

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

INNOVATIVE FOUNDRY
TECHNOLOGIES LLC,

Plaintiff,

v.

SEMICONDUCTOR MANUFACTURING
INTERNATIONAL CORPORATION;
SEMICONDUCTOR MANUFACTURING
INTERNATIONAL (SHANGHAI)
CORPORATION; SEMICONDUCTOR
MANUFACTURING INTERNATIONAL
(BEIJING) CORPORATION;
SEMICONDUCTOR MANUFACTURING
INTERNATIONAL (TIANJIN)
CORPORATION; SEMICONDUCTOR
MANUFACTURING INTERNATIONAL
(BVI) CORPORATION;
SEMICONDUCTOR MANUFACTURING
NORTH CHINA (BEIJING)
CORPORATION; SEMICONDUCTOR
MANUFACTURING SOUTH CHINA
CORPORATION; BROADCOM
INCORPORATED; BROADCOM
CORPORATION; CYPRESS
SEMICONDUCTOR CORPORATION; and
DISH NETWORK CORPORATION.

Defendants.

C.A. No.: 6:19-CV-719-ADA

JURY TRIAL DEMANDED

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Innovative Foundry Technologies LLC (“IFT” or “Plaintiff”), brings this action for patent infringement under 35 U.S.C. § 271 against Defendants Semiconductor Manufacturing International Corporation (“SMIC”), Semiconductor Manufacturing International (Shanghai) Corporation (“SMIC Shanghai”), Semiconductor Manufacturing International (Beijing)

Corporation (“SMIC Beijing”), Semiconductor Manufacturing International (Tianjin) Corporation (“SMIC Tianjin”), Semiconductor Manufacturing International (BVI) Corporation (“SMIC BVI”), Semiconductor Manufacturing North China (Beijing) Corporation (“SMIC North China”), Semiconductor Manufacturing South China Corporation (“SMIC South China”), Broadcom Incorporated and Broadcom Corporation (collectively, “Broadcom”), Cypress Semiconductor Corporation (“Cypress”), and DISH Network Corporation (“DISH Network”), (collectively, “Defendants”) and alleges as follows:

THE PARTIES

1. Plaintiff Innovative Foundry Technologies LLC is a Delaware corporation, and has a principal place of business at 40 Pleasant Street, Suite 208, Portsmouth, NH 03801.

SMIC

2. SMIC is a corporation organized under the laws of the Cayman Islands, with a registered office at PO Box 2681, Cricket Square, Hutchins Drive, George Town, Grand Cayman KY1-111, Cayman Islands, a “head office and place of business” at No. 18 Zhangjiang Road, Pudong New Area, Shanghai 201203, People’s Republic of China, and a “place of business” at Suite 3003 30th Floor, 9 Queen’s Road Central, Hong Kong. SMIC 2018 Annual Report at 7 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

3. SMIC owns (directly or indirectly), and controls, its SMIC Shanghai, SMIC Beijing, SMIC Tianjin, SMIC BVI, SMIC North China, and SMIC South China subsidiaries (together, “Subsidiaries”). *See, e.g.*, SMIC 2018 Annual Report at 165; SMIC Answer to Compl., ¶ 7 (ECF No. 18), *Lone Star Silicon Innovations LLC v. Semiconductor Mfg. Int’l Corp. et al.*, Case No. 2:16-cv-1276-JRG-RSP (E.D. Tex. Feb. 21, 2017).

4. SMIC, either itself and/or through the activities of its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District,

products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include SMIC-made semiconductor devices and integrated circuits.

5. SMIC Shanghai is a corporation organized under the laws of the People's Republic of China with its principal place of business at No. 18 Zhanjiang Road, Pudong New Area, Shanghai 201203, China.

6. SMIC Shanghai, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC Shanghai's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC Shanghai, either itself and/or through the activities of SMIC and its Subsidiaries.

7. SMIC Beijing is a corporation organized under the laws of the People's Republic of China with its principal place of business at No. 18 Wenchang Avenue, Economic-Technical Development Area, Beijing 100176, China.

8. SMIC Beijing, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC Beijing's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC Beijing, either itself and/or through the activities of SMIC and its Subsidiaries.

9. SMIC Tianjin is a corporation organized under the laws of the People's Republic of China with its principal place of business at No. 19 Xinghua Avenue, Xiqing Economic Development Area, Tianjin 300385, China.

10. SMIC Tianjin, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC Tianjin's customers incorporate these products into downstream products that are made,

used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC Tianjin, either itself and/or through the activities of SMIC and its Subsidiaries.

11. SMIC BVI is a corporation organized under the laws of the British Virgin Islands with its principal place of business in the British Virgin Islands.

12. SMIC BVI, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC BVI's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC BVI, either itself and/or through the activities of SMIC and its Subsidiaries.

13. SMIC North China is a corporation organized under the laws of the People's Republic of China with its principal place of business at No. 19 Wenchang Avenue, Economic-Technical Development Area, Beijing 100176, China.

14. SMIC North China, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC North China's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC North China, either itself and/or through the activities of SMIC and its Subsidiaries.

15. SMIC South China is a corporation organized under the laws of the People's Republic of China with its principal place of business at No. 18 Zhanjiang Road, Pudong New Area, Shanghai 201203, China.

16. SMIC South China, either itself and/or through the activities of SMIC and its Subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. SMIC South China's customers incorporate these products into downstream products that are

made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits (including Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and BCM20702, and CYW20705B0KWFBG), set-top boxes, wireless TV receivers (including DISH's Hopper 3 and Hopper family of DVR products), and various other products that include semiconductor devices and/or integrated circuits made, sold, and/or imported by SMIC South China, either itself and/or through the activities of SMIC and its Subsidiaries.

17. According to SMIC, it is “the largest advanced foundry in mainland China.” SMIC 2018 Annual Report at 1 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf. According to an article by Semiconductor Engineering, SMIC “is China’s largest general-purpose commercial IC foundry.” Profile of Semiconductor Manufacturing International Corp. (Oct. 19 2015), available at <https://semiengineering.com/entities/semiconductor-manufacturing-international-corp/>. “Founded in 2000, [SMIC] focuses on logic, mixed-signal, RF, MEMS and bulk CMOS” integrated circuits, manufactured at fabrication processes of various nanometer (nm) sizes. *Id.*

18. According to SMIC, SMIC’s “65 nanometer” fabrication process is one of its “key process technology nodes[.]” SMIC 2018 Annual Report at 5 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

19. According to SMIC, in 2018, SMIC “continued to see new designs using both specialty technology and advanced technology, in particular on 0.18μm, 0.11/0.13μm, 55/65nm, 40/45nm, 28nm and 14nm FinFET process technologies.” SMIC 2018 Annual Report at 13 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

20. SMIC refers to its 55/65nm technology (as well as its 90nm, 0.35 μ m 0.25 μ m 0.18 μ m 0.15 μ m, 0.11/0.13 μ m technologies) as “Mature Logic.” *See* SMIC Technology, <https://www.smics.com/en/site/technology> (last accessed Dec. 18, 2019).

21. According to SMIC, in 2018, “[m]ature technology is still a key growth driver for SMIC,” and SMIC “plan[s] to have multiple products ramping up this year, including power management, memory, high-voltage LCD driver, CMOS image sensors, and fingerprint sensors.” SMIC 2018 Annual Report at 15 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

22. According to SMIC, in 2018, its 55/65nm technology accounted for 22% of its overall wafer sales for the year (representing an increase from 20% in 2017). SMIC 2018 Annual Report at 9, 13 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

23. According to SMIC, as of the end of Q3 of 2019, its 55/65nm technology accounted for 29.3% of its overall wafer sales for the quarter (representing an increase from 26.2% in Q2 of 2019). SMIC 2018 Annual Report at 9, 13 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

Broadcom

24. Broadcom Incorporated is a Delaware corporation with its principal place of business and registered office at 1320 Ridder Park Dr., San Jose, California 95131, and has as its wholly owned U.S. subsidiary Broadcom Corporation.

25. Broadcom Incorporated, either itself and/or through the activities of its subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits (including Broadcom BCM43236 and BCM20702), that infringe, or were manufactured by processes that infringe, the

Asserted Patents, defined below. Broadcom Incorporated's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits, set-top boxes, wireless TV receivers (including DISH Hopper 3 and DISH's Hopper family of DVR products), and various other products that include semiconductor devices and integrated circuits.

26. Broadcom Corporation is a California corporation with its principal place of business and registered office at 1320 Ridder Park Dr., San Jose, California 95131. Broadcom Corporation provides sales, research, and development support in North America for its ultimate parent, Broadcom Incorporated. Broadcom Corporation makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits (including Broadcom BCM43236 and BCM20702), that infringe the Asserted Patents. Broadcom Corporation's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits, set-top boxes, wireless TV receivers (including DISH Hopper 3 and DISH's Hopper family of DVR products), and various other products that include semiconductor devices and integrated circuits.

27. Broadcom is a company based in the United States. According to SMIC's 2018 Annual Report, 40% of SMIC's sales in 2017, and 32% of SMIC's sales in 2018, were to customers based in North America. SMIC 2018 Annual Report at 9, 13 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.


28. In 2018, SMIC's "five largest customers, as a group," accounted for approximately 46.2% of SMIC's total overall sales. *Id.* at 93.

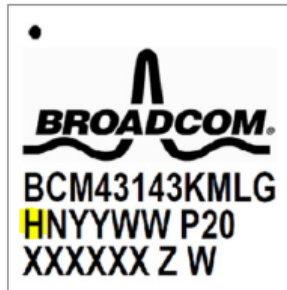
29. According to an article by Semiconductor Engineering, three of SMIC's "[t]op customers" include "Qualcomm, Broadcom, and Texas Instruments." Profile of Semiconductor Manufacturing International Corp. (Oct. 19 2015), available at <https://semiengineering.com/entities/semiconductor-manufacturing-international-corp/>.

30. According to Broadcom's 2018 Annual Report, "[t]he majority of [Broadcom's] front-end wafer manufacturing operations is outsourced to external foundries, including...Semiconductor Manufacturing International Corporation..." Broadcom 2018 10-K at 8 (Dec. 21, 2018), available at <https://investors.broadcom.com/static-files/e6231f8d-76e3-422e-b647-931b3794d2cc>.

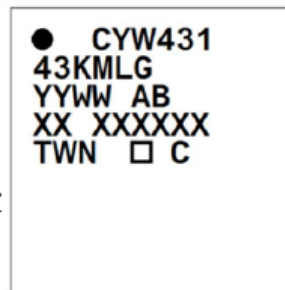
31. According to a Product Change Notification document describing the transition of Broadcom marketing part numbers to Cypress Inc. marketing part numbers for certain IoT ("internet of things") products, wherein "[a]ll qualification and reliability documentation related to the current Broadcom marketing part numbers is unchanged, as there is no change to the form, fit, or function of the new Cypress marketing part numbers[,]" Broadcom has used and/or uses the first letter of the second row of characters from the bottom on the marking on its chips to denote "FAB Foundry Code."

Marking Change Example:Definitions

 : BRCM Logo
 Line 1: BCM43143KMLG = MPN
 K: Temperature Grade
 ML: Package Type
 G: Lead-free Designator
 Line 2: HNYWW P20
 H: FAB Foundry Code
 N: Assembly Site Code
 YYWW: BRCM Date Code
 P: P Code "P" is Constant
 2: Major Die Revision

Existing Marking

(Not Drawn to Scale)

New Marking

(Not Drawn to Scale)

Definitions

No Logo
 Line 1&2: MPN
 K: Temperature Grade
 ML: Package Type
 G: Lead-free Designator
 Line 3: YYWW AB
 YYWW: CY Date Code
 AB: BE Part Revision
 Line 4: XX XXXXXX
 XX: Fab location code
 XXXXXX: Assembly Lot

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Product Change Notification, available at
https://www.mouser.com/PCN/Cypress_Semiconductor_PCN165005.pdf (Dec. 19, 2016)
 (highlighted annotations added).

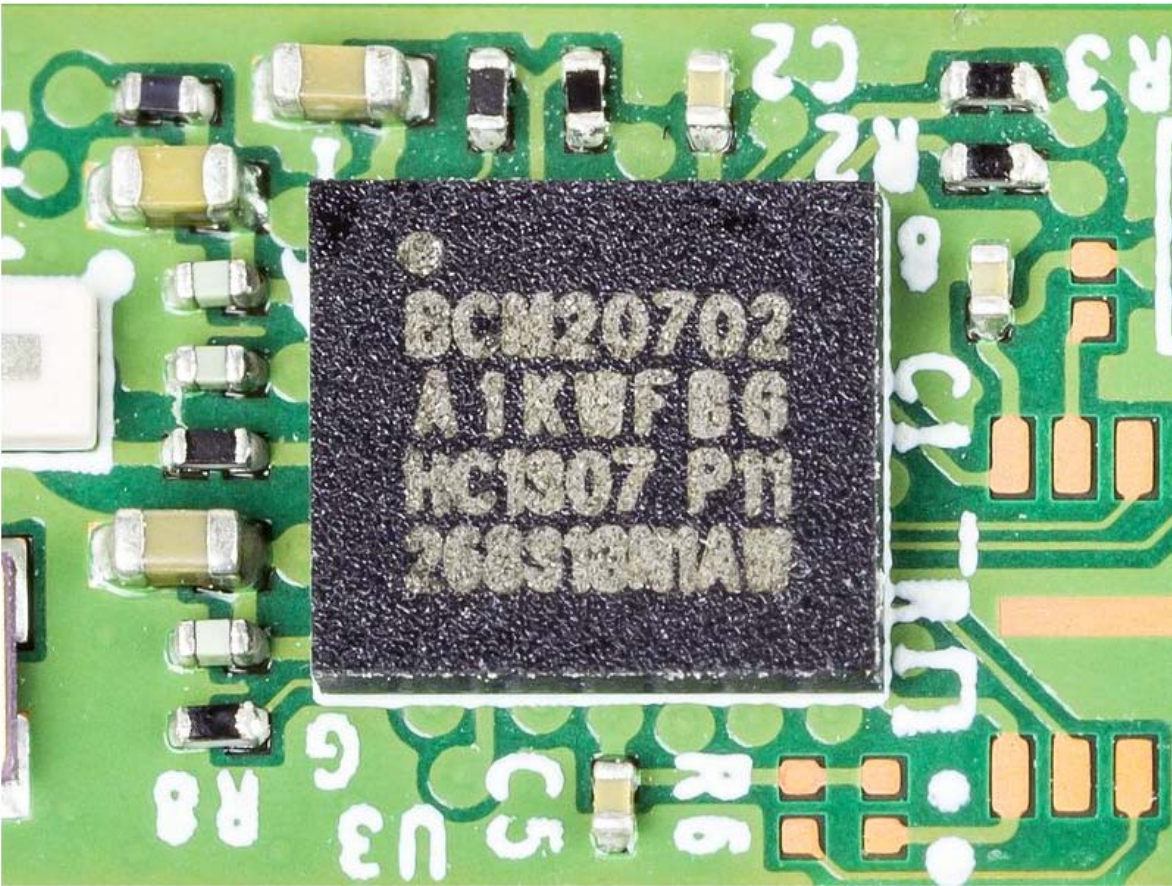
32. According to a Cypress Semiconductor Reliability Qualification Report, the Broadcom BCM20702 chip is manufactured by “Fab” called “SMIC-B1” according to the fabrication “Process” of the “65NM LP” technology node, which, on information and belief, corresponds to a SMIC 65nm feature size technology node.

Product Description: BCM20702B0KWFBG **Cypress Division:** IoT Division
Single-Chip Bluetooth Transceiver and Baseband Processor

Package:	WFBGA	QTP:	D13543		
Description:	(4.5 x 4 x 0.8mm) 50 Ball, Wafer Level Fine Pitch Ball Grid Array (WFBGA)	Flammability:	O2 Index:		
Assembly:	ASE Shanghai	Molding Compound:	KE-G1250ULKDS-30	UL-V0	>28
Electrical Test:	ASE Singapore	Theta Ja / Psi Jt:	21 °C/W / 1 °C/W		
Substrate/Leadframe:	Laminate Substrate	Die Attachment:	Ablebond 2025D		
Lead Finish:	96.5Sn/3.0Ag/0.5Cu	Bond Wire:	Copper		
Comments:					
Est. Field Temperature:	55 °C	Life Test Temperature:	125 °C		
Est. DC Field Current:	20 mA	Life Test Dynamic Current:	5 mA		
Est. Field Voltage:	1.2 V	Life Test Voltage:	1.4 V		
Est. Field Power Dissipation:	24.4 mWatts	Est. Stress Power Dissipation:	7 mWatts		
Est. Field Tj:	55.5 °C	Est. Stress Tj:	125.1 °C		
Die:	20702B0	Die Size:	3.04 x 2.53 mm		
Process:	65NM LP	Fab:	SMIC-B1		
Type:	Bluetooth	Density:	N/A		

Semiconductor Reliability Qualification Report, available at <https://www.cypress.com/file/337091/download> at 2 (Dec. 15, 2016) (highlighted annotations added).

33. According to a photograph of a BCM20702 chip from Wikimedia Commons, the Broadcom BCM20702 chip is marked as having a second-from-bottom row of characters beginning with “H” – which on information and belief denotes a fab operated by SMIC and/or its Subsidiaries.



Size of this preview: 800 × 600 pixels. Other resolutions: 320 × 240 pixels | 640 × 480 pixels | 1,024 × 768 pixels | 1,280 × 960 pixels | 2,039 × 1,529 pixels.

Original file (2,039 × 1,529 pixels, file size: 2.41 MB, MIME type: image/jpeg); ZoomViewer: [flash/no flash](#)



File:Broadcom BCM92070MD – BCM20702-2427, available at https://commons.wikimedia.org/wiki/File:Broadcom_BCM92070MD_-_BCM20702-2427.jpg (Sept. 22, 2016); Product Change Notification, available at https://www.mouser.com/PCN/Cypress_Semiconductor_PCN165005.pdf (Dec. 19, 2016).

34. According to photographs from Abovelike.com, the Broadcom BCM43236 chip is marked as having a second-from-bottom row of characters beginning with “H” – which on information and belief denotes a fab operated by SMIC.



DNUB-AT1 (236B) 2.4/5G wifi 802.11a/b/g/n 300M Dual Band 2×2 USB Dongle BCM43236, available at <https://abovelike.com/product/dnub-at1-236b-2-4-5g-wifi-802-11a-b-g-n-300m-dual-band-2x2-usb-dongle-bcm43236/> (last accessed Dec. 16, 2019).

35. According to a Cypress Semiconductor Reliability Qualification Report, the Broadcom BCM43236 chip is manufactured by “Fab” called “SMIC-B1” according to the fabrication “Process” of the “65NM LP” technology node, which, on information and belief, corresponds to a SMIC 65nm feature size technology node.

I. Product and Package Information

Product Description: BCM43236BKMLG		Cypress Division: IoT Division	
2.4 GHz/5 GHz IEEE802.11n MAC/PHY/Radio Chip			
Package: QFN		QTP: D09792	
Description: (10 x 10 x 0.9mm) 88 Contact, Quad Flat No Lead Package (QFN)		Flammability: O2 Index:	
Assembly: ASE Taiwan		Molding Compound: Hitachi CEL-9510HFL UL-V0 >28	
Electrical Test: ASE		Theta Ja / Psi Jt: 18 °C/W / 8.8 °C/W	
Substrate/Leadframe: Copper Leadframe		Die Attachment: Hitachi EN-4900F	
Lead Finish: 100% Sn		Bond Wire: Copper	
Comments:			
Est. Field Temperature: 55 °C		Life Test Temperature: 125 °C	
Est. DC Field Current: 100 mA		Life Test Dynamic Current: 25 mA	
Est. Field Voltage: 3.0 V		Life Test Voltage: 3.45 V	
Est. Field Power Dissipation: 300 mWatts		Est. Stress Power Dissipation: 86.2 mWatts	
Est. Field Tj: 60.3 °C		Est. Stress Tj: 126.5 °C	
Die: 43236B1		Die Size: 5.13 x 5.07 mm	
Process: 65NM LP		Fab: SMIC-B1	
Type: Bluetooth		Density: N/A	

Cypress Semiconductor Reliability Qualification Report, available at <https://www.cypress.com/file/339466/download> at 2 (Jan. 5, 2017) (highlighted annotations added).

Cypress

36. Cypress Semiconductor Corporation (“Cypress”) is a Delaware corporation with its principal places of business and registered office at 198 Champion Court, San Jose, California 95134-1709.

37. In April 2016, Cypress Semiconductor Corporation “acquire[d] Broadcom’s Wireless Internet of Things (IoT) business and related assets...[including] Broadcom’s Wi-Fi, Bluetooth and Zigbee IoT product lines and intellectual property, along with its WICED brand and developer ecosystem[, and including] Broadcom’s IoT business unit, which employs approximately 430 people worldwide, [and] generated \$189 million in revenue” from April 2015

to April 2016. *See* <https://www.cypress.com/news/cypress-acquire-broadcom-s-wireless-internet-things-business-0> (last accessed Dec. 17, 2019).

38. Cypress, either itself and/or through the activities of its subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products, such as semiconductor devices and integrated circuits (including Broadcom/Cypress BCM43236, BCM20702, and CYW20705B0KWFBG), that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below. Cypress's customers incorporate these products into downstream products that are made, used, sold, offered for sale, and/or imported throughout the United States, including within this District. These downstream products may include, but are not limited to, integrated circuits, set-top boxes, wireless TV receivers (including DISH Hopper 3 and DISH's Hopper family of DVR products), and various other products that include semiconductor devices and integrated circuits.

39. According to a Cypress Semiconductor Reliability Qualification Report, the Broadcom/Cypress BCM20702 chip is manufactured by "Fab" called "SMIC-B1" according to the fabrication "Process" of the "65NM LP" technology node, which, on information and belief, corresponds to a SMIC 65nm feature size technology node. Semiconductor Reliability Qualification Report, available at <https://www.cypress.com/file/337091/download> at 2 (Dec. 15, 2016).

40. According to a Cypress Semiconductor Reliability Qualification Report, the Broadcom/Cypress BCM43236 chip is manufactured by "Fab" called "SMIC-B1" according to the fabrication "Process" of the "65NM LP" technology node, which, on information and belief, corresponds to a SMIC 65nm feature size technology node. Cypress Semiconductor Reliability

Qualification Report, available at <https://www.cypress.com/file/339466/download> at 2 (Jan. 5, 2017).


41. According to a Product Change Notification document describing the transition of Broadcom marketing part numbers to Cypress marketing part numbers for certain IoT (“internet of things”) products, wherein “[a]ll qualification and reliability documentation related to the current Broadcom marketing part numbers is unchanged, as there is no change to the form, fit, or function of the new Cypress marketing part numbers[,]” the “new Cypress marketing part numbers will include a prefix of ‘CYW’, replacing the current prefix of ‘BCM’”. The example below shows the current Broadcom marketing part number marking and the new Cypress marketing part number marking format.”

Part Number Change Example:

Existing Marketing Part Number (Ordering Part Number)	New Marketing Part Number (Ordering Part Number)
BCM43143KMLG	CYW43143KMLG

Marking Change Example:

Definitions

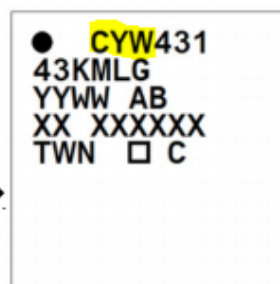
 : BRCM Logo
 Line 1: BCM43143KMLG = MPN
 K: Temperature Grade
 ML: Package Type
 G: Lead-free Designator
 Line 2: HNYWW P20
 H: FAB Foundry Code
 N: Assembly Site Code
 YYWW: BRCM Date Code
 P: P Code “P” is Constant
 2: Major Die Revision

Existing Marking



(Not Drawn to Scale)

New Marking



(Not Drawn to Scale)

Definitions

No Logo
 Line 1&2: MPN
 K: Temperature Grade
 ML: Package Type
 G: Lead-free Designator
 Line 3: YYWW AB
 YYWW: CY Date Code
 AB: BE Part Revision
 Line 4: XX XXXXXX
 XX: Fab location code
 XXXXXX: Assembly Lot

Product Change Notification, available at https://www.mouser.com/PCN/Cypress_Semiconductor_PCN165005.pdf (Dec. 19, 2016) (highlighted annotations added).

42. According to a Cypress Semiconductor Reliability Qualification Report, the Broadcom/Cypress BCM20705B0KWFBG / CYW20705B0KWFBG chip is manufactured by “Fab” called “SMIC-B1” according to the fabrication “Process” of the “65NM LP” technology node, which, on information and belief, corresponds to a SMIC 65nm feature size technology node.

Product Description: BCM20705B0KWFBG		Cypress Division: IoT Division	
Single-Chip Bluetooth Transceiver and Baseband Processor			
Package: WFBGA		QTP: D13543a	
Description: (4.5 x 4 x 0.8mm) 50 Ball, Wafer Level Fine Pitch Ball Grid Array (WFBGA)		Flammability: O2 Index:	
Assembly: ASE Shanghai		Molding Compound: KE-G1250ULKDS-30	
Electrical Test: ASE Singapore		UL-V0 >28	
Substrate/Leadframe: Laminate Substrate		Theta Ja / Psi Jt: 21 °C/W / 1 °C/W	
Lead Finish: 96.5Sn/3.0Ag/0.5Cu		Die Attachment: Ablebond 2025D	
Comments:		Bond Wire: Copper	
Est. Field Temperature: 55 °C		Life Test Temperature: 125 °C	
Est. DC Field Current: 20 mA		Life Test Dynamic Current: 5 mA	
Est. Field Voltage: 1.2 V		Life Test Voltage: 1.4 V	
Est. Field Power Dissipation: 24.4 mWatts		Life Test Power Dissipation: 7 mWatts	
Est. Field Tj: 55.5 °C		Est. Stress Tj: 125.1 °C	
Die: 20702B0		Die Size: 3.04 x 2.53 mm	
Process: 65NM LP		Fab: SMIC-B1	
Type: Bluetooth		Density: N/A	

Cypress Semiconductor Reliability Qualification Report, available at <https://www.cypress.com/file/337091/download> at 3 (Dec. 15, 2016) (highlighted annotations added).

DISH Network

43. DISH Network Corporation (“DISH Network”) is a Nevada corporation with its principal place of business at 9601 South Meridian Boulevard, Englewood, Colorado and a registered address at PO Box 6655, Englewood, CO 80155, United States.

44. DISH Network, either itself and/or through the activities of its subsidiaries, affiliates, or intermediaries (including distributors, retailers, and others), makes, has made, uses, sells, offers for sale, imports, and/or has imported throughout the United States, including within this District, products, such as set-top boxes and wireless TV receivers (including DISH Hopper 3 and DISH’s Hopper family of DVR products) containing semiconductor devices, that infringe, or were manufactured by processes that infringe, the Asserted Patents, defined below.

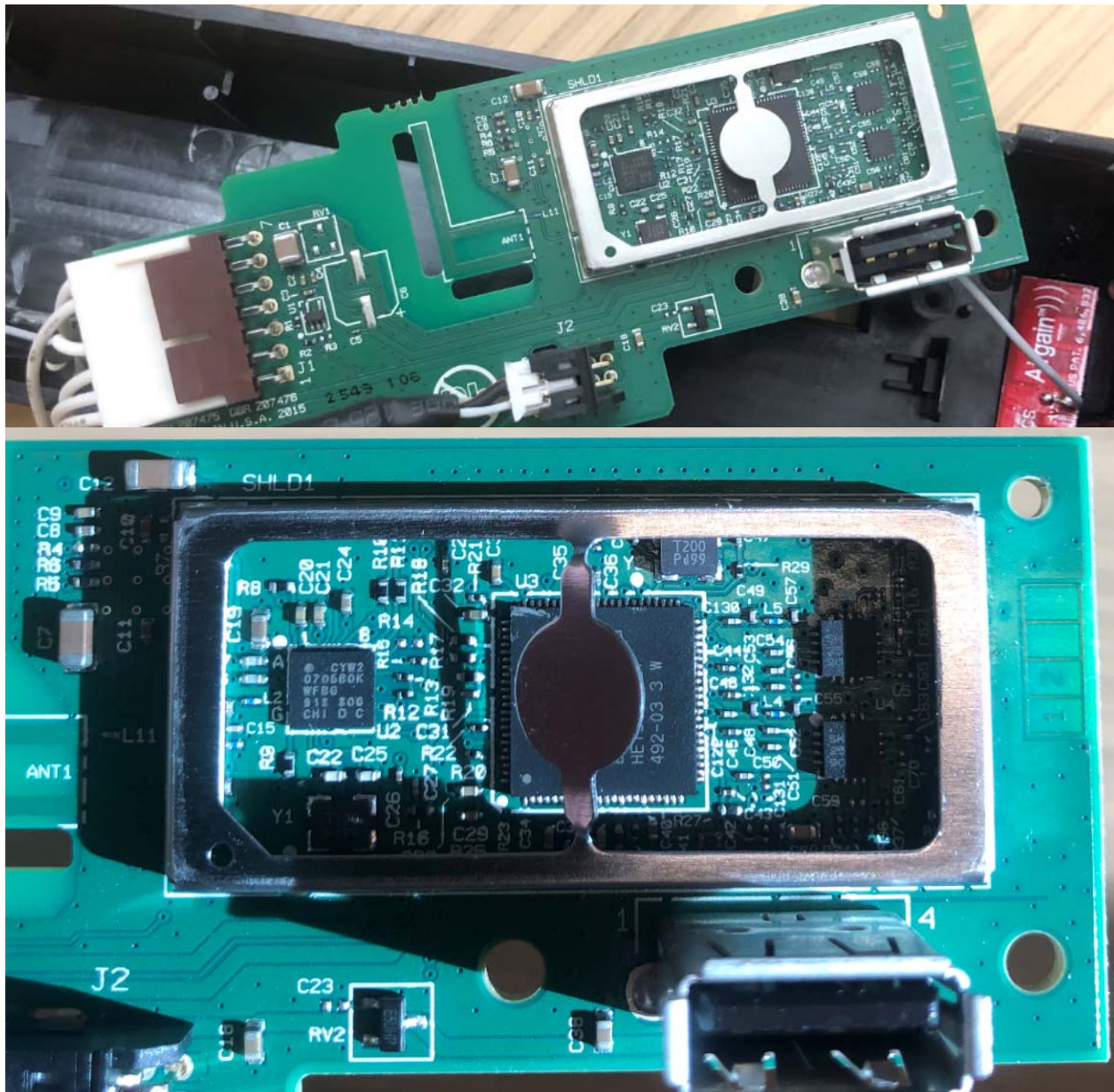
45. DISH Network incorporates Broadcom and Cypress chips into its products. For example, according to a Broadcom press release, DISH Network’s Super Joey is “a companion set-top box based on Broadcom’s BCM7346 processor.” Sarah Murry, “DISH's Super Joey, with Broadcom Satellite Chip Inside, Gets CES Applause,” (Jan. 16, 2014), available at [https://www.broadcom.com/blog/dishs-super-joey-with-broadcom-satellite-chip-inside-gets-ces-](https://www.broadcom.com/blog/dishs-super-joey-with-broadcom-satellite-chip-inside-gets-ces-a)
a.

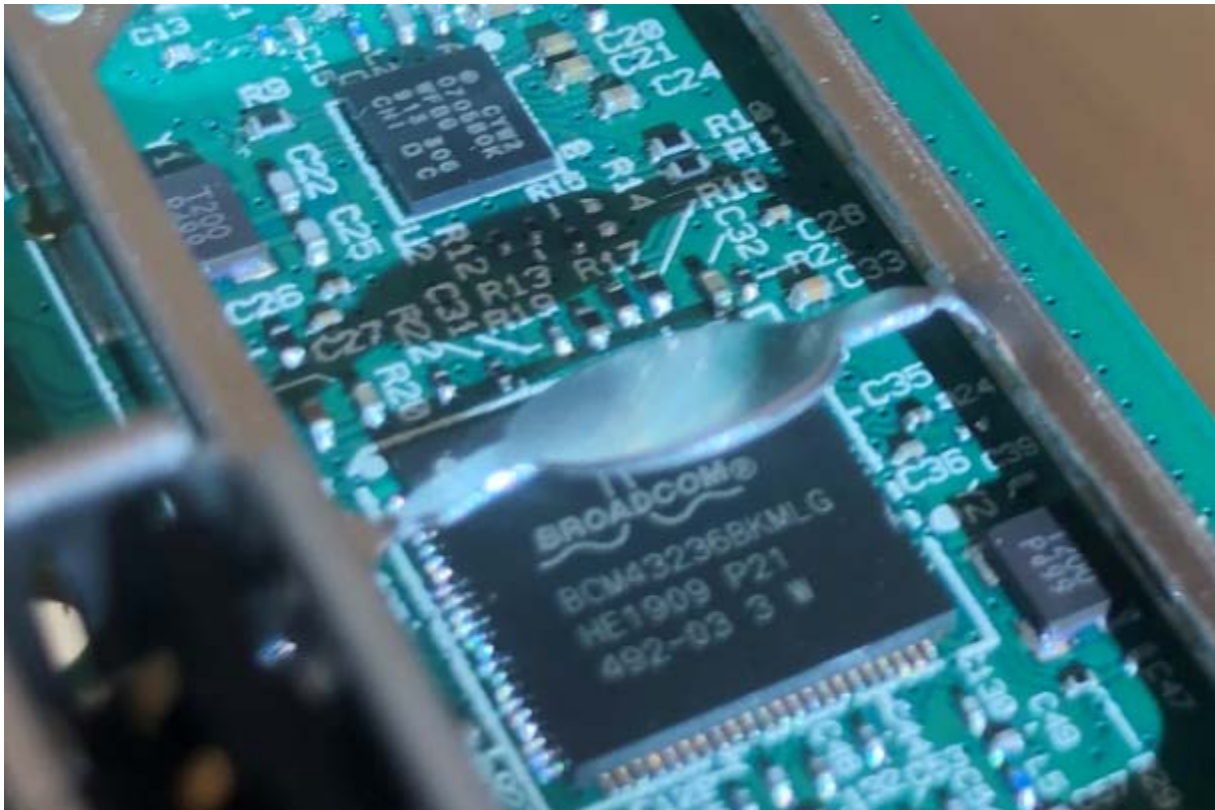
46. Also for example, according to a DISH Hopper 3 DVR System ordered on December 12, 2019, the purchased DISH Hopper 3 DVR System was labeled as “Made in India.”



47. Also for example, the purchased DISH Hopper 3 DVR System incorporates Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, which on information and belief are each manufactured by a fab operated by SMIC at a 65nm technology node fabrication process.







See bottom image (top left-center chip inscribed as “CYW20705B0KWFBG 918 306 CHI DC”, and bottom right-center chip inscribed as “Broadcom BCM43236BKMLG HE1909 P21 492-03 3 W”).

THE ASSERTED PATENTS

48. United States Patent No. 6,580,122 (“the ’122 Patent”), entitled “Transistor Device Having an Enhanced Width Dimension and a Method of Making Same,” issued on June 17, 2003, to inventors Derick J. Wristers, Jon D. Cheek, and John G. Pellerin. The ’122 Patent expires on March 20, 2021. The ’122 Patent issued from U.S. Patent App. Ser. No. 09/812,521, filed on March 20, 2001.

49. United States Patent No. 6,806,126 (“the ’126 Patent”), entitled “Method of Manufacturing a Semiconductor Component,” issued on October 19, 2004, to inventors Scott Luning, Karsten Wieczorek, and Thorsten Kammler. The ’126 Patent expires on September 20,

2022. The '126 Patent issued from U.S. Patent App. Ser. No. 10/236,200, filed on September 6, 2002.

50. United States Patent No. 6,933,620 (“the '620 Patent”), entitled “Semiconductor Component and Method of Manufacture,” issued on August 23, 2005 to inventors Scott Luning, Karsten Wieczorek, and Thorsten Kammler. The '620 Patent expires on September 6, 2022. The '620 Patent issued from U.S. Patent App. Ser. No. 10/915,638, filed on August 9, 2004, and was previously published as U.S. Patent Pub. No. 2005/0009285 on January 13, 2005. The '620 Patent claims the benefit of priority to, and is a divisional of, U.S. Patent App. No. 10/236,200, filed on September 6, 2002, now U.S. Patent No. 6,806,126.

51. United States Patent No. 7,009,226 (“the '226 Patent”), entitled “In-Situ Nitride/Oxynitride Processing with Reduced Deposition Surface Pattern Sensitivity,” issued on March 7, 2006 to inventor Sey-Ping Sun. The '226 Patent expires on July 12, 2024. The '226 Patent issued from U.S. Patent App. Ser. No. 10/887,836, filed on July 12, 2004.

52. By way of assignment, IFT owns all rights, title, and interest to the '122 Patent, the '126 Patent, the '620 Patent, and the '226 Patent (collectively, the “Asserted Patents”).

53. The Asserted Patents are each valid and enforceable.

JURISDICTION AND VENUE

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

55. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338(a).

SMIC

56. Venue in this District is proper under 28 U.S.C. § 1391(c)(3) and 28 U.S.C. § 1400(b) with respect to SMIC. SMIC and its Subsidiaries are not residents of the United States and may be sued in this District, because suits against foreign entities are proper in any judicial

district where they are subject to personal jurisdiction. Defendants SMIC and its Subsidiaries have committed acts of patent infringement in this District.

57. This Court has personal jurisdiction over SMIC and its Subsidiaries. SMIC and its Subsidiaries have conducted and do conduct business within the State of Texas. SMIC and its Subsidiaries, directly or through their subsidiaries or intermediaries (including distributors, retailers, and others), ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including by providing interactive web pages) products and/or services in the United States and the Western District of Texas and/or contribute to and actively induce customers to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of interactive web pages) infringing products and/or services in the United States and the Western District of Texas.

58. SMIC and its Subsidiaries, directly and through their subsidiaries or intermediaries (including distributors, retailers, and others), have purposefully and voluntarily placed one or more infringing products and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the Western District of Texas. These infringing products and/or services have been and continue to be made, used, sold, offered for sale, purchased, and/or imported by customers and/or consumers in the Western District of Texas.

59. On information and belief, SMIC and its Subsidiaries have also placed integrated circuits using SMIC process node technology and products containing these integrated circuits (the “Accused Products”) into the stream of commerce by shipping Accused Products into Texas, shipping Accused Products knowing that those products would be shipped into Texas, and/or shipping Accused Products knowing that these Accused Products would be incorporated into other Accused Products that would be shipped into Texas. For example, the Subsidiaries have alleged

in a complaint that the Accused Products in this action, *i.e.*, the “Texas Accused Products,” are “manufactured by SMIC Manufacturing Companies [*i.e.*, the “SMIC family of entities,” SMIC Shanghai, SMIC Beijing, SMIC Tianjin, SMIC North China, and SMIC South China].” *See, e.g., SMIC, Americas et al. v. Innovative Foundry Techs.*, Case No. 3:20-cv-02256, (ECF No. 1), Compl., ¶¶ 10-13, 16 (Apr. 2, 2020). In addition, the Subsidiaries coordinate with SMIC, Americas to sell “the Texas Accused Products to various customers in the United States[,]” including to customers in Texas. *Id.*

60. Also, for example, in 2017, SMIC, either alone or in conjunction with its Subsidiaries, sponsored and displayed a booth, podium, and presentation area at DAC 2017, at the Austin Convention Center in Austin, Texas. <https://www.artsolutemediagroup.com/index.php/k2/exhibits/item/542-dac-2017-austin-convention-center-austin-tx> (last accessed Dec. 18, 2019).

61. Also for example, “[t]he SMIC Multi-Project Wafer (MPW) program provides customers a cost-effective prototyping service by enabling multiple customers and projects to share common masks and engineering wafers.” SMIC Multi-Project Wafer Service, available at https://www.smics.com/en/site/multi_project (last accessed Dec. 16, 2019).

62. According to SMIC, its “MPW schedule information, seat reservation, service request and tape-out can be done conveniently in the SMIC Now system.” SMIC Multi-Project Wafer Service, available at https://www.smics.com/en/site/multi_project (last accessed Dec. 16, 2019).

63. According to SMIC, “SMIC Now (Networked-service on web) provides our customers **24/7 online access** to all the information needed to conduct a business with SMIC.”

SMIC Your Online Service, available at <https://service.smics.com/globallogin/SSLLogin.action> (last accessed Dec. 16, 2019) (bold in original).

64. According to SMIC, the SMIC Now website has a “Contact Us” link with an “Americas” option under the “Please select a region” dropdown menu for customers. SMIC Contact Us, http://www.smics.com/en/site/about_contact (last accessed Dec. 16, 2019).

65. On information and belief, through SMIC’s multi-project wafer (“MPW”) services, SMIC offers and/or provides customized Accused Products to customers for purchase and/or testing, including customers in Texas. On information and belief, SMIC ships wafers directly to the customers of its Shuttle MPW service and/or has knowledge of the final shipping address for customers of its MPW service, including customers in Texas. *See* SMIC MPW Shuttle Schedule, available at <http://www.icisc.cn/module/download/downfile.jsp?classid=0&filename=a076393c7a9c4c4188bf07bae3169ba4.pdf> (uploaded on Jan. 21, 2019).

66. According to SMIC, in 2018, its sales in the United States accounted for 32% of its overall sales for the year. SMIC 2018 Annual Report at 9 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf. Also, for example, according to Bill of Lading number ATXFATJU17070019, on August 10, 2017, SMIC, itself or in conjunction with Microchip Technology of Chandler, Arizona, imported into the United States, through the port of Los Angeles, one container containing the description “MASK” from Hsinkang, People’s Republic of China.

67. SMIC has 15 employees in the United States, at least as of the end of 2018. SMIC 2018 Annual Report at 84 (Apr. 29, 2019), available at https://www.smics.com/uploads/e_00981ar-20190425.pdf.

68. On information and belief, SMIC and/or its Subsidiaries interact with customers in Texas, including through visits to customer sites in Texas. Through these interactions and visits, SMIC directly infringes the Asserted Patents. SMIC and/or its Subsidiaries also interact with customers who sell the Accused Products into Texas, knowing that these customers will sell the Accused Products into Texas, either directly or through intermediaries.

69. For example, at least one Assistant Director of SMIC is located in Austin, Texas. *See* LinkedIn profile of SMIC Assistant Director Dave Lewis, available at <https://www.linkedin.com/in/davidbrynlewis/>.

70. Also, one of SMIC's three "[t]op customers," according to Semiconductor Engineering, is "Broadcom," which has at least one permanent location in Austin, Texas. Profile of Semiconductor Manufacturing International Corp. (Oct. 19 2015), available at <https://semiengineering.com/entities/semiconductor-manufacturing-international-corp/>; <https://www.broadcom.com/company/contact#locations>.

71. Also, one of SMIC's wholly-owned subsidiaries, SMIC, Americas, is headquartered in the United States and is in the business of "[p]rovision of marketing related activities." SMIC 2018 Annual Report at 165 (Apr. 29, 2019).

72. At least one director of SMIC subsidiary "SMIC Americas" is located in Austin, Texas. *See* LinkedIn profile of SMIC Americas Director Warren He, available at <https://www.linkedin.com/in/warren-he-98709a1/>.

73. SMIC and its Subsidiaries have minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has personal jurisdiction over SMIC and its Subsidiaries.

Broadcom

74. Venue in this District is proper under 28 U.S.C. §§ 1391(b), (c) and 28 U.S.C. § 1400(b) with respect to Broadcom Incorporated and Broadcom Corporation because: (i) Defendants Broadcom Incorporated and Broadcom Corporation have done and continue to do business in this District; (ii) Defendants Broadcom Incorporated and Broadcom Corporation have committed and continue to commit acts of infringement in this District; and (iii) Defendants Broadcom Incorporated and Broadcom Corporation have a regular and established place of business in this District.

75. Venue is proper in this district under 28 U.S.C. § 1400(b) because Defendants Broadcom Incorporated and Broadcom Corporation have a regular and established place of business in this district and have committed acts of infringement in this district.

76. Broadcom Incorporated has a permanent office location at 2901 Via Fortuna Drive, Suite 400, Floor 4, Terrace 6, Austin, Texas 78746, which is located in Travis County and within this district. *See* <https://www.broadcom.com/company/contact#locations>. Broadcom Corporation has a permanent office location at 2901 Via Fortuna Drive, Suite 400, Floor 4, Terrace 6, Austin, Texas 78746, which is located in Travis County and within this district. *See* <https://www.broadcom.com/company/contact#locations> (noting on its Locations page that “[t]he term ‘Broadcom’ refers to Broadcom Inc. and/or its subsidiaries”).

77. On information and belief, Broadcom Corporation also has a location at 9430 Research Boulevard, Austin, TX 78759. *See* <https://www.manta.com/c/mbdc2yg/broadcom-corporation>.

78. Defendants Broadcom Incorporated and Broadcom Corporation employ full-time personnel such as sales personnel and engineers in this district, including in Austin, Texas. Defendants Broadcom Incorporated and Broadcom Corporation have also committed acts of

infringement in this district by commercializing, marketing, selling, distributing, testing, and servicing certain Accused Products.

79. This Court has personal jurisdiction over Broadcom. Broadcom has conducted and do conduct business within the State of Texas. Broadcom Incorporated and Broadcom Corporation, directly or through subsidiaries or intermediaries (including distributors, retailers, and others), ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including by providing interactive web pages) their products and/or services in the United States and the Western District of Texas and/or contribute to and actively induce their customers to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of interactive web pages) infringing products and/or services in the United States and the Western District of Texas. Broadcom, directly and through subsidiaries or intermediaries (including distributors, retailers, and others), has purposefully and voluntarily placed one or more of its infringing products and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the Western District of Texas. These infringing products and/or services have been and continue to be made, used, sold, offered for sale, purchased, and/or imported by customers and/or consumers in the Western District of Texas. Broadcom has committed acts of patent infringement within the Western District of Texas.

80. On information and belief, Broadcom has also placed integrated circuits incorporating semiconductor products which infringe, and products containing these integrated circuits (the “Accused Products”) into the stream of commerce by shipping Accused Products into Texas, shipping Accused Products knowing that those products would be shipped into Texas, and/or shipping Accused Products knowing that these Accused Products would be incorporated

into other Accused Products that would be shipped into Texas. Plaintiff's claims arise out of and relate to Broadcom's acts of infringement and/or inducement of infringement in this District, and because the exercise of jurisdiction by this Court over the Broadcom Defendants in this action would be reasonable.

81. On information and belief, Broadcom interacts with customers in Texas, including through visits to customer sites in Texas. Through these interactions and visits, Broadcom directly infringe the Asserted Patents. Broadcom also interacts with customers who sell the Accused Products into Texas, knowing that these customers will sell the Accused Products into Texas, either directly or through intermediaries.

82. Broadcom has minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has both general and specific personal jurisdiction over Broadcom.

Cypress

83. Venue in this District is proper under 28 U.S.C. §§ 1391(b), (c) and 28 U.S.C. § 1400(b) with respect to Cypress Semiconductor Corporation because: (i) Defendant Cypress has done and continues to do business in this District; (ii) Defendant Cypress has committed and continue to commit acts of infringement in this District; and (iii) Defendant Cypress has a regular and established place of business in this District.

84. Cypress has a sales office location at 5204 E. Ben White Blvd., Austin, TX 78741 and, which is located in Travis County and within this district. *See* <https://www.cypress.com/about-us/sales-offices/north-america> (last accessed Dec. 17, 2019).

85. Cypress also has a sales office location at "O'Donnell Associates Southwest - Texas (El Paso only), 300 Thunderbird Drive, Suite 18, El Paso, TX 79912," which is located in El Paso

County and within this district. *See* <https://www.cypress.com/about-us/sales-offices/north-america> (last accessed Dec. 17, 2019).

86. On information and belief, Cypress also has a location at 9442 N. Capital of Texas Hwy, Austin, TX 78759, which is located in Travis County and within this district. *See* <https://www.yellowpages.com/austin-tx/mip/cypress-semiconductor-4641479> (last accessed Dec. 17, 2019).

87. Cypress employs full-time personnel such as sales personnel in this district, including in Austin, Texas. Cypress has also committed acts of infringement in this district by commercializing, marketing, selling, distributing, testing, and servicing certain Accused Products.

88. This Court has personal jurisdiction over Cypress. Cypress has conducted and does conduct business within the State of Texas. Cypress, directly or through subsidiaries or intermediaries (including distributors, retailers, and others), ships, distributes, makes, uses, offers for sale, sells, imports, and/or advertises (including by providing interactive web pages) its products and/or services in the United States and the Western District of Texas and/or contributes to and actively induces its customers to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of interactive web pages) infringing products and/or services in the United States and the Western District of Texas. Defendant Cypress, directly and through subsidiaries or intermediaries (including distributors, retailers, and others), has purposefully and voluntarily placed one or more of its infringing products and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the Western District of Texas. These infringing products and/or services have been and continue to be made, used, sold, offered for sale,

purchased, and/or imported by customers and/or consumers in the Western District of Texas. Cypress has committed acts of patent infringement within the Western District of Texas.

89. On information and belief, Cypress has also placed integrated circuits incorporating semiconductor products which infringe, and products containing these integrated circuits (the “Accused Products”) into the stream of commerce by shipping Accused Products into Texas, shipping Accused Products knowing that those products would be shipped into Texas, and/or shipping Accused Products knowing that these Accused Products would be incorporated into other Accused Products that would be shipped into Texas. Plaintiff’s claims arise out of and relate to Defendants’ acts of infringement and/or inducement of infringement in this District, and because the exercise of jurisdiction by this Court over Cypress in this action would be reasonable.

90. On information and belief, Cypress interacts with customers in Texas, including through visits to customer sites in Texas. Through these interactions and visits, Cypress directly infringes the Asserted Patents. Cypress also interacts with customers who sell the Accused Products into Texas, knowing that these customers will sell the Accused Products into Texas, either directly or through intermediaries.

91. Cypress has minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has both general and specific personal jurisdiction over Defendant Cypress.

DISH Network

92. Venue in this District is proper under 28 U.S.C. §§ 1391(b), (c), and 28 U.S.C. § 1400(b) with respect to DISH Network. DISH Network is registered for the right to transact business in Texas and has a Texas taxpayer number (18803369976).

93. DISH Network owns and maintains regular and established physical places of business within this judicial district, including but not limited to: (i) a customer call center, warehouse, service, and remanufacturing center located at 1285 Joe Battle Blvd., Suite A, El Paso, Texas 79936; (ii) a micro digital broadcast operations center near Mustang Ridge, Texas; and (iii) a regional digital broadcast operations center near New Braunfels, Texas. *See* DISH 2018 Annual Report at 62 (Feb. 13, 2019), available at <https://dish.gcs-web.com/static-files/1500d9f6-3b27-4e59-b4a0-d7f3257cb992>; *see also* DISH Network Careers page, available at <https://questionnaire1-dish.icims.com/jobs/48502/electrician/job> (job post for Electrician “at [DISH Network’s] New Braunfels, TX facility”).

94. This Court has personal jurisdiction over DISH Network. DISH Network has conducted and does conduct business within this District. DISH Network, directly or through subsidiaries, affiliates, or intermediaries (including distributors, retailers, and others), ships, distributes, makes, has made, uses, offers for sale, sells, imports, has imported, and/or advertises (including by providing interactive web pages) its products and/or services in the United States and this District, and/or contributes to and actively induces others to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of interactive web pages) infringing products (including its wireless TV receivers, including DISH Hopper 3 and DISH’s Hopper family of DVR products) and/or services in the United States and this District. *See, e.g.*, <https://www.dish.com/availability/tx/austin> (advertising TV packages in Austin, Texas, including

offerings for “Hopper Duo for qualifying customers[,] Hopper, Hopper w/Sling or Hopper 3 \$5/mo. More” (emphasis added)) (last accessed Dec. 19, 2019).

95. DISH Network, directly and through subsidiaries, affiliates, or intermediaries (including distributors, retailers, and others), has purposefully and voluntarily placed one or more of its infringing products (including its wireless TV receivers, including DISH Hopper 3 and DISH’s Hopper family of DVR products) and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in this District. These infringing products and/or services have been and continue to be made, used, sold, offered for sale, purchased, and/or imported by customers and/or consumers in this District. DISH Network has committed acts of patent infringement within this District. Plaintiffs’ claims arise out of and relate to DISH Network’s acts of infringement and/or inducement of infringement in this District, and because the exercise of jurisdiction by this Court over DISH Network in this action would be reasonable.

96. DISH Network has minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has both general and specific personal jurisdiction over DISH Network.

JOINDER

97. 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 importing (or having imported) into the United States and/or making (or having made), using (or inducing the use of), selling, or offering for sale within the United States, the same Accused Products, including Broadcom’s, Cypress’s, and/or DISH Network’s products incorporating

semiconductor devices fabricated by SMIC and/or its Subsidiaries at various fabrication process technology node feature sizes, *e.g.*, but not limited to, 65nm.

98. Examples of these products include, but are not limited to, DISH Networks' TV receivers, including DISH Hopper 3 and DISH's Hopper family of DVR products, which on information and belief contain Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, which on information and belief are or have been manufactured according to an SMIC technology node fabrication process, including but not limited to the 65nm feature size, and are imported, sold, offered for sale, and/or used in this District.

ALLEGATIONS OF PATENT INFRINGEMENT

99. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

100. As set forth below, the Accused Products incorporate, without any license from IFT, semiconductor devices and manufacturing process technology protected by patents owned by IFT. IFT respectfully seeks relief from this Court for Defendants' infringement.

SMIC

101. SMIC and its Subsidiaries have and continue to make, have made, use, sell, offer for sale, import, have imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents.

102. SMIC and its Subsidiaries have directly infringed, and continue to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, using, selling and/or offering to sell, in this District and elsewhere in the United States, and/or importing into this District and elsewhere in the United States, certain infringing semiconductor devices, integrated circuits, and products containing the same which infringe, or were manufactured using processes that infringe,

the Asserted Patents, as further described in detail in Counts I-VIII *infra* (collectively, “Accused Products”).

103. With notice of the Asserted Patents, SMIC and its Subsidiaries have proceeded to directly infringe by making, using, testing, designing, selling, offering to sell, and/or importing in this District and elsewhere in the United States, semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents. SMIC and its Subsidiaries have been placed on actual notice of the Asserted Patents at least as early as December 2019, by way of a letter to SMIC dated December 19, 2019. Additionally, the filing of the original Complaint and this First Amended Complaint also constitute notice in accordance with 35 U.S.C. § 287.

104. SMIC and its Subsidiaries have also indirectly infringed, and continue to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(b) and (c). SMIC and its Subsidiaries knew and intended to induce the infringement of the Asserted Patents by customers and/or other third parties. The Accused Products, and the processes of manufacture of the Accused Products, have no substantial non-infringing use. After receiving actual notice of the Asserted Patents, SMIC and its Subsidiaries proceeded to actively induce infringement of the Asserted Patents by inducing customers and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices, integrated circuits, and/or products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents (*e.g.*, DISH Networks’ TV receivers, including DISH Hopper 3 and DISH’s Hopper family of DVR products, which on information and belief contain Broadcom and Cypress integrated circuits, including BCM43236 and CYW20705B0KWFBG, which on information and belief are manufactured

according to an SMIC 65nm technology node fabrication process), as described in detail in Counts I-VIII *infra*.

105. Additionally, SMIC and its Subsidiaries have indirectly infringed, and continue 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 and/or integrated circuits for use in products that infringe, or which were manufactured using processes that infringe, the Asserted Patents, and by instructing those others to infringe the Asserted Patents, as described in detail in Counts I-VIII *infra*.

106. The Accused Products include, but are not limited to, all SMIC semiconductor devices, integrated circuits, and products manufactured at SMIC's various nanometer technology nodes including, but not limited to, Broadcom and Cypress integrated circuits, including BCM20702, BCM20705, BCM43236, and CYW20705B0KWFBG, and any semiconductor devices manufactured using SMIC's 65nm and lower (*e.g.*, 55/65nm, 40/45nm, 28nm and 14nm FinFET) process technologies, and products containing the same. Plaintiff IFT reserves the right to accuse any forthcoming SMIC technology not yet commercially available.

107. SMIC's and its Subsidiaries' acts of infringement have caused damage to Plaintiff. Plaintiff is entitled to recover from SMIC and its Subsidiaries the damages incurred by Plaintiff as a result of SMIC's and its Subsidiaries' wrongful acts.

Broadcom

108. Broadcom has and continues to make, have made, use, sell, offer for sale, import, have imported, test, design, and/or market in the United States semiconductor devices, integrated

circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents.

109. Broadcom has directly infringed, and continue to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, using, selling and/or offering to sell, in this District and elsewhere in the United States, and/or importing into this District and elsewhere in the United States, certain infringing semiconductor devices, integrated circuits, and products containing the same which infringe, or were manufactured using processes that infringe, the Asserted Patents, as further described in detail in Counts I-VIII *infra* (collectively, “Accused Products”).

110. With notice of the Asserted Patents, Broadcom has proceeded to directly infringe by making, using, testing, designing, selling, offering to sell, and/or importing in this District and elsewhere in the United States, semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents. Broadcom has been placed on actual notice of the Asserted Patents at least as early as December 2019, by way of a letter to Broadcom dated December 19, 2019. Additionally, the filing of this Complaint also constitutes notice in accordance with 35 U.S.C. § 287.

111. 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 customers and/or other third parties. The Accused Products, and the processes of manufacture of the Accused Products, have no substantial non-infringing use. After receiving actual notice of the Asserted Patents, Broadcom proceeded to actively induce infringement of the Asserted Patents by inducing its customers and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices,

integrated circuits, and/or products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents (*e.g.*, DISH Networks' TV receivers, including DISH Hopper 3 and DISH's Hopper family of DVR products, which on information and belief contain Broadcom integrated circuits, including BCM43236, which on information and belief is manufactured according to an SMIC 65nm technology node fabrication process), as described in detail in Counts I-VIII *infra*.

112. 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 and/or integrated circuits for use in products that infringe, or which were manufactured using processes that infringe, the Asserted Patents, and by instructing those others to infringe the Asserted Patents, as described in detail in Counts I-VIII *infra*.

113. The Accused Products include, but are not limited to, Broadcom's BCM20702, BCM20705, and BCM43236 processors, and any other Broadcom product that incorporates semiconductor devices, integrated circuits, and products manufactured at SMIC's various nanometer technology nodes including, but not limited to semiconductor devices manufactured using SMIC's 65nm and lower (*e.g.*, 55/65nm, 40/45nm, 28nm and 14nm FinFET) process technologies, and products containing the same. Plaintiff IFT reserves the right to accuse any forthcoming SMIC technology not yet commercially available.

114. Broadcom's acts of infringement have caused damage to Plaintiff. Plaintiff is entitled to recover from Broadcom the damages incurred by Plaintiff as a result of Broadcom's wrongful acts.

Cypress

115. Cypress has and continues to make, have made, use, sell, offer for sale, import, have imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents.

116. Cypress has directly infringed, and continues to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, using, selling and/or offering to sell, in this District and elsewhere in the United States, and/or importing into this District and elsewhere in the United States, certain infringing semiconductor devices, integrated circuits, and products containing the same which infringe, or were manufactured using processes that infringe, the Asserted Patents, as further described in detail in Counts I-VIII *infra* (collectively, “Accused Products”).

117. With notice of the Asserted Patents, Cypress has proceeded to directly infringe by making, using, testing, designing, selling, offering to sell, and/or importing in this District and elsewhere in the United States, semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents. Cypress has been placed on actual notice of the Asserted Patents at least as early as December 2019, by way of a letter to Cypress dated December 19, 2019. Additionally, the filing of this Complaint also constitutes notice in accordance with 35 U.S.C. § 287.

118. Cypress has also indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(b) and (c). Cypress knew and intended to induce the infringement of the Asserted Patents by its customers and/or other third parties. The Accused Products, and the processes of manufacture of the Accused Products, have no substantial non-infringing use. After receiving actual notice of the Asserted Patents, the Cypress proceeded to

actively induce infringement of the Asserted Patents by inducing its customers and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices, integrated circuits, and/or products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents (*e.g.*, DISH Networks' TV receivers, including DISH Hopper 3 and DISH's Hopper family of DVR products, which on information and belief contain Cypress integrated circuits, including CYW20705B0KWFBG, which on information and belief are manufactured according to an SMIC 65nm technology node fabrication process), as described in detail in Counts I-VIII *infra*.

119. Additionally, Cypress 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 and/or integrated circuits for use in products that infringe, or which were manufactured using processes that infringe, the Asserted Patents, and by instructing those others to infringe the Asserted Patents, as described in detail in Counts I-VIII *infra*.

120. The Accused Products include, but are not limited to, Cypress's CYW20705B0KWFBG chip, and any other Cypress product that incorporates semiconductor devices, integrated circuits, and products manufactured at SMIC's various nanometer technology nodes including, but not limited to semiconductor devices manufactured using SMIC's 65nm and lower (*e.g.*, 55/65nm, 40/45nm, 28nm and 14nm FinFET) process technologies, and products containing the same. Plaintiff IFT reserves the right to accuse any forthcoming SMIC technology not yet commercially available.

121. Cypress's acts of infringement have caused damage to Plaintiff. Plaintiff is entitled to recover from Cypress the damages incurred by Plaintiff as a result of Cypress's wrongful acts.

DISH Network

122. DISH Network has and continues to make, have made, use, sell, offer for sale, import, have imported, test, design, and/or market in the United States semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents.

123. DISH Network has directly infringed, and continues to directly infringe, the Asserted Patents under 35 U.S.C. § 271(a) and (g) by making, using, selling and/or offering to sell, in this District and elsewhere in the United States, and/or importing into this District and elsewhere in the United States, certain infringing semiconductor devices, integrated circuits, and products containing the same which infringe, or were manufactured using processes that infringe, the Asserted Patents, as further described in detail in Counts I-VIII *infra* (collectively, “Accused Products”).

124. With notice of the Asserted Patents, DISH Network has proceeded to directly infringe by making, using, testing, designing, selling, offering to sell, and/or importing in this District and elsewhere in the United States, semiconductor devices, integrated circuits, and products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents. DISH Network has been placed on actual notice of the Asserted Patents at least as early as December 2019, by way of a letter to DISH Network dated December 19, 2019. Additionally, the filing of this Complaint also constitutes notice in accordance with 35 U.S.C. § 287.

125. DISH Network has also indirectly infringed, and continues to indirectly infringe, the Asserted Patents under 35 U.S.C. § 271(b) and (c). DISH Network knew and intended to induce the infringement of the Asserted Patents by its customers and/or other third parties. The Accused Products, and the processes of manufacture of the Accused Products, have no substantial

non-infringing use. After receiving actual notice of the Asserted Patents, the DISH Network proceeded to actively induce infringement of the Asserted Patents by inducing its customers and/or other third parties to make, use, sell, offer for sale, market, advertise, and/or import semiconductor devices, integrated circuits, and/or products containing the same that infringe, or were manufactured using processes that infringe, the Asserted Patents (*e.g.*, DISH Networks' TV receivers, including DISH Hopper 3 and DISH's Hopper family of DVR products, which on information and belief contain Broadcom and Cypress integrated circuits, including BCM43236 and CYW20705B0KWFBG, which on information and belief is manufactured according to an SMIC 65nm technology node fabrication process), as described in detail in Counts I-VIII *infra*.

126. Additionally, DISH Network 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 and/or integrated circuits for use in products that infringe, or which were manufactured using processes that infringe, the Asserted Patents, and by instructing those others to infringe the Asserted Patents, as described in detail in Counts I-VIII *infra*.

127. The Accused Products include, but are not limited to, DISH Networks' wireless TV receivers, including DISH Hopper 3 and DISH's Hopper family of DVR products, and any other DISH Network product that incorporates semiconductor devices, integrated circuits, and products manufactured at SMIC's various nanometer technology nodes including, but not limited to, Broadcom and Cypress integrated circuits, including BCM43236 and CYW20705B0KWFBG, and any semiconductor devices manufactured using SMIC's 65nm and lower (*e.g.*, 55/65nm, 40/45nm, 28nm and 14nm FinFET) process technologies, and products containing the same. Plaintiff IFT reserves the right to accuse any forthcoming SMIC technology not yet commercially available.

128. DISH Network's acts of infringement have caused damage to Plaintiff. Plaintiff is entitled to recover from DISH Network the damages incurred by Plaintiff as a result of DISH Network's wrongful acts.

COUNT I
(Defendants' Infringement of the '122 Patent)

129. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

130. Plaintiff is the assignee and lawful owner of all right, title and interest in and to the '122 Patent. The '122 Patent is valid and enforceable.

131. Defendants have directly infringed, and continue to directly infringe, the '122 Patent by making, using, selling, offering for sale, or importing into the United States products that infringe the '122 Patent including, but not limited to, semiconductor devices, integrated circuits, and products containing the same. The accused products that infringe one or more claims of the '122 Patent include, but are not limited to, at least the Accused Products. Further discovery may reveal additional infringing products and/or models.

132. For example, and without limitation, the Accused Products infringe claims 1-34 of the '122 Patent. The Accused Products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of the asserted claims of the '122 Patent.

133. With respect to an exemplary device manufactured at the SMIC 65nm technology node, used to manufacture Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, incorporated into DISH Hopper 3 and DISH's Hopper family of DVR products, said process of manufacture results in a product covered by at least Claim 1 of the '122 Patent. This product is exemplary and, on information and belief, many other products provided by SMIC infringe the '122 Patent.

134. The Accused Products include all of the limitations of at least Claim 1 of the '122 Patent. Specifically, the '122 Patent claims a transistor, comprising: (i) a semiconducting substrate; (ii) a recessed isolation structure formed in said substrate, said isolation structure defining a recess thereabove; (iii) a gate electrode and a gate insulation layer formed above said substrate, a portion of said gate electrode and said gate insulation layer extending into said recess above said recessed isolation structure; and (iv) a source region and a drain region formed in said substrate.

135. The Accused Products are manufactured by, for example SMIC using its 65nm feature size manufacturing process. SMIC's 65nm feature size manufacturing process produces a product that meets all of the limitations of at least Claim 1 of the '122 Patent. For example, integrated circuits manufactured according to SMIC's 65nm feature size manufacturing process comprise a silicon substrate, shallow trench isolation (STI) regions formed in said substrate that define a recess, transistors each comprising an oxide layer formed over the substrate, a gate electrode over the oxide layer, and a source region and a drain region formed in the substrate.

136. Defendants have, and continue to, indirectly infringe the '122 Patent by actively inducing and contributing to the infringement of the '122 Patent by others, such as fabless companies original equipment manufacturers, customers, resellers, and retailers who, for example, incorporate the Accused Products which infringe the '122 Patent into downstream products made, sold, offered for sale, and/or imported throughout the United States, including within this District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this 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.

137. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the '122 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the Accused Products such that they would each infringe the '122 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, Accused Products 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 Accused Products, thereby directly infringing one or more claims of the '122 Patent.

138. The Accused Products 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 an Accused Product or a downstream product incorporating an Accused Product infringes the '122 Patent. The Accused Products are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The Accused Products cannot be used without being incorporated into a downstream product. Thus, the Accused Products have no substantial non-infringing uses. Moreover, because the Accused Products provide vital functionality to the down-stream products, the Accused Products constitute a material part of the invention claimed in the '122 Patent.

139. Defendants have had knowledge of the '122 Patent since at least as of receiving letters dated December 19, 2019.

140. Defendants' continued infringement of the '122 Patent has damaged and will continue to damage Plaintiff.

141. Plaintiff is entitled to recover damages adequate to compensate it for Defendants' infringement.

COUNT II
(Defendants' Willful Infringement of the '122 Patent)

142. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

143. The Defendants have infringed and/or do willfully infringe the '122 Patent.

144. The Defendants received actual notice of the '122 Patent at least as early as December 2019 by way of letters dated December 19, 2019. After receiving such actual notice of the '122 Patent, Defendants proceeded to make, use, test, sell, and/or offer to sell in this District and elsewhere in the United States, and import into this District and elsewhere in the United States, the Accused Products.

145. On information and belief, Defendants engaged in such activities despite an objectively high likelihood that their actions constituted infringement of valid patents, including the '122 Patent. Defendants knew and should have known that their actions would cause direct and indirect infringement of the '122 Patent.

COUNT III
(Defendants' Infringement of the '126 Patent)

146. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

147. Plaintiff is the assignee and lawful owner of all right, title and interest in and to the '126 Patent. The '126 Patent is valid and enforceable.

148. Defendants have directly infringed, and continue to directly infringe, the '126 Patent by making, using, selling, offering for sale, or importing into the United States products manufactured using processes that infringe the '126 Patent including, but not limited to,

semiconductor devices, integrated circuits, and products containing the same. The accused products that infringe one or more claims of the '126 Patent include, but are not limited to, at least the Accused Products. Further discovery may reveal additional infringing products and/or models.

149. For example, and without limitation, the Accused Products were manufactured using processes that infringe claims 1-25 of the '126 Patent. The methods used to make the Accused Products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of the asserted claims of the '126 Patent.

150. With respect to the manufacture of an exemplary device at the SMIC 65nm technology node, used to manufacture Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, incorporated into DISH Hopper 3 and DISH's Hopper family of DVR products, said process of manufacture is covered by at least Claim 1 of the '126 Patent. This product is exemplary and, on information and belief, many other products provided by SMIC infringe the '126 Patent.

151. The Accused Products are manufactured by a process that includes all of the limitations of at least Claim 1 of the '126 Patent. Specifically, the '126 Patent claims a method for manufacturing a semiconductor component, comprising: (i) providing a semiconductor material of a first conductivity type having a major surface; (ii) forming a gate structure on the major surface, the gate structure having first and second sides and a top surface; (iii) forming first and second spacers adjacent the first and second sides of the gate structure, respectively, the first and second spacers comprising a first dielectric material; (iv) forming source and drain extension regions in the semiconductor material, the source extension region aligned to the first spacer and the drain extension region aligned to the second spacer; (v) forming third and fourth spacers adjacent the first and second spacers, respectively, the third and fourth spacers comprising the first

dielectric material; (vi) exposing portions of the first and second sides of the gate structure; and (vii) forming source and drain regions in the semiconductor material, the source region aligned to the third spacer and the drain region aligned to the fourth spacer.

152. The Accused Products are manufactured by, for example SMIC using its 65nm feature size manufacturing process. SMIC's 65nm feature size manufacturing process includes all of the limitations of at least Claim 1 of the '126 Patent. For example, SMIC's 65nm feature size manufacturing process provides a semiconductor material of a first conductivity type having a major surface, a transistor on the major surface, having a gate structure with a first side, a second side, and a top surface, "SWS 1 nitride" spacers are formed adjacent to the first and second sides of the gate structure, source and drain extension regions formed in the semiconductor material aligned to the first and second spacers, third and fourth spacers (SWS 3 nitride) adjacent the first and second spacers, portions of the first and second sides of the gate structure that have been exposed, and an SWS 3 used to define the source/drain regions.

153. Defendants have, and continue to, indirectly infringe the '126 Patent by actively inducing and contributing to the infringement of the '126 Patent by others, such as fabless companies original equipment manufacturers, customers, resellers, and retailers who, for example, incorporate the Accused Products which were manufactured using processes that infringe the '126 Patent into downstream products made, sold, offered for sale, and/or imported throughout the United States, including within this District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this 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.

154. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the '126 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the Accused Products such that they would each infringe the '126 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, Accused Products 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 Accused Products, thereby directly infringing one or more claims of the '126 Patent.

155. The Accused Products 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 an Accused Product or a downstream product incorporating an Accused Product infringes the '126 Patent. The Accused Products are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The Accused Products cannot be used without being incorporated into a downstream product. Thus, the Accused Products have no substantial non-infringing uses. Moreover, because the Accused Products provide vital functionality to the down-stream products, the Accused Products constitute a material part of the invention claimed in the '126 Patent.

156. Defendants have had knowledge of the '126 Patent since at least as of receiving letters dated December 19, 2019.

157. Defendants' continued infringement of the '126 Patent has damaged and will continue to damage Plaintiff.

158. Plaintiff is entitled to recover damages adequate to compensate it for Defendants' infringement.

COUNT IV
(Defendants' Willful Infringement of the '126 Patent)

159. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

160. The Defendants have infringed and/or do willfully infringe the '126 Patent.

161. The Defendants received actual notice of the '126 Patent at least as early as December 2019 by way of letters dated December 19, 2019. After receiving such actual notice of the '126 Patent, Defendants proceeded to make, use, test, sell, and/or offer to sell in this District and elsewhere in the United States, and import into this District and elsewhere in the United States, the Accused Products.

162. On information and belief, Defendants engaged in such activities despite an objectively high likelihood that their actions constituted infringement of valid patents, including the '126 Patent. Defendants knew and should have known that their actions would cause direct and indirect infringement of the '126 Patent.

COUNT V
(Defendants' Infringement of the '620 Patent)

163. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

164. Plaintiff is the assignee and lawful owner of all right, title and interest in and to the '620 Patent. The '620 Patent is valid and enforceable.

165. Defendants have directly infringed, and continue to directly infringe, the '620 Patent by making, using, selling, offering for sale, or importing into the United States products that infringe the '620 Patent including, but not limited to, semiconductor devices, integrated

circuits, and products containing the same. The accused products that infringe one or more claims of the '620 Patent include, but are not limited to, at least the Accused Products. Further discovery may reveal additional infringing products and/or models.

166. For example, and without limitation, the Accused Products infringe claims 7-20 of the '620 Patent. The Accused Products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of the asserted claims of the '620 Patent.

167. With respect to the manufacture of an exemplary device at the SMIC 65nm technology node, used to manufacture Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, incorporated into DISH Hopper 3 and DISH's Hopper family of DVR products, said process of manufacture results in a product covered by at least Claim 7 of the '620 Patent. This product is exemplary and, on information and belief, many other products provided by SMIC infringe the '620 Patent.

168. The Accused Products include all of the limitations of at least Claim 7 of the '620 Patent. Specifically, the '620 Patent claims a semiconductor component having sidewall spacers, comprising: (i) a semiconductor material having a gate structure disposed thereon, the gate structure having a top surface and first and second sides; (ii) a first oxide layer on the first side of the gate structure and a second oxide layer on the second side of the gate structure; (iii) a first nitride spacer in contact with the first oxide layer and a second nitride spacer in contact with the second oxide layer; (iv) a third nitride spacer adjacent the first nitride spacer; and (v) a fourth nitride spacer adjacent the second nitride spacer.

169. The Accused Products are manufactured by, for example SMIC using its 65nm feature size manufacturing process. SMIC's 65nm feature size manufacturing process produces a product with all of the limitations of at least Claim 7 of the '620 Patent. For example, integrated

circuits manufactured according to SMIC's 65nm feature size manufacturing process comprise transistors having sidewall spacers, a transistor having a top surface and two sides and disposed on a silicon substrate, a buffer oxide layer on the first side of the gate structure, another buffer oxide layer on the second side of the gate structure, a nitride spacer in contact with the buffer oxide layer on the first side, another nitride sidewall spacer in contact with the buffer oxide layer on the second side, another nitride spacer adjacent to the first nitride spacer on the first side, and a fourth nitride spacer is adjacent the second nitride spacer on the second side.

170. Defendants have, and continue to, indirectly infringe the '620 Patent by actively inducing and contributing to the infringement of the '620 Patent by others, such as fabless companies original equipment manufacturers, customers, resellers, and retailers who, for example, incorporate the Accused Products which infringe the '620 Patent into downstream products made, sold, offered for sale, and/or imported throughout the United States, including within this District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this 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.

171. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the '620 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the Accused Products such that they would each infringe the '620 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, Accused Products 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 Accused Products, thereby directly infringing one or more claims of the '620 Patent.

172. The Accused Products 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 an Accused Product or a downstream product incorporating an Accused Product infringes the '620 Patent. The Accused Products are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The Accused Products cannot be used without being incorporated into a downstream product. Thus, the Accused Products have no substantial non-infringing uses. Moreover, because the Accused Products provide vital functionality to the down-stream products, the Accused Products constitute a material part of the invention claimed in the '620 Patent.

173. Defendants have had knowledge of the '620 Patent since at least as of receiving letters dated December 19, 2019.

174. Defendants' continued infringement of the '620 Patent has damaged and will continue to damage Plaintiff.

175. Plaintiff is entitled to recover damages adequate to compensate it for Defendants' infringement.

COUNT VI
(Defendants' Willful Infringement of the '620 Patent)

176. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

177. The Defendants have infringed and/or do willfully infringe the '620 Patent.

178. The Defendants received actual notice of the '620 Patent at least as early as December 2019 by way of letters dated December 19, 2019. After receiving such actual notice of

the '620 Patent, SMIC proceeded to make, use, test, sell, and/or offer to sell in this District and elsewhere in the United States, and import into this District and elsewhere in the United States, the Accused Products.

179. On information and belief, Defendants engaged in such activities despite an objectively high likelihood that their actions constituted infringement of valid patents, including the '620 Patent. Defendants knew and should have known that their actions would cause direct and indirect infringement of the '620 Patent.

COUNT VII
(Defendants' Infringement of the '226 Patent)

180. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

181. Plaintiff is the assignee and lawful owner of all right, title and interest in and to the '226 Patent. The '226 Patent is valid and enforceable.

182. Defendants have directly infringed, and continue to directly infringe, the '226 Patent by making, using, selling, offering for sale, or importing into the United States products that infringe the '226 Patent including, but not limited to, semiconductor devices, integrated circuits, and products containing the same. The accused products that infringe one or more claims of the '226 Patent include, but are not limited to, at least the Accused Products. Further discovery may reveal additional infringing products and/or models.

183. For example, and without limitation, the Accused Products infringe claims 1, 2, and 6-9 of the '226 Patent. The methods used to make the Accused Products fall within the scope of and include, either literally under the doctrine of equivalents, all of the elements of the asserted claims of the '226 Patent.

184. With respect to the manufacture of an exemplary device at the SMIC 65nm technology node, used to manufacture Broadcom and Cypress integrated circuits, *e.g.*, BCM43236 and CYW20705B0KWFBG, incorporated into DISH Hopper 3 and DISH's Hopper family of DVR products, said process of manufacture results in a product covered by at least Claim 1 of the '226 Patent. This product is exemplary and, on information and belief, many other products provided by SMIC infringe the '226 Patent.

185. The Accused Products include all of the limitations of at least Claim 1 of the '226 Patent. Specifically, the '226 Patent claims a semiconductor device comprising: (i) a substrate; (ii) a plurality of transistors formed on the substrate, each transistor comprising source/drain regions and a gate electrode, having an upper and side surfaces, over the substrate with a gate dielectric layer therebetween, the gate electrodes being separated by a gap; (iii) a conformal stressed nitride liner over the upper and side surfaces of the gate electrodes and over the source/drain regions; and (iv) a dielectric layer over the transistors and filling the gaps between the gate electrodes.

186. The Accused Products are manufactured by, for example SMIC using its 65nm feature size manufacturing process. SMIC's 65nm feature size manufacturing process produces a product with all of the limitations of at least Claim 1 of the '226 Patent. For example, integrated circuits manufactured according to SMIC's 65nm feature size manufacturing process comprise a silicon substrate, multiple transistors formed on the Si substrate with each transistor comprising source and drain regions and a gate electrode having upper and side surfaces, also with each transistor formed over the silicon substrate with a layer of nitride gate oxide between the gate electrode and the silicon substrate, gate electrodes separated by a gap, an SiON liner formed over the upper and side surfaces of the gate electrodes and over the source/drain regions, and a pre-

metal dielectric layer over the SiON liners and transistors and filling the gaps between the gate electrodes.

187. Defendants have, and continue to, indirectly infringe the '226 Patent by actively inducing and contributing to the infringement of the '226 Patent by others, such as fabless companies original equipment manufacturers, customers, resellers, and retailers who, for example, incorporate the Accused Products which infringe the '226 Patent into downstream products made, sold, offered for sale, and/or imported throughout the United States, including within this District. For example, Defendants hire permanent sales and/or marketing personnel located throughout the United States, and in this 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.

188. Defendants specifically intended these others, such as original equipment manufacturers, customers, resellers, and retailers, to infringe the '226 Patent and knew that these others perform acts that constituted direct infringement. For example, Defendants designed the Accused Products such that they would each infringe the '226 Patent if made, used, sold, offered for sale, or imported into the United States. Defendants provided, directly or indirectly, Accused Products 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 Accused Products, thereby directly infringing one or more claims of the '226 Patent.

189. The Accused Products 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 an Accused Product or a downstream product incorporating an Accused Product infringes

the '226 Patent. The Accused Products are semiconductor devices and integrated circuits that provide vital functionality to downstream products. The Accused Products cannot be used without being incorporated into a downstream product. Thus, the Accused Products have no substantial non-infringing uses. Moreover, because the Accused Products provide vital functionality to the down-stream products, the Accused Products constitute a material part of the invention claimed in the '226 Patent.

190. Defendants have had knowledge of the '226 Patent since at least as of receiving letters dated December 19, 2019.

191. Defendants' continued infringement of the '226 Patent has damaged and will continue to damage Plaintiff.

192. Plaintiff is entitled to recover damages adequate to compensate it for Defendants' infringement.

COUNT VIII
(Defendants' Willful Infringement of the '226 Patent)

193. Plaintiff incorporates the allegations of all of the foregoing paragraphs as if fully restated herein.

194. The Defendants have infringed and/or do willfully infringe the '226 Patent.

195. The Defendants received actual notice of the '226 Patent at least as early as December 2019 by way of letters dated December 19, 2019. After receiving such actual notice of the '226 Patent, Defendants proceeded to make, use, test, sell, and/or offer to sell in this District and elsewhere in the United States, and import into this District and elsewhere in the United States, the Accused Products.

196. On information and belief, Defendants engaged in such activities despite an objectively high likelihood that their actions constituted infringement of valid patents, including

the '226 Patent. Defendants knew and should have known that their actions would cause direct and indirect infringement of the '226 Patent.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests the following relief:

- a) A judgment that the Asserted Patents are valid and enforceable;
- b) A judgment that Defendants have infringed, directly and indirectly, either literally or under the Doctrine of Equivalents, one or more claims of the '122 Patent;
- c) A judgment that the Defendants' infringement of the '122 Patent was willful, and that the Defendants' continued infringement of the '122 Patent is willful;
- d) A judgment that Defendants have infringed, directly and indirectly, either literally or under the Doctrine of Equivalents, one or more claims of the '126 Patent;
- e) A judgment that the Defendants' infringement of the '126 Patent was willful, and that the Defendants' continued infringement of the '126 Patent is willful;
- f) A judgment that Defendants have infringed, directly and indirectly, either literally or under the Doctrine of Equivalents, one or more claims of the '620 Patent;
- g) A judgment that the Defendants' infringement of the '620 Patent was willful, and that the Defendants' continued infringement of the '620 Patent is willful;
- h) A judgment that Defendants have infringed, directly and indirectly, either literally or under the Doctrine of Equivalents, one or more claims of the '226 Patent;
- i) A judgment that the Defendants' infringement of the '226 Patent was willful, and that the Defendants' continued infringement of the '226 Patent is willful;
- j) A judgment that awards Plaintiff all appropriate damages under 35 U.S.C. § 284 for Defendants' past infringement, and any continuing or future infringement of the Asserted Patents, including pre or post judgment interest, costs, and disbursements

as justified under 35 U.S.C. § 284 and, if necessary to adequately compensate Plaintiff for Defendants' infringement, an accounting:

- i. that Plaintiff be awarded enhanced damages by reason of the Defendants' willful infringement of the '122 Patent;
 - ii. that Plaintiff be awarded enhanced damages by reason of the Defendants' willful infringement of the '126 Patent;
 - iii. that Plaintiff be awarded enhanced damages by reason of the Defendants' willful infringement of the '620 Patent;
 - iv. that Plaintiff be awarded enhanced damages by reason of the Defendants' willful infringement of the '226 Patent;
 - vi. that this case be declared exceptional within the meaning of 35 U.S.C. § 285 and that Plaintiff be awarded its reasonable attorneys' fees against the Defendants incurred in prosecuting this action;
 - vii. that Plaintiff be awarded costs and expenses incurred in prosecuting this action; and
- k) A judgment that Plaintiff be awarded such further relief at law or in equity as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Under Fed. R. Civ. P. 38, Plaintiff hereby demands trial by jury on all claims and issues so triable.

Dated: April 3, 2020

Respectfully submitted,

/s/ Adam S. Rizk w/permission Claire A. Henry

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on March 27, 2020, a copy of the foregoing was served electronically, via CM/ECF, on all counsel of record who are deemed to have consented such service under the Court's local rules. Any other counsel of record will be served via facsimile and certified mail, return receipt requested.

/s/ Claire A. Henry
Counsel for Plaintiff
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