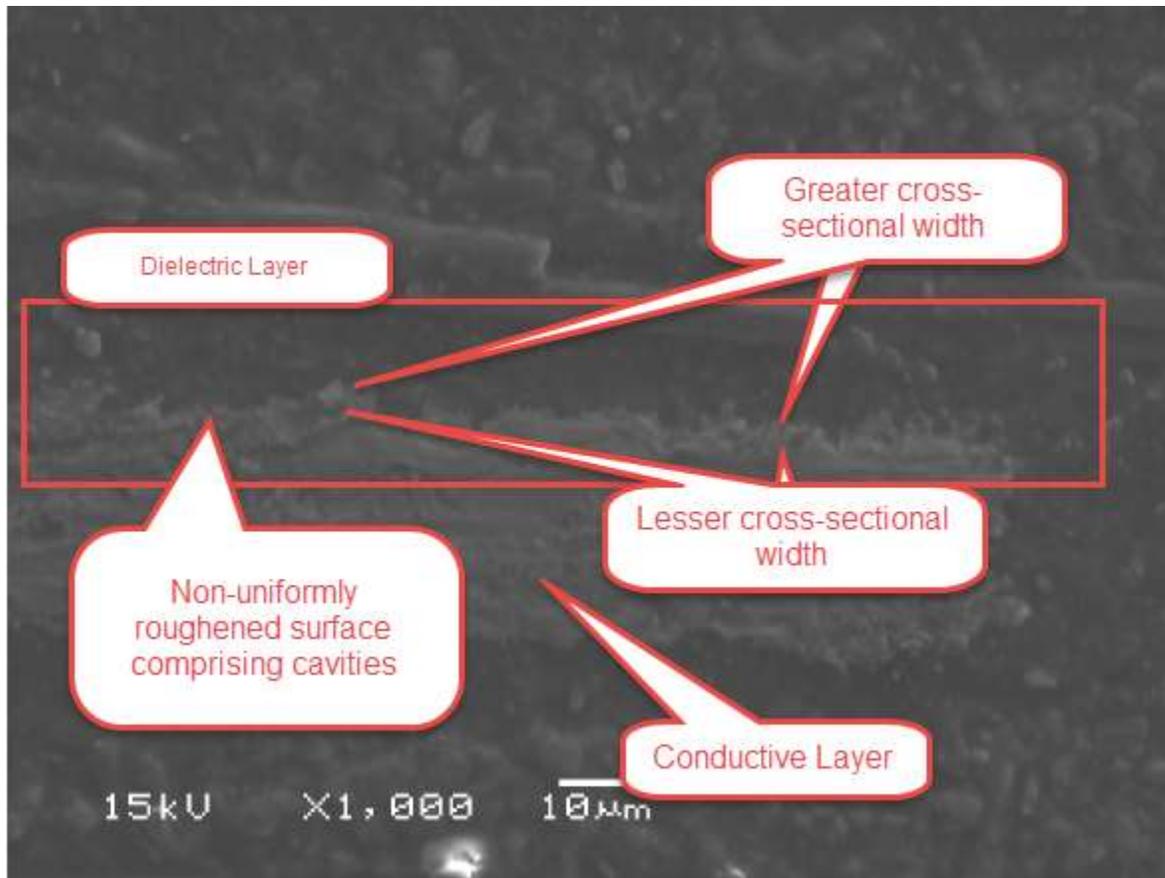
41. Defendant has directly infringed the '105 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every

limitation of one or more claims of the '105 Patent. Such products include but are not limited to processors and SoCs manufactured by TSMC for Defendant, that were included in multilayer electric devices, products, and/or a circuit board.

42. For example, Defendant has directly infringed at least claim 80 of the '105 Patent by making, using, offering to sell, selling, and/or importing into the United States the Accused Products which are multilayer electric devices, products, and/or circuit boards.

43. Upon information and belief, the Accused Products comprise circuitry with conductive material being part of the circuitry and configured as angular teeth in filling cavities.

44. Upon information and belief, the Accused Products comprise an epoxy dielectric material disposed in combination with the circuitry and coupled with the conductive material in a configuration where the dielectric material comprises a non-uniformly roughened surface comprising cavities located in and underneath an initial surface of the dielectric material delivered with solid content being non-homogeneous and configured to bring about the formation of the non-uniformly roughened surface by etching of the epoxy.



SEM image of example A10 Processor with exemplary annotations

45. Upon information and belief, at least some of the cavities of the Accused Products have a first cross-sectional distance proximate the initial surface, and a substantially greater cross-sectional distance distant from the initial surface.

46. Because of Defendant's infringement of the '105 Patent, Continental Circuits has suffered damages in an amount to be proved at trial.

**COUNT IV**  
**(Infringement of the '912 Patent)**

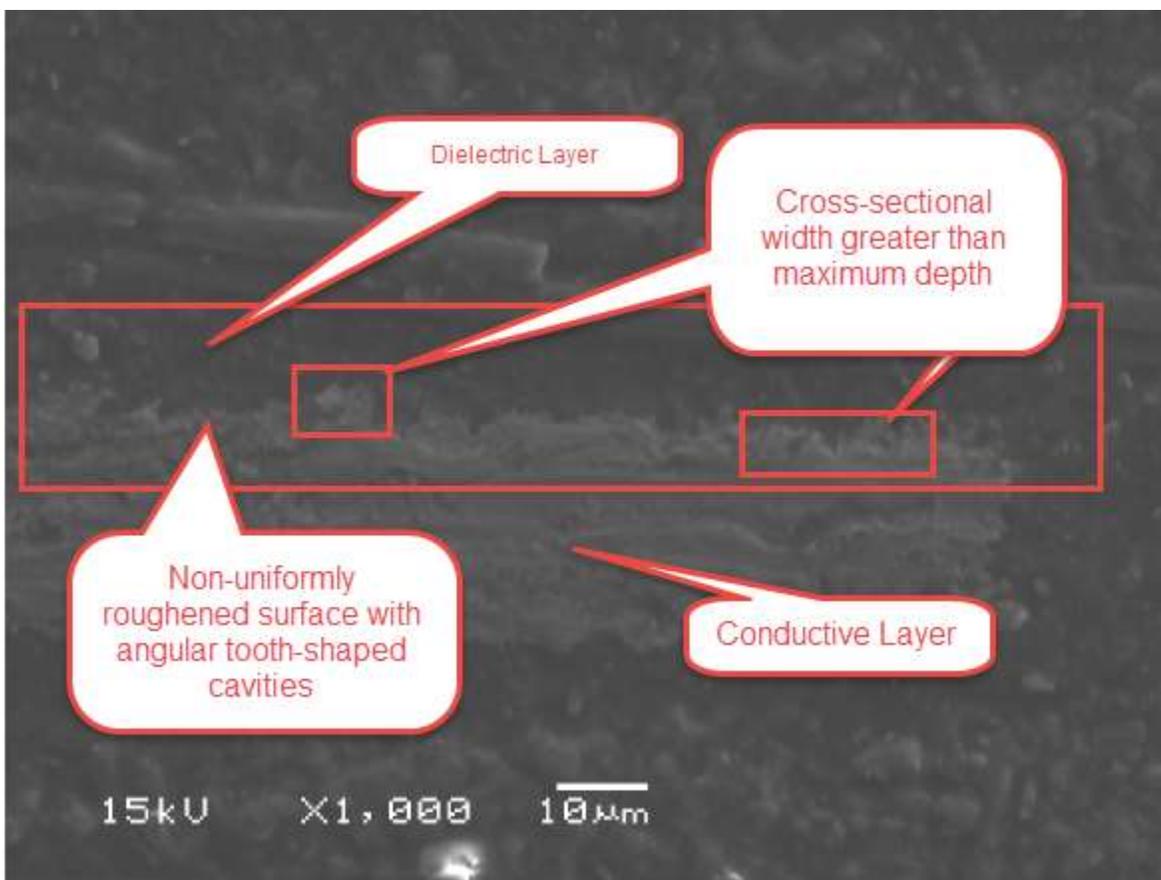
47. Paragraphs 1 through 23 are incorporated by reference as if fully set forth herein.

48. Continental Circuits has not licensed or otherwise authorized Defendant to make, use, offer for sale, sell, or import any products that embody the inventions of the '912 Patent.

49. Defendant has directly infringed the '912 Patent, either literally or under the doctrine of equivalents, without authority and in violation of 35 U.S.C. § 271, by making, using, offering to sell, selling, and/or importing into the United States products that satisfy each and every limitation of one or more claims of the '912 Patent. Such products include but are not limited to processors and SoCs manufactured by TSMC for Defendant, that were included in multilayer electric devices, products, and/or a circuit board.

50. For example, Defendant has directly infringed at least claim 17 of the '912 Patent by making, using, offering to sell, selling, and/or importing into the United States the Accused Products which are products produced by the process of claim 1 of the '912 Patent.

51. Upon information and belief, the Accused Products are made by implementing a circuit design for an electrical device by coupling a dielectric material delivered with solid content, the dielectric material and the solid content being non-homogeneous materials sufficient that etching the dielectric material forms a non-uniformly roughened surface of cavities located in, and underneath an initial surface of, the dielectric material, sufficient that the etching of the dielectric material uses non-homogeneity with the solid content in bringing about formation of the non-uniformly roughened surface of the cavities and sufficient that the etching of the dielectric material is such that a plurality of the cavities have a cross-sectional width that is greater than a maximum depth with respect to the initial surface, wherein the etching forms the non-uniformly roughened surface of cavities, with a conductive material, a portion of the conductive material in the cavities thereby forming numerous sized and shaped teeth in the cavities, in the circuitry of the electrical device.



SEM image of example A10 Processor with exemplary annotations

52. Because of Defendant's infringement of the '912 Patent, Continental Circuits has suffered damages in an amount to be proved at trial.

**DEMAND FOR JURY TRIAL**

Plaintiff hereby demands a jury for all issues so triable.

**PRAYER FOR RELIEF**

WHEREFORE, Continental Circuits prays for relief against Defendant as follows:

- a. Entry of judgment declaring that Defendant infringed one or more claims of each of the Patents-in-Suit;
- b. An order awarding damages sufficient to compensate Continental Circuits for Defendant's infringement of the Patents-in-Suit, but in no event less than a

reasonable royalty, together with pre-judgment and post-judgment interest and costs;

- c. Enhanced damages pursuant to 35 U.S.C. § 284;
- d. Entry of judgment declaring that this case is exceptional and awarding Continental Circuits its costs and reasonable attorney fees under 35 U.S.C. § 285;
- e. An accounting for acts of infringement;
- f. Such other equitable relief which may be requested and to which Plaintiff is entitled; and
- g. Such other and further relief as the Court deems just and proper.

Dated: October 12, 2021

Respectfully submitted,

/s/ Raymond W. Mort, III

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