

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

COMMWORKS SOLUTIONS, LLC,

Plaintiff,

v.

QUALCOMM INC. and QUALCOMM
TECHNOLOGIES, INC.,

Defendants.

Civil Action No. 2:25-cv-00154

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff CommWorks Solutions, LLC (“CommWorks” or “Plaintiff”) files this complaint against Defendants Qualcomm Inc. and Qualcomm Technologies, Inc. (collectively, “Defendants” or “Qualcomm”) alleging, based on its own knowledge as to itself and its own actions, and based on information and belief as to all other matters, as follows:

NATURE OF THE ACTION

1. This is a patent infringement action for Defendants’ infringement of the following United States Patents (collectively, the “Asserted Patents”), issued by the United States Patent and Trademark Office (“USPTO”):

| | Patent No. | Title | Reference |
|----|-------------------|---|--|
| 1. | 7,177,285 | Time Based Wireless Access Provisioning | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7177285 , https://patentcenter.uspto.gov/applications/10961959 |
| 2. | 7,463,596 | Time Based Wireless Access Provisioning | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7463596 , https://patentcenter.uspto.gov/applications/11673513 |

| | Patent No. | Title | Reference |
|----|-------------------|---|--|
| 3. | 7,911,979 | Time Based Access Provisioning System And Process | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7911979 , https://patentcenter.uspto.gov/applications/12323399 |
| 4. | RE44,904 | Method For Contention Free Traffic Detection | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/RE44904 , https://patentcenter.uspto.gov/applications/13171882 |
| 5. | 7,027,465 | Method For Contention Free Traffic Detection | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/7027465 , https://patentcenter.uspto.gov/applications/10167986 |
| 6. | 6,891,807 | Time Based Wireless Access Provisioning | https://image-ppubs.uspto.gov/dirsearch-public/print/downloadPdf/6891807 , https://patentcenter.uspto.gov/applications/10341847 |

2. Plaintiff seeks monetary damages.

PARTIES

3. CommWorks is a limited liability company formed under the laws of the State of Georgia with its registered office address located in Alpharetta, Georgia (Fulton County).

4. Defendant Qualcomm Inc. is a corporation organized under the laws of the state of Delaware with a principal place of business at 5775 Morehouse Dr., San Diego, California, 92121.

5. Defendant Qualcomm Technologies, Inc. is a company organized under the laws of the state of Delaware with a principal place of business at 5775 Morehouse Dr., San Diego, California, 92121.

6. Defendant Qualcomm Technologies, Inc. is a wholly-owned subsidiary of, and is controlled and directed by, Qualcomm Inc.; Qualcomm Technologies, Inc. “operates, along with its subsidiaries, substantially all of Qualcomm’s engineering, research, and development functions, and substantially all of its products and services businesses.” *See Home Page, QUALCOMM* (last

visited Jan. 23, 2025), <https://www.qualcomm.com/>.

7. On information and belief, Defendants have a business location in this Judicial District at 2100 Lakeside Blvd., Suite 475, Richardson, Texas, 75082.¹

8. On information and belief, Defendants are joint tortfeasors with each other regarding the matters alleged herein. On information and belief, Qualcomm Technologies, Inc. had the same knowledge of the Asserted Patents as any corporate parent, including at least Qualcomm Inc. and any other parent in any Qualcomm corporate parent-subsidary relationship. The knowledge and actions of the Defendants are imputed to each other.

9. On information and belief, Defendants have directly and/or indirectly developed, designed, manufactured, distributed, marketed, offered to sell and/or sold infringing products and services in the United States, including in the Eastern District of Texas, and otherwise direct infringing activities to this District in connection with their products and services as set forth in this Complaint.

JURISDICTION AND VENUE

10. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

11. This is an action for infringement of a United States patent arising under 35 U.S.C. §§ 271, 281, and 284–85, among others. This Court has subject matter jurisdiction of the action under 28 U.S.C. § 1331 and § 1338(a).

12. Defendants are subject to this Court’s specific and general personal jurisdiction under due process due at least to Defendants’ substantial business in this judicial district, including: (i)

¹ See *73 Offices in USA*, QUALCOMM (last visited Jan. 23, 2025), <https://www.qualcomm.com/company/facilities/offices?country=USA&page=2>.

at least a portion of the infringements alleged herein; (ii) regularly transacting, doing, and/or soliciting business, engaging in other persistent courses of conduct, or deriving substantial revenue from goods and services provided to individuals in Texas and in this District; and (iii) having an interest in, using or possessing real property in Texas.

13. Specifically, Defendants have done business in and have committed acts of infringement in this District directly, through intermediaries, by contributing to and through their inducement of third parties, and offer their products or services, including those accused of infringement here, to customers and potential customers located in this District.

14. Defendants have purposefully directed infringing activities at residents of the State of Texas, and this litigation results from those infringing activities. Defendants regularly sell (either directly or indirectly), their products within this District. For example, upon information and belief, Defendants have placed their products into the stream of commerce *via* an established distribution channel with the knowledge or understanding that such products are being sold in this District and the State of Texas. Defendants are subject to this Court's specific and/or general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due to their substantial and pervasive business in this State and District, including their infringing activities alleged herein, from which Defendants derive substantial revenue from goods sold to residents and consumers.

15. Defendants sell, offer for sale, use, make and/or import products that are and have been used, offered for sale, sold, and purchased in the Eastern District of Texas, and Defendants have committed acts of infringement in the Eastern District of Texas, have conducted business in the Eastern District of Texas, and/or have engaged in continuous and systematic activities in the Eastern District of Texas.

16. Under 28 U.S.C. §§ 1391(b)-(d) and 1400(b), venue is proper in this judicial district

as to Defendants at least because Defendants have transacted business in this District and committed acts of infringement from this District, including, but not limited to, the sale and use of the products identified below.

17. On information and belief, as identified in above in paragraph 7, Defendants have a regular and established place of business in this District, at least at 2100 Lakeside Blvd., Suite 475, Richardson, TX 75082, and have numerous employees in Texas.

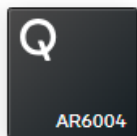
18. On information and belief, Defendants have authorized sellers and sales representatives that offer and sell products identified in this Complaint throughout the State of Texas, including in this Judicial District, and to consumers throughout this Judicial District.

THE ACCUSED PRODUCTS

19. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

20. Defendants use, cause to be used, manufacture, provide, supply, or distribute one or more Qualcomm Systems-on-Chips (SoCs), and/or devices, including, but not limited to the “Accused Products,” set forth below:

- Qualcomm SoCs, and/or devices supporting **Wi-Fi Multimedia and 802.11-2007+** functionality, including:
 - **AR6004 SoCs**



AR6004 Chipset

Single Chip 2x2 802.11a/b/g/n MIMO MAC/BB/Radio

The AR6004 chipset is a single chip, small form factor 2x2 IEEE 802.11 a/b/g/n MAC/baseband/radio optimized for low-power mobile applications.

AR6004 is a product of Qualcomm Technologies, Inc., and/or its subsidiaries.
[Product license agreement](#)

Figure 1A (*AR6004 Chipset Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/ar6004> (last visited Jan. 23, 2025)).

1.2 AR6004 features

- All-CMOS IEEE 802.11a/b/g/n or 802.11b/ g/n single-chip client
- Two-stream 802.11n to provide highest throughput and superior radio frequency (RF) performance for devices
- Advanced 2x2 802.11n features:
 - 40 MHz channels at 5GHz
 - Full/Half guard interval
 - Frame aggregation

- Security support for WPS, WPA2, WPA, WAP and protected management frames
- Full 802.11e QoS support including Wi-Fi Multimedia (WMM) and U-APSD

Figure 1B (*AR6004 Single Chip 2X2 802.11 A/B/G/N MIMO MAC/BB/Radio Data Sheet*, QUALCOMM INC., available at https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/ar6004_datasheet.pdf (last visited Jan. 23, 2025)).

- QCA6234 SoCs

28.1 QCA6234 overview

28.1.1 General description

The QCA6234 is a complete, small form factor 2x2 802.11 a/b/g/n WLAN plus BT4.0 combo solution optimized for low-power, mobile consumer electronic devices. The device integrates all WLAN and BT functionality in a single package to support a low cost, layout-friendly implementation while allowing flexibility for platform specific customization.

The QCA6234 integrates the complete transmit/receive RF paths including baluns, switches, and reference oscillator. The device is also pre-calibrated, eliminating the need for customer production calibration.

28.2.10 Advanced WLAN features

The QCA6234 is fully compliant with IEEE 802.11e QoS, WiFi Alliance WMM Power Save and 802.11n power saving, ensuring the lowest possible power consumption.

Advanced features such as Host wake-on-wireless and ARP (address resolution protocol) off-loading enable the WLAN link to remain associated for extended periods with host processor asleep for additional deep system power savings.

Figure 2 (*Qualcomm® Snapdragon™ 600 Processor APQ8064 Data Sheet*, QUALCOMM INC., available at https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/snapdragon_600_apq_8064_data_sheet.pdf (last visited Jan. 23, 2025)).

- AR6103 SoCs

General Description

The AR6103 is a complete, small form factor 802.11 b/g/n Wi-Fi solution optimized for low-power, low-cost, and highly integrated mobile and portable consumer electronic devices. The device integrates all Wi-Fi functionality in a package friendly to low-cost PCB design, requiring only a few external bypass capacitors and connection to an antenna.

The AR6103 is fully compliant with IEEE 802.11e QoS, Wi-Fi Alliance WMM® Power Save and 802.11n power saving, ensuring the lowest possible power consumption.

Figure 3 (*AR6103 RoCm™ Integrated 802.11n Data Sheet*, Atheros Communications, Inc., available at https://community.nxp.com/pwmxy87654/attachments/pwmxy87654/imx-processors/56783/1/Datasheet_Nov_2010.pdf (last visited Jan. 23, 2025)).

- Qualcomm SoCs, and/or devices supporting **Wi-Fi Protected Setup (WPS)** functionality, including:

- **Networking Pro 800 Platform**



Networking Pro 800 Platform

[Overview](#) [Services](#)

8-stream Wi-Fi 6 networking platform ideal for densely congested infrastructure applications

The Qualcomm® Networking Pro 800 platform is a broad market Wi-Fi 6 (802.11ax) network solution, supporting up to 8 spatial streams of Wi-Fi 6 connectivity, and designed to meet the growing demands of increasingly crowded and dense Wi-Fi environments.

Specifications

Wi-Fi

Peak PHY Rate: Up to 4.1 Gbps

Generation: Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 5 GHz, 2.4 GHz

Maximum Band Configuration: Tri-band

Spatial Streams: Up to 8

Peak QAM: 1024 QAM

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WPA2, WPA3, WEP, WAPI1, WPA3 Enterprise, WPA3 Easy Connect

Features: Uplink scheduling, Advanced QoS, TxBF, MU-MIMO, OFDMA, Qualcomm® Wi-Fi SON

Figure 4 (*Networking Pro 800 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/networking-pro-series/qualcomm-networking-pro-800-platform> (last visited Jan. 23, 2025)).

- **Networking Pro 810 Platform**



Networking Pro 810 Platform

Qualcomm Tri-Band Wi-Fi 6, 8-stream networking platform with Wi-Fi 6E support, for congested Wi-Fi environments.

The Qualcomm® Networking Pro 810 Platform is a fully integrated Wi-Fi 6E platform ideally suited for premium home mesh networks, gaming routers, broadband gateways, and more. It is an 8-stream solution featuring Qualcomm® Tri-Band Wi-Fi 6. The Qualcomm Networking Pro 810 Platform can simultaneously use 2.4, 5, and 6 GHz spectrum bands with 160 MHz channel support and advanced Qualcomm® 4K QAM to deliver peak speeds of up to 6.6 Gbps, support VR-class low-latency performance, and offer extended range.

Specifications

Wi-Fi

Peak PHY Rate: Up to 6.6 Gbps

Generation: Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz

Maximum Band Configuration: Tri-band

Spatial Streams: Up to 8

Peak QAM: 4K QAM

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WAPI, WPA2, WEP, WPA3 Enterprise, WPA3 Easy Connect

Features: Uplink scheduling, Advanced QoS, TxBF, MU-MIMO, OFDMA, Qualcomm® Wi-Fi SON

Figure 5 (*Networking Pro 810 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/networking-pro-series/qualcomm-networking-pro-810-platform> (last visited Jan. 23, 2025)).

- **Networking Pro 820 Platform**



Networking Pro 820 Platform

Quad-Band Wi-Fi 7 networking platform with an 8-stream configuration. Ideal architecture for small-to-medium business and prosumer home environments.

The Qualcomm Networking Pro 820 Platform enables 16 Gbps peak capacity for enterprise access points, routers, carrier gateways, and mesh Wi-Fi networking. Designed to support maximum aggregated capacity and sustained connections, with low latency and resilient connectivity, this platform delivers high-performance even in congested networks.

Specifications

Wi-Fi

Peak PHY Rate: Up to 16 Gbps

Generation: Wi-Fi 7, Wi-Fi 6E, Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11be, 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz

Maximum Band Configuration: Quad-band

Channels: 320 MHz, 240 MHz, 160 MHz, 80 MHz, 40 MHz, 20 MHz

Spatial Streams: Up to 8

Peak QAM: 4K QAM

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WPA2, WEP, WAPI2, WAPI1, WPA3 Enterprise, WPA3 Easy Connect

Features: Simultaneous & Alternating Multi Link, Adaptive Interference Puncturing, 802.11be QoS, TxBF, OFDMA (UL/DL), MU-MIMO (UL/DL), Mesh 2.0

Figure 6 (*Networking Pro 820 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/networking-pro-series/qualcomm-networking-pro-820-platform> (last visited Jan. 23, 2025)).

o Networking Pro 1620 Platform



Networking Pro 1620 Platform

Contact sales

Quad-Band Wi-Fi 7 networking platform with a 16-stream configuration. Ideal architecture for highly-congested venues, large enterprises and premium home mesh systems.

The Qualcomm® Networking Pro 1620 Platform sets new Wi-Fi 7 and networking platform performance benchmarks for premium tier networking. It is designed to enable 33 Gbps* peak speeds for massive capacity even in congested environments such as large public venues and enterprises.

Featured Documents

 Product Brief

Wi-Fi

Peak PHY Rate: Up to 33 Gbps

Generation: Wi-Fi 7, Wi-Fi 6E, Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11be, 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz

Maximum Band Configuration: Quad-band

Channels: 320 MHz, 240 MHz, 160 MHz, 80 MHz, 40 MHz, 20 MHz

Spatial Streams: Up to 16

Peak QAM: 4K QAM

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WPA2, WEP, WAPI2, WAPI1, WPA3 Enterprise, WPA3 Easy Connect

Figure 7 (*Networking Pro 1620 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/networking-pro-series/qualcomm-networking-pro-1620-platform> (last visited Jan. 23, 2025)).

- Immersive Home 216 Platform



Immersive Home 216 Platform

Qualcomm Immersive Home 216 is a dual-band, 6-stream networking platform featuring a novel modular architecture, advanced network packet processing, and next-generation Wi-Fi 6 to power immersive home networking experiences.

The next generation successor to our groundbreaking mesh networking platforms, Qualcomm Immersive Home Platforms are designed to deliver Gigabit-speed wireless performance to every room in the home with devices that fit in the palm of the hand.

A 4x4 Wi-Fi 6 configuration in the 5GHz band delivers enhanced performance, range, and/or client count for the Immersive Home 216.

Specifications

Wi-Fi

Peak PHY Rate: Up to 5.4 Gbps

Generation: Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 5 GHz, 2.4 GHz

Maximum Band Configuration: Dual-band

Channels: 160 MHz, 80 MHz, 40 MHz, 20 MHz

Spatial Streams: Up to 6

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WPA2, WPA3 Enterprise, WPA3 Easy Connect

Features: TxBF, MU-MIMO, OFDMA, Target Wake Time, Wi-Fi Alliance's Wi-Fi CERTIFIED EasyMesh[™], Qualcomm[®] Wi-Fi SON

Figure 8 (Immersive Home 216 Platform, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/immersive-home-platforms/immersive-home-216-platform> (last visited Jan. 23, 2025)).

○ Immersive Home 318 Platform



Immersive Home 318 Platform

Qualcomm Immersive Home 318 is an 8-stream networking platform designed to support Qualcomm® Tri-Band Wi-Fi 6, and features a novel modular architecture, advanced network packet processing, and next-generation Wi-Fi 6E to support simultaneous high-end performance across three spectrum bands.

The next generation successor to our groundbreaking mesh networking platforms, Qualcomm Immersive Home Platforms are designed to deliver Gigabit-speed wireless performance to every room in the home with devices that fit in the palm of the hand.

With a 4x4 Wi-Fi 6E configuration delivering enhanced performance, range, and/or client count, the Immersive Home 318 platform offers extreme flexibility in the application of Tri-Band Wi-Fi 6E by supporting migration of performance limiting backhaul traffic to the 6GHz band while future-proofing the network for devices supporting 6GHz operation.

Specifications

| | |
|-------|--|
| Wi-Fi | <p>Peak PHY Rate: Up to 7.8 Gbps</p> <p>Generation: Wi-Fi 6E, Wi-Fi 6, Wi-Fi 5, Wi-Fi 4</p> <p>Standards: 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a</p> <p>Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz</p> <p>Maximum Band Configuration: Tri-band</p> <p>Channels: 160 MHz, 80 MHz, 40 MHz, 20 MHz</p> <p>Spatial Streams: Up to 8</p> <p>Encryption: AES-CCMP, AES-GCMP</p> <p>Security: WPA3 Enhanced Open, PRNG, TKIP, WPS, WPA3 Personal, WPA2, WEP, WAPI2, WPA3 Enterprise, WPA3 Easy Connect</p> <p>Features: Uplink scheduling, Advanced QoS, TxBF, MU-MIMO, OFDMA, Target Wake Time, Wi-Fi Alliance's Wi-Fi CERTIFIED EasyMesh™, Qualcomm® Wi-Fi SON</p> |
|-------|--|

Figure 9 (*Immersive Home 318 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/immersive-home-platforms/immersive-home-318-platform> (last visited Jan. 23, 2025)).

○ Immersive Home 326 Platform



Immersive Home 326 Platform

Tri-Band Wi-Fi 7 networking platform with a 6-stream configuration. Ideal for powerful whole home mesh systems.

The Qualcomm Immersive Home 326 Platform leverages advanced Wi-Fi 7 features and Qualcomm[®] Multi-Link Mesh innovation to deliver peak speeds and low latency to serve the needs of today's and tomorrow's applications like real-time gaming, high-resolution video or XR and realize the full capacity of next-gen broadband access.

Features

Wi-Fi

Peak PHY Rate: 10.6 Gbps

Generation: Wi-Fi 7, Wi-Fi 6E, Wi-Fi 6, Wi-Fi 5, Wi-Fi 4

Standards: 802.11be, 802.11ax, 802.11ac, 802.11n, 802.11g, 802.11b, 802.11a

Spectral Bands: 6 GHz, 5 GHz, 2.4 GHz

Maximum Band Configuration: Tri-band

Channels: 320 MHz, 240 MHz, 160 MHz, 80 MHz, 40 MHz, 20 MHz

Spatial Streams: Up to 6

Peak QAM: Up to 4K QAM

Encryption: AES-CCMP, AES-GCMP

Security: WPA3 Personal, WPA3 Enterprise, WPA3 Enhanced Open, WPA3 Easy Connect, WPA2, WPS, 802.11i security, PRNG, TKIP, WAPI2, WAPI1, WEP

Features: Simultaneous & Alternating Multi Link, Adaptive Interference Puncturing, OFDMA (UL/DL), Qualcomm Automatic Frequency Coordination (AFC) Service, MU-MIMO (UL/DL)

Figure 10 (*Immersive Home 326 Platform*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/immersive-home-platforms/immersive-home-326-platform> (last visited Jan. 23, 2025)).

○ **Mesh Networking Dev Kit for Amazon AVS**



Mesh Networking Dev Kit for Amazon AVS

Hardware development kit with the necessary building blocks to create mesh Wi-Fi systems with Alexa built-in

The Qualcomm* Mesh Networking Development Kit for Amazon AVS brings mesh Wi-Fi technology features to device manufacturers in a hardware-based development kit.

Wi-Fi

Peak Speed: Up to 1.733 Gbps

Generation: Wi-Fi 4, Wi-Fi 5

Standards: 802.11n, 802.11p, 802.11ac

Spectral Bands: 2.4 GHz, 5 GHz

Channels: 5 MHz, 10 MHz, 40 MHz, 20 MHz, 80 MHz

MIMO Configuration: 2x2

Spatial Streams: Up to 2

Encryption: AES-CCMP, AES-GCMP

Security: WPA, PRNG, TKIP, WPS, WAPI, WPA2, WEP

Figure 11 (*Mesh Networking Dev Kit for Amazon AVS*, QUALCOMM INC., available at <https://www.qualcomm.com/products/technology/wi-fi/mesh-networking-development-kit-amazon-avs> (last visited Jan. 23, 2025)).

○ IPQ4019 SoCs

IPQ4019 SoC Contact sales

[Overview](#) [Documentation](#) [Software](#) [Hardware](#)

Wave-2 802.11ac SoC for Routers, Gateways and Access Points

The IPQ4019 was the industry's first single-chip Wi-Fi system-on-chip (SoC) to bring Wave-2 802.11ac features to a variety of home and enterprise networking products. The highly-integrated, single-chip design combines dual-band 11ac, advanced Wi-Fi features and network processing in a variety of configurations for high-performance, power-efficient and cost-effective network infrastructure products.

| Wi-Fi | |
|-------|--|
| | Peak Speed: Up to 1.733 Gbps |
| | Generation: Wi-Fi 4, Wi-Fi 5 |
| | Standards: 802.11n, 802.11p, 802.11ac |
| | Spectral Bands: 2.4 GHz, 5 GHz |
| | Channels: 5 MHz, 10 MHz, 40 MHz, 20 MHz, 80 MHz |
| | MIMO Configuration: 2x2 |
| | Spatial Streams: Up to 2 |
| | Encryption: AES-CCMP, AES-GCMP |
| | Security: WPA, PRNG, TKIP, WPS, WAPI, WPA2, WEP |
| | Features: TxBF, MU-MIMO, Qualcomm® Wi-Fi SON |

Figure 12 (*IPQ4019 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/ipq4019> (last visited Jan. 23, 2025)).

○ IPQ4029 SoCs

IPQ4029 SoC Contact sales

[Overview](#) [Software](#) [Hardware](#) [Services](#)

Wave-2 802.11ac SoC for Routers, Gateways and Access Points

The IPQ4029 was the industry's first single-chip Wi-Fi system-on-chip (SoC) to bring Wave-2 802.11ac features to a variety of home and enterprise networking products. The highly-integrated, single-chip design combines dual-band 11ac, advanced Wi-Fi features and network processing in a variety of configurations for high-performance, power-efficient and cost-effective network infrastructure products.

| | |
|--------------|--|
| Wi-Fi | Peak Speed: Up to 1733 Gbps Generation: Wi-Fi 4, Wi-Fi 5 Standards: 802.11a, 802.11b, 802.11g, 802.11n, 802.11p, 802.11ac Spectral Bands: 2.4 GHz, 5 GHz Channels: 5 MHz, 10 MHz, 40 MHz, 20 MHz, 80 MHz MIMO Configuration: 2x2 Spatial Streams: Up to 2 Encryption: AES-CCMP, AES-GCMP Security: WPA, PRNG, TKIP, WPS, WAPI, WPA2, WEP Features: TxBF, MU-MIMO, Qualcomm* IoT Connectivity, Qualcomm* Wi-Fi SON |
|--------------|--|

Figure 13 (*IPQ4029 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/internet-of-things/networking/wi-fi-networks/ipq4029> (last visited Oct. 16, 2024)).

- QCA4012 SoCs



QCA4012

Intelligent connectivity Wi-Fi SoCs (System-on-Chip) for the Internet of Things (IoT).

The QCA4012 is a low power MCU with an integrated Wi-Fi platform for the Internet of Things that contains a low-power dual-band Qualcomm® Wi-Fi connectivity solution on a single chip.

Specifications

Wi-Fi

Peak Speed: Up to 150 Mbps

Generation: Wi-Fi 4

Standards: 802.11a, 802.11b, 802.11g, 802.11n

Spectral Bands: 2.4 GHz, 5 GHz

MIMO Configuration: 1x1

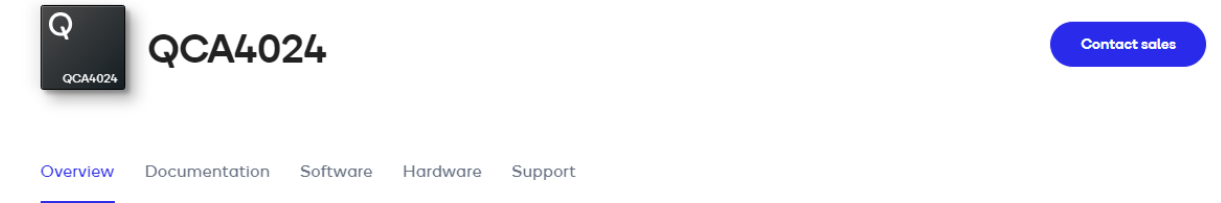
Spatial Streams: Up to 1

Security: WPA, WPA2, WEP, TKIP, WPS, WAPI

Features: Qualcomm® IoT Connectivity

Figure 14 (*QCA4012 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/technology/wi-fi/qca401x-series/qca4012> (last visited Jan. 23, 2025)).

○ QCA4024 SoCs



The header for the QCA4024 SoC product overview page. It features a dark square icon with a white 'Q' and 'QCA4024' text on the left. To the right of the icon is the product name 'QCA4024' in a large, bold, dark font. Further right is a blue rounded rectangular button with the text 'Contact sales'. Below these elements is a horizontal navigation bar with the following links: 'Overview' (underlined), 'Documentation', 'Software', 'Hardware', and 'Support'.

Multi-mode intelligent connectivity solution integrating IEEE 802.15.4 and Bluetooth.

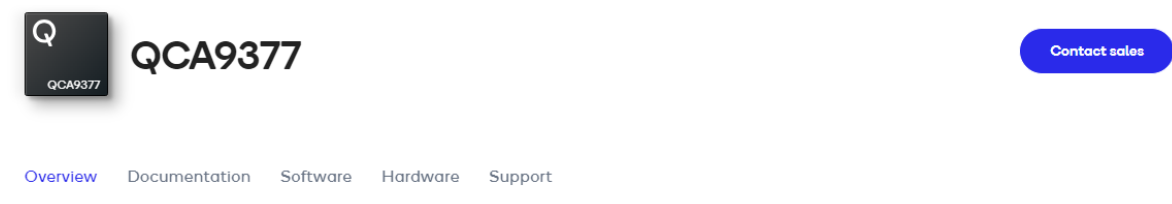
The QCA4024 SoC is a multi-mode system-on-chip with support for Bluetooth 5 and 802.15.4-based technologies, including Zigbee and Thread.

Specifications

| | |
|---------|---|
| LR-WPAN | Protocol: Zigbee, Thread |
| CPU | Name: Arm® Cortex®-M4F Processor, Arm® Cortex®-M0 Processor Clock Speed: Up to 128 MHz |
| Wi-Fi | Security: WPS |

Figure 15 (*QCA4024 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/technology/bluetooth/qca4024> (last visited Jan. 23, 2025)).

○ QCA9377 SoCs



The header for the QCA9377 SoC product overview page. It features a dark square icon with a white 'Q' and 'QCA9377' text on the left. To the right of the icon is the product name 'QCA9377' in a large, bold, dark font. Further right is a blue rounded rectangular button with the text 'Contact sales'. Below these elements is a horizontal navigation bar with the following links: 'Overview' (underlined), 'Documentation', 'Software', 'Hardware', and 'Support'.

High performance, low power single-stream 11ac MU-MIMO and Bluetooth 5 in a single chip solution.

The QCA9377 is a single-die wireless local area network (WLAN) and Bluetooth combination solution to support 1 × 1 802.11a/b/g/n/ac WLAN standards and Bluetooth 5.0 + HS, designed to deliver superior integration of WLAN/Bluetooth and low-energy technology.

QCA9377 and Qualcomm Wi-Fi are products of Qualcomm Technologies, Inc., and/or its subsidiaries.
Product license agreement

Figure 16A (*QCA9377 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/technology/wi-fi/qca9377> (last visited Jan. 23, 2025)).

Qualcomm Atheros QCA9377 Wireless Network Adapter NFA435A

| Device Name | Model(s) | Company | Certification Date |
|---|----------|----------|--------------------|
| Qualcomm Atheros QCA9377 Wireless Network Adapter | NFA435A | Qualcomm | 2019-11-13 |

| ▼ Device Certifications | |
|---|---|
| Security: Protected Management Frames | ✔ |
| Spectrum & Regulatory Features: Spectrum & Regulatory | ✔ |
| Connectivity: Wi-Fi CERTIFIED™ ac | ✔ |
| Connectivity: Wi-Fi CERTIFIED™ n | ✔ |
| Access: Wi-Fi Protected Setup™ | ✔ |

Figure 16B (*Qualcomm Atheros QCA Wireless Network Adapter*, PRODUCT DEVICE REPORT, available at <https://device.report/wifi/WFA61703> (last visited Jan. 23, 2025)).

○ **QCA9994 SoCs**

Wave-2 802.11ac Solution with MU-MIMO and 160MHz for Enterprise Networks

The QCA9994 is a Wave-2 802.11ac radio that enables premium Wi-Fi access points to support more devices and more demanding applications in the enterprise and carrier hotspots. The dual-band, 4x4 solution delivers peak data rates up to 1.7 Gbps, and uses Multi-User MIMO to maintain faster connections on increasingly crowded networks. The QCA9994 also supports 160MHz and 80+80MHz channels to double the capacity at close range.

Security Support **Wi-Fi Security:** WPA2, WPA, WPS, 802.11i security, AES-CCMP, AES-GCMP, TKIP, WAPI, WEP

Figure 17A (*QCA9994 SoC Product Overview*, QUALCOMM INC., available at <https://www.qualcomm.com/products/qca9994> (last visited Jan. 23, 2025)).

1.1 General description

The QCA9994 with Qualcomm® VIVE™ 802.11ac technology is a highly integrated wireless local area network (WLAN) system-on-chip (SoC) for 2.4 802.11n WLAN applications. The QCA9994 is a synthesizer WLAN radio. It includes a CPU and memory for WLAN media access layer (MAC) and physical layer (PHY) management and provides host offload of other high-level networking tasks. It enables high-performance 4x4 MIMO with 4 spatial streams for wireless applications demanding the highest robust link quality and maximum throughput and range, plus 4 spatial stream MU-MIMO. The QCA9994 integrates a multi-protocol MAC, PHY, analog-to-digital/digital-to-analog converters (ADC/DAC), 4x4 MIMO radio transceivers, and PCIE interface in an all-CMOS device for low power consumption and small form-factor applications.

Figure 17B (*QCA9994 Dual-Band 4x4 with 4 SS MIMO 802.11 b/g/n/ac WLAN SoC, Device Specification*, p. 2, UBIQUITI NETWORKS (2015)).

21. On information and belief, Defendants provide information and assistance to their customers to enable them to use the Accused Products in an infringing manner as described below.

22. For these reasons and the additional reasons detailed below, the Accused Products practice at least one claim of each of the Asserted Patents.

23. By letter dated March 5, 2021, addressed to John Scott at Qualcomm, Inc. (the “Notice Letter”), Defendants received notice of their infringement of CommWorks’ patents, including the Asserted Patents.

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 7,177,285

24. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

25. The USPTO duly issued U.S. Patent No. 7,177,285 (the “’285 patent”) on February 13, 2007, after full and fair examination of Application No. 10/961,959 which was filed October 8, 2004. The ’285 patent is entitled “Time Based Wireless Access Provisioning.”

26. CommWorks owns all substantial rights, interest, and title in and to the ’285 patent, including the sole and exclusive right to prosecute this action and enforce the ’285 patent against infringers and to collect damages for all relevant times.

27. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the ’285 patent.

28. The claims of the ’285 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems. The written description of the ’285 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from

and improved upon what may have been considered conventional or generic in the art at the time of the invention.

29. For example, at the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '285 Patent at col. 3:13-26. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:27-36.

30. The invention of the '285 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:37-41. The invention of the '285 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:42-49. The invention of the '285 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:50-58. Moreover, the structure of the devices described in the '285 Patent was not

conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

31. Defendants have directly infringed the '285 patent by making, using, offering to sell, selling, and/or importing the Accused Products identified above.

32. Defendants have directly infringed, either literally or under the doctrine of equivalents, at least claim 1 of the '285 patent, as detailed in Exhibit A to this Complaint (Evidence of Use Regarding U.S. Patent No. 7,177,285).

33. On information and belief, Defendants have infringed the '285 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi Protected Setup ("WPS") compatible SoCs and/or devices, such as, for example, the Qualcomm QCA9994 SoCs (included in the "Accused Products").

34. For example, Defendants have infringed at least claim 1 of the '285 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which perform a process for provisioning between a wireless device and a network. *See* Exhibit A. The process for provisioning comprises the step of tracking an operating parameter of the wireless device within a service area, wherein the operating parameter of the wireless device comprises an onset of a signal transmission of the wireless device. *Id.* The process for provisioning further comprises the step of initiating provisioning of the wireless device if the tracked operating parameter occurs within a time interval. *Id.*

35. From March of 2021 to the expiry of the '285 Patent, Defendants had also indirectly infringed the '285 patent by inducing others to directly infringe the '285 patent. Defendants had induced distributors and end-users, including, but not limited to, Defendants' employees, partners, contractors, or customers, to directly infringe, either literally or under the doctrine of equivalents, the '285 patent by providing or requiring use of the Accused Products. Defendants had taken active steps, directly or through contractual relationships with others, with the specific intent to cause them to use the Accused Products in a manner that infringed one or more claims of the '285 patent, including, for example, claim 1 of the '285 patent. Such steps by Defendants included, among other things, advising or directing personnel, contractors, or end-users to use the Accused Products in an infringing manner; advertising and promoting the use of the Accused Products in an infringing manner; or distributing instructions that guide users to use the Accused Products in an infringing manner. Defendants had performed these steps, which constitute induced infringement with the knowledge of the '285 patent and with the knowledge that the induced acts constitute infringement. Defendants had been aware that the normal and customary use of the Accused Products by others would infringe the '285 patent.

36. From March of 2021 to the expiry of the '285 patent, Defendants had also indirectly infringed by contributing to the infringement of the '285 patent. Defendants had contributed to the direct infringement of the '285 patent by their personnel, contractors, distributors, and customers. The Accused Products have special features that were specially designed to be used in an infringing way and that have no substantial uses other than ones that infringed one or more claims of the '285 patent, including, for example, claim 1 of the '285 patent. The special features constituted a material part of the invention of one or more of the claims of the '285 patent and were not staple articles of commerce suitable for substantial non-infringing use.

37. Defendants had knowledge of the '285 patent when they received the Notice Letter in March of 2021.

38. Furthermore, on information and belief, Defendants have a policy or practice of not reviewing the patents of others, including instructing its employees to not review the patents of others, and thus has been willfully blind of CommWorks' patent rights.

39. Defendants' actions are at least objectively reckless as to the risk of infringing a valid patent and this objective risk was either known or should have been known by Defendants.

40. Defendants' direct infringement of one or more claims of the '285 patent is, has been, and continues to be willful, intentional, deliberate, or in conscious disregard of CommWorks' rights under the patent.

41. CommWorks has been damaged as a result of the infringing conduct by Defendants alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 7,463,596

42. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

43. The USPTO duly issued U.S. Patent No. 7,463,596 (the "'596 patent") on December 9, 2008, after full and fair examination of Application No. 11/673,513, which was filed on February 9, 2007. The '596 patent is entitled "Time Based Wireless Access Provisioning."

44. CommWorks owns all substantial rights, interest, and title in and to the '596 patent, including the sole and exclusive right to prosecute this action and enforce the '596 patent against infringers and to collect damages for all relevant times.

45. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '596 patent.

46. The claims of the '596 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems.

47. The written description of the '596 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

48. For example, at the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '596 Patent at col. 3:13-26. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:27-36.

49. The invention of the '596 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a

provisioning process—“a major technological advance.” *Id.* at col. 3:37-41. The invention of the ’596 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:42-49. The invention of the ’596 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:50-58. Moreover, the structure of the devices described in the ’596 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

50. Defendants have directly infringed the ’596 patent by making, using, offering to sell, selling, and/or importing the Accused Products identified above.

51. Defendants have directly infringed, either literally or under the doctrine of equivalents, at least claim 1 of the ’596 patent, as detailed in **Exhibit B** to this Complaint (Evidence of Use Regarding U.S. Patent No. 7,463,596).

52. On information and belief, Defendants have infringed the ’596 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi Protected Setup (“WPS”) compatible SoCs

and/or devices, such as, for example, the Qualcomm QCA9994 SoCs (included in the “Accused Products”).

53. For example, Defendants, using the Accused Products, have infringed at least claim 1 of the '596 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which perform a process for associating devices. *See Exhibit B.* The process for associating devices comprises the step of tracking an operating parameter of a first device, wherein the operating parameter of the first device comprises any of a power on of the first device, and an onset of a signal transmission of the first device. *Id.* The process for associating devices further comprises the step of automatically associating the first device with at least one other device if the tracked operating parameter occurs within a time interval. *Id.*

54. From March of 2021 to the expiry of the '596 patent, Defendants had also indirectly infringed the '596 patent by inducing others to directly infringe the '596 patent. Defendants had induced distributors and end-users, including, but not limited to, Defendants' employees, partners, contractors, or customers, to directly infringe, either literally or under the doctrine of equivalents, the '596 patent by providing or requiring use of the Accused Products. Defendants had taken active steps, directly or through contractual relationships with others, with the specific intent to cause them to use the Accused Products in a manner that infringed one or more claims of the '596 patent, including, for example, claim 1 of the '596 patent. Such steps by Defendants included, among other things, advising or directing personnel, contractors, or end-users to use the Accused Products in an infringing manner; advertising and promoting the use of the Accused Products in an infringing manner; or distributing instructions that guide users to use the Accused Products in an infringing manner. Defendants had performed these steps, which constitute induced infringement with the knowledge of the '596 patent and with the knowledge that the induced acts

constitute infringement. Defendants had been aware that the normal and customary use of the Accused Products by others would infringe the '596 patent.

55. From March of 2021 to the expiry of the '596 patent, Defendants had also indirectly infringed by contributing to the infringement of the '596 patent. Defendants had contributed to the direct infringement of the '596 patent by their personnel, contractors, distributors, and customers. The Accused Products have special features that were specially designed to be used in an infringing way and that have no substantial uses other than ones that infringed one or more claims of the '596 patent, including, for example, claim 1 of the '596 patent. The special features constituted a material part of the invention of one or more of the claims of the '596 patent and were not staple articles of commerce suitable for substantial non-infringing use.

56. Defendants had knowledge of the '596 patent when it received the Notice Letter in March of 2021.

57. Furthermore, on information and belief, Defendants have a policy or practice of not reviewing the patents of others, including instructing their employees to not review the patents of others, and thus have been willfully blind of CommWorks' patent rights.

58. Defendants' actions are at least objectively reckless as to the risk of infringing a valid patent and this objective risk was either known or should have been known by Defendants.

59. Defendants' direct infringement of one or more claims of the '596 patent is, has been, and continues to be willful, intentional, deliberate, or in conscious disregard of CommWorks' rights under the patent.

60. CommWorks has been damaged as a result of the infringing conduct by Defendants alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest

and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 7,911,979

61. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

62. The USPTO duly issued U.S. Patent No. 7,911,979 (the “’979 patent”) on March 22, 2011, after full and fair examination of Application No. 12/323,399 which was filed on November 25, 2008. The ’979 patent is entitled “Time Based Access Provisioning System And Process.” A Certificate of Correction was issued on July 19, 2011.

63. CommWorks owns all substantial rights, interest, and title in and to the ’979 patent, including the sole and exclusive right to prosecute this action and enforce the ’979 patent against infringers and to collect damages for all relevant times.

64. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the ’979 patent.

65. The claims of the ’979 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems.

66. The written description of the ’979 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

67. For example, at the time of the invention wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '979 Patent at col. 3:19-31. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:32-41.

68. The invention of the '979 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:42-46. The invention of the '979 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:47-53. The invention of the '979 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:54-62. Moreover, the structure of the devices described in the '979 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list,

wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

69. Defendants have directly infringed the '979 patent by importing, selling, manufacturing, offering to sell, using, providing, supplying, or distributing the Accused Products identified above.

70. Defendants have directly infringed either literally or under the doctrine of equivalents, at least claim 1 of the '979 patent, as detailed in **Exhibit C** to this Complaint (Evidence of Use Regarding U.S. Patent No. 7,911,979).

71. On information and belief, Defendants have infringed the '979 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi Protected Setup (“WPS”) compatible SoCs and/or devices, such as, for example, the Qualcomm QCA9994 SoCs (included in the “Accused Products”).

72. For example, Defendants, using the Accused Products, have infringed at least claim 1 of the '979 patent by making, using, offering to sell, selling, and/or importing the Accused Products, which perform a provisioning process performed by a provisioning system having provisioning logic. *See Exhibit C.* The provisioning process performed comprises tracking, by the provisioning logic, an operating parameter of a first device, wherein the operating parameter of the first device comprises any of a power on of the first device, and an onset of a signal transmission of the first device. *Id.* The provisioning process performed in the Accused Products further comprises sending a signal to initiate provisioning of the first device with a network if the tracked operating parameter occurs within a designated time interval. *Id.*

73. From March of 2021 to the expiry of the '979 patent, Defendants had also indirectly

infringed the '979 patent by inducing others to directly infringe the '979 patent. Defendants had induced distributors and end-users, including, but not limited to, Defendants' employees, partners, contractors, or customers, to directly infringe, either literally or under the doctrine of equivalents, the '979 patent by providing or requiring use of the Accused Products. Defendants had taken active steps, directly or through contractual relationships with others, with the specific intent to cause them to use the Accused Products in a manner that infringed one or more claims of the '979 patent, including, for example, claim 1 of the '979 patent. Such steps by Defendants included, among other things, advising or directing personnel, contractors, or end-users to use the Accused Products in an infringing manner; advertising and promoting the use of the Accused Products in an infringing manner; or distributing instructions that guide users to use the Accused Products in an infringing manner. Defendants had performed these steps, which constitute induced infringement with the knowledge of the '979 patent and with the knowledge that the induced acts constitute infringement. Defendants had been aware that the normal and customary use of the Accused Products by others would infringe the '979 patent.

74. From March of 2021 to the expiry of the '979 patent, Defendants had also indirectly infringed by contributing to the infringement of the '979 patent. Defendants had contributed to the direct infringement of the '979 patent by their personnel, contractors, distributors, and customers. The Accused Products have special features that were specially designed to be used in an infringing way and that have no substantial uses other than ones that infringed one or more claims of the '979 patent, including, for example, claim 1 of the '979 patent. The special features constituted a material part of the invention of one or more of the claims of the '979 patent and were not staple articles of commerce suitable for substantial non-infringing use.

75. Defendants had knowledge of the '979 patent when they received the Notice Letter in

March of 2021.

76. Furthermore, on information and belief, Defendants have a policy or practice of not reviewing the patents of others, including instructing their employees to not review the patents of others, and thus have been willfully blind of CommWorks' patent rights.

77. Defendants' actions are at least objectively reckless as to the risk of infringing a valid patent and this objective risk was either known or should have been known by Defendants.

78. Defendants' direct infringement of one or more claims of the '979 patent is, has been, and continues to be willful, intentional, deliberate, or in conscious disregard of CommWorks' rights under the patent.

79. CommWorks has been damaged as a result of the infringing conduct by Defendants alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. RE44,904

80. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

81. The USPTO duly and lawfully reissued U.S. Patent No. RE44,904 (the "'904 patent") on May 20, 2014. The '904 patent is entitled "Method For Contention Free Traffic Detection."

82. CommWorks owns all substantial rights, interest, and title in and to the '904 patent, including the sole and exclusive right to prosecute this action and enforce the '904 patent against infringers and to collect damages for all relevant times.

83. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the

'904 patent.

84. The claims of the '904 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems.

85. The written description of the '904 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

86. For example, at the time of the invention, “conventionally ... transmission differentiation based on priority was not conducted at all.” '904 Patent at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:63-2:2. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 2:5-8. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 2:8-14. Such a huge amount of information was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:20-25.

87. The invention of the '904 Patent improved upon conventional network traffic routing systems by providing methods by which priority traffic can easily be distinguished from normal traffic without the need of complex processing making it possible to execute in a low cost and possibly low performance AP. *Id.* at col. 2:29-32, 3:2-4, 3:52-53. The methods of the invention of the '904 Patent further improved upon conventional network traffic routing systems by easily finding higher priority traffic from the stream of MAC layer frames without necessarily requiring knowledge of the upper layer protocols. *Id.* at col. 2:62-65. The methods of the invention of the '904 Patent further improved upon conventional network traffic routing systems by being protocol-independent and flexible such that their configuration may be done in an external configuration program; with the Access Point not needing to know anything about the processed traffic; further alleviating the need of complex structure of the device. *Id.* at col. 3:5-8, 3:14-21. A further advantage over conventional network traffic routing systems is that installation of new software or hardware in the network element would not be required when new protocols or modified protocols are introduced in the network. *Id.* at col. 3:22-31.

88. Defendants have directly infringed the '904 patent by importing, selling, manufacturing, offering to sell, using, providing, supplying, or distributing the Accused Products identified above.

89. Defendants have directly infringed either literally or under the doctrine of equivalents, at least claim 1 of the '904 patent, as detailed in **Exhibit D** to this Complaint (Evidence of Use Regarding U.S. Patent No. RE44,904).

90. On information and belief, Defendants, using the Accused Products, have infringed the '904 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing methods for contention free traffic detection using Wi-Fi Multimedia (“WMM”)

and/or 802.11-2007+ compatible chips, such as, for example, the Qualcomm AR6004 Chipset (included in the “Accused Products”).

91. For example, Defendants, using the Accused Products, have infringed at least claim 1 of the ’904 patent by performing a method comprising extracting a bit pattern from a predetermined position in a frame. *See Exhibit D.* The method further comprises comparing said extracted bit pattern with a search pattern. *Id.* The method further comprises identifying a received frame as a priority frame in case said extracted bit pattern matches with said search pattern. *Id.* The method further comprises forwarding said received frame to a high priority queue in case said frame is detected to be a high priority frame during a special period for sending priority traffic. *Id.* The method further comprises adjusting the duration of the special period for sending priority traffic according statistic information regarding sent priority frames. *Id.*

92. CommWorks has been damaged as a result of the infringing conduct by Defendants alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. 7,027,465

93. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

94. The USPTO duly issued U.S. Patent No. 7,027,465 (the “’465 patent”) on April 11, 2006, after full and fair examination of Application No. 10/167,986 which was filed on June 11, 2002. The ’465 patent is entitled “Method For Contention Free Traffic Detection.”

95. CommWorks owns all substantial rights, interest, and title in and to the ’465 patent, including the sole and exclusive right to prosecute this action and enforce the ’465 patent against

infringers and to collect damages for all relevant times.

96. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '465 patent.

97. The claims of the '465 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems.

98. The written description of the '465 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

99. For example, at the time of the invention, “conventionally ... transmission differentiation based on priority was not conducted at all.” '465 Patent at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:53-59. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 1:62-65. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 1:66-2:4. Such a huge amount of information

was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:11-15.

100. The invention of the '465 Patent improved upon conventional network traffic routing systems by providing methods by which priority traffic can easily be distinguished from normal traffic without the need of complex processing making it possible to execute in a low cost and possibly low performance AP. *Id.* at col. 2:19-23, 2:60-62, 3:43. The methods of the invention of the '465 Patent further improved upon conventional network traffic routing systems by easily finding higher priority traffic from the stream of MAC layer frames without necessarily requiring knowledge of the upper layer protocols. *Id.* at col. 2:53-56. The methods of the invention of the '465 Patent further improved upon conventional network traffic routing systems by being protocol-independent and flexible such that their configuration may be done in an external configuration program; with the Access Point not needing to know anything about the processed traffic; further alleviating the need of complex structure of the device. *Id.* at col. 2:63-66, col. 3:5-11. A further advantage over conventional network traffic routing systems is that installation of new software or hardware in the network element would not be required when new protocols or modified protocols are introduced in the network. *Id.* at col. 3:12-21.

101. Defendants have directly infringed the '465 patent by importing, selling, manufacturing, offering to sell, using, providing, supplying, or distributing the Accused Products identified above.

102. Defendants have directly infringed either literally or under the doctrine of equivalents, at least claim 1 of the '465 patent, as detailed in **Exhibit E** to this Complaint (Evidence of Use Regarding U.S. Patent No. 7,027,465).

103. On information and belief, Defendants, using the Accused Products, have infringed the '465 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing methods for contention free traffic detection using Wi-Fi Multimedia (WMM) and/or 802.11-2007+ compatible chips and devices, such as, for example, the Qualcomm AR6004 Chipset (included in the “Accused Products”).

104. For example, Defendants have infringed at least claim 1 of the '465 patent by performing a method for detecting priority of data frames in a network. *See Exhibit E.* The method for detecting priority of data frames comprises the step of extracting a bit pattern from a predetermined position in a frame. *Id.* The method for detecting priority of data frames further comprises the step of comparing said extracted bit pattern with a search pattern. *Id.* The method for detecting priority of data frames further comprises the step of identifying a received frame as a priority frame in case said extracted bit pattern matches with said search pattern. *Id.* In the method for detecting priority of data frames, the predetermined position in said frame is defined by the offset of said bit pattern in said frame. *Id.*

105. CommWorks has been damaged as a result of the infringing conduct by Defendant alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT VI: INFRINGEMENT OF U.S. PATENT NO. 6,891,807

106. CommWorks repeats and re-alleges the allegations in the paragraphs above as though fully set forth in their entirety.

107. The USPTO duly issued U.S. Patent No. 6,891,807 (the “’807 patent”) on May 10, 2005, after full and fair examination of Application No. 10/341,847 which was filed on January

13, 2003. The '807 patent is entitled "Time Based Wireless Access Provisioning."

108. CommWorks owns all substantial rights, interest, and title in and to the '807 patent, including the sole and exclusive right to prosecute this action and enforce the '807 patent against infringers and to collect damages for all relevant times.

109. CommWorks or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '807 patent.

110. The claims of the '807 patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting network provisioning systems.

111. The written description of the '807 patent describes in technical detail each limitation of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patently distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

112. For example, at the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '807 Patent at col. 3:5-18. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device

identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:19-28.

113. The invention of the '807 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:29-33. The invention of the '807 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:34-41. The invention of the '807 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:42-50. Moreover, the structure of the devices described in the '807 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

114. Defendants have directly infringed either literally or under the doctrine of equivalents, at least claim 17 of the '807 patent, as detailed in **Exhibit F** to this Complaint (Evidence of Use Regarding U.S. Patent No. 6,891,807).

115. On information and belief, Defendants have infringed the '807 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale,

selling, and/or importing into the United States Wi-Fi Protected Setup (“WPS”) compatible consumer electronics chips, such as, for example, the Qualcomm Networking Pro 820 Platform (included in the “Accused Products”).

116. For example, Defendants have infringed at least claim 17 of the ’807 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which include a time based network access provisioning system between a wireless device and a network. *See Exhibit F.* The time based network access provisioning system comprises a network access point connected to the network, the network access point comprising logic for tracking operation of the wireless device. *Id.* The time based network access provisioning system further comprises logic for provisioning the wireless device if the operation of the wireless device occurs within an activatable time interval. *Id.*

117. CommWorks has been damaged as a result of the infringing conduct by Defendants alleged above. Thus, Defendants are liable to CommWorks in an amount that compensates it for such infringements, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

JURY DEMAND

118. CommWorks hereby requests a trial by jury on all issues so triable by right.

PRAYER FOR RELIEF

119. CommWorks requests that the Court find in its favor and against Defendants, and that the Court grant CommWorks the following relief:

- a. Judgment that one or more claims of each of the Asserted Patents has been infringed, either literally or under the doctrine of equivalents, by the Defendant or others acting in concert therewith;

- b. Judgment that Defendants account for and pay to CommWorks all damages to and costs incurred by CommWorks because of Defendants' infringing activities and other conduct complained of herein;
- c. Judgment that Defendant's infringements of the '285, '596, and '979 patents during their life be found willful, and that the Court award treble damages for the period of such willful infringement pursuant to 35 U.S.C. § 284;
- d. Pre-judgment interest on the damages caused by Defendants' infringing activities and other conduct complained of herein;
- e. That this Court declare this an exceptional case and award CommWorks its reasonable attorneys' fees and costs in accordance with 35 U.S.C. § 285; and
- f. All other and further relief as the Court may deem just and proper under the circumstances.

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Dated: February 6, 2025

Respectfully submitted,

By: /s/ James F. McDonough, III

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List of Exhibits

- A. Evidence of Use Regarding U.S. Patent No. 7,177,285
- B. Evidence of Use Regarding U.S. Patent No. 7,463,596
- C. Evidence of Use Regarding U.S. Patent No. 7,911,979
- D. Evidence of Use Regarding U.S. Patent No. RE44,904
- E. Evidence of Use Regarding U.S. Patent No. 7,027,465
- F. Evidence of Use Regarding U.S. Patent No. 6,891,807

Attachments

- Civil Cover Sheet
- Proposed Summons (2)