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15 **UNITED STATES DISTRICT COURT**
16 **CENTRAL DISTRICT OF CALIFORNIA**
17 **SOUTHERN DIVISION**

18 SKYWORKS SOLUTIONS, INC.

19 Plaintiff,

20 v.

21 KANGXI COMMUNICATION
TECHNOLOGIES (SHANGHAI)
22 CO., LTD., GRAND CHIP LABS,
INC., D-LINK CORPORATION, D-
23 LINK SYSTEMS, INC., AND
RUIJIE NETWORKS CO., LTD.

24 Defendants.
25
26
27
28

**CASE NUMBER: 8:24-CV-00974-
FWS-ADS**

**FIRST AMENDED COMPLAINT
FOR PATENT INFRINGEMENT**

JURY TRIAL DEMANDED

1 **NATURE OF THE ACTION**

2 1. Plaintiff Skyworks Solutions, Inc. (“Skyworks”) brings this First
3 Amended Complaint for Patent Infringement in the Central District of California
4 (the “District”) against Defendants Kangxi Communication Technologies
5 (Shanghai) Co., Ltd., (“KXComTech”) and Grand Chip Labs, Inc. (“GCLI”) (collectively, “KCT” or the “KCT Defendants”); D-Link Corporation and D-Link
6 Systems, Inc. (collectively, “D-Link” or the “D-Link Defendants”); and Ruijie
7 Networks Co., Ltd. (“Ruijie”) for infringement of United States Patent Nos.
8 8,717,101 (the “101 patent”), 9,917,563 (the “563 patent”), 9,450,579 (the “579
9 patent”), and 9,148,194 (the “194 patent”) (collectively, the “Asserted Patents”).

11 **THE PARTIES**

12 **A. Skyworks**

13 2. Skyworks is a Delaware Corporation with its principal place of business
14 at 5260 California Avenue, Irvine, California 92617. Skyworks is renowned in the
15 wireless semiconductor industry for its innovative approach to radio frequency and
16 semiconductor system design. It is a worldwide leader in the wireless front-end-
17 module (“FEM”) industry based in part on the success of its strong and long-standing
18 investments in research and development right here in California and throughout the
19 United States. As discussed further below, a wireless system’s FEM is typically
20 located adjacent to the system’s antenna and comprises, for example, radio
21 frequency signal conditioning elements that operate in the analog domain, such as
22 amplification, switching, and/or filtering elements. Skyworks provides innovative
23 wireless FEM chips that are used in a wide array of products that play critical roles
24 in the U.S. economy, including in enabling reliable connectivity for the network of
25 wireless devices that power today’s economy and infrastructure.

26 3. Skyworks’ technology enables everything from daily essentials like
27 smartphones, computers, and Internet of Things (IoT) devices to societal necessities
28 like lifesaving patient telemetry in hospitals, advanced security systems, and

1 industrial automation. Skyworks’ technology also serves the aerospace and national
2 defense sectors, among others.

3 4. As one of the largest producers of wireless FEMs in the world (Dkt. 1-
4 1 [Mordor Intelligence Report] at 4), Skyworks is committed to developing
5 innovative solutions to meet the ever-evolving demands for wireless communication
6 across many industries. To that end, Skyworks spent more than \$606 million on
7 research and development in 2023 alone, for example, and it has been awarded more
8 than 4,600 patents worldwide in recognition of its pioneering innovations.
9 (Skyworks Solutions, Inc., *2023 Annual Report*, [<https://perma.cc/Y23Q-J8TG>] at
10 140.)

11 5. Skyworks employs thousands of scientists, engineers, and other
12 personnel in the United States, including at its numerous facilities right here in
13 California.

14 **B. The KCT Defendants**

15 6. Defendant KXComTech is a corporation organized under the laws of
16 China, with its principal place of business located at 5th Floor, Building 10, No.399
17 Keyuan Road, Pudong New Area, Shanghai, China.

18 7. Established in 2014, KXComTech offers multiple wireless FEM
19 products that infringe the Asserted Patents, including products compatible with at
20 least the sixth generation (802.11ax or “Wi-Fi 6”), sixth generation extended (“Wi-
21 Fi 6E”),¹ or the seventh generation (802.11b3 or “Wi-Fi 7”) protocols, among
22 others.² According to its website, KXComTech was “founded by seasoned experts
23 with global experience[] in the field of RF chip design, application, production, and
24 sales” and operates with a mission to “provide wireless devices with faster speed,
25

26 ¹ WI-Fi 6E expanded on the pre-existing Wi-Fi 6 standard by enabling access to a
27 6 GHz band.

28 ² Although KCT markets its accused wireless FEM products as compatible with
certain standards (like Wi-Fi 6, 6E, and 7), Skyworks’ Asserted Patents have not
been declared standards-essential and are not subject to any FRAND obligations.

1 lower latency, higher capacity and wider coverage for more complex and diversified
2 network access scenarios.” (KXComTech, *About Us*, [[https://perma.cc/ST82-
3 V7TA](https://perma.cc/ST82-V7TA)].) KXComTech has stated publicly that “most of [its] R&D teams” have
4 “overseas work experience” at American semiconductor companies, like Skyworks.
5 (Dkt. 1-2 [KCT Press Release] (“Most of the R&D teams ... have overseas work
6 experience in RFAxis (acquired by Skyworks in 2016), RFMD (merged into Qorvo),
7 Anadigics and other internationally renowned RF front-end chip companies[.]”.)

8 8. KXComTech purports to work with distributors to sell its products in
9 the United States, China, and Taiwan. (KXComTech, *Distributors*,
10 [<https://perma.cc/39JG-J7Y6>].) It also sells its products directly in all three markets.
11 (KXComTech, *Sales Support*, [<https://perma.cc/2PTT-F9XZ>].)

12 9. On November 17, 2023, KXComTech was officially listed on the
13 Shanghai Stock Exchange’s Science and Technology Innovation Board.
14 (KXComTech, *IPO Press Release*, [<https://perma.cc/6D7X-VUU6>].) According to
15 its public offering filings, KXComTech employs 156 people, has a market
16 capitalization of \$1.24 billion, and an enterprise value of \$1.16 billion.

17 10. GCLI is a corporation organized under Nevada law and domiciled in
18 California with a principal place of business at 14151 Newport Ave., Suite 204,
19 Tustin, CA 92780. (Dkt. 1-3 [GCLI California Corporation Registration].) GCLI is
20 a wholly owned subsidiary of KXComTech. (KXComTech, *Sales Support*,
21 [<https://perma.cc/2PTT-F9XZ>].)

22 11. On information and belief, GCLI is directly controlled by KXComTech
23 and handles business development and sales of wireless FEM products in the United
24 States for KXComTech.

25 12. KCT has recently announced its intent to attempt to displace Skyworks
26 in the market for wireless FEM chips. (Wi-Fi Now, *Meet KXcomtech: On track to
27 ship hundreds of millions in Wi-Fi FEMs in 2022*, [<https://perma.cc/R3R7-5B47>].)
28 For instance, KCT has marketed its products as pin-for-pin replacements for

1 Skyworks’ products (*see, e.g.*, Dkt 1-4 [KCT Product Roadmap Presentation] at 8-
2 24), has set up its United States sales and marketing subsidiary (GCLI) ten miles
3 from Skyworks’ corporate headquarters, and has targeted Skyworks’ current and
4 former customers—such as D-Link and Ruijie—including by directly comparing its
5 products to Skyworks’ products “in terms of linearity, efficiency, noise figure, and
6 other performance metrics” (KXComTech, *IPO Press Release*,
7 [<https://perma.cc/6D7X-VUU6>]). KCT has engaged in this conduct despite
8 knowledge of Skyworks’ patent portfolio generally and the Asserted Patents in
9 particular. On information and belief, the KCT wireless FEMs used in D-Link’s and
10 Ruijie’s products copy Skyworks’ technology, including the technology covered by
11 the Asserted Patents.

12 **C. The D-Link Defendants**

13 13. D-Link Corporation is a corporation organized under the laws of
14 Taiwan with a principal place of business at 4F 289 Sinhu 3rd Road, Neihu District,
15 Taipei, 114 Taiwan.

16 14. D-Link Systems Inc. is a corporation organized under California law
17 with a principal place of business at 14420 Myford Road, Suite 100, Irvine, CA
18 92606. (Ex. 1 [D-Link Systems Inc. California Corporation Registration]). D-Link
19 Systems Inc. is a wholly owned subsidiary of D-Link Corporation. (D-Link
20 Corporation, *2023 Annual Report*, [<https://perma.cc/9QWC-HUSZ>] at 148.)

21 15. Originally established in Taiwan in 1986 as Datex System, Inc. to
22 market network adapters, D-Link is now a multinational designer, manufacturer, and
23 seller of products ranging from surveillance cameras to whole home Wi-Fi systems.
24 D-Link sells its products worldwide, including in the U.S. where it made more than
25 \$37 million in sales in 2023 alone. (*Id.* at 167.) On information and belief, these
26 sales are made both directly and through third-party distributors.

27 16. D-Link’s Wi-Fi routers and other products utilize wireless FEMs. D-
28 Link has historically purchased these wireless FEMs from Skyworks but has recently

1 started shipping products that contain KCT wireless FEMs that KCT advertises as
2 pin-for-pin compatible with Skyworks' products. (*See, e.g.*, Dkt. 1-4 [KCT Product
3 Roadmap Presentation] at 8-24.) On information and belief, the KCT wireless FEMs
4 used in D-Link's products directly copy Skyworks' technology, including the
5 technology covered by the Asserted Patents.

6 **D. Ruijie**

7 17. Ruijie is a corporation organized under the laws of China with a
8 principal place of business at Building 19, Juyuanzhou Industrial Park, No. 618
9 Jinshan Road, Cangshan District, Fuzhou, Fujian, China.

10 18. Founded in 2003, Ruijie is a network infrastructure and solution
11 provider that produces and sells network equipment, network security products, and
12 cloud desktop solutions, among other products. Ruijie has stated publicly that it
13 "serves energy and electric power, government, entertainment and hospitality,
14 telecommunications, healthcare, transportations, finance, Internet, exhibition,
15 education, and enterprise industries." (Yahoo! Finance, *Ruijie Networks Co., Ltd.*
16 *(301165.SZ)*, [<https://perma.cc/B7J4-YH8V>].) Ruijie reported sales of more than
17 11.25 billion Chinese Yuan (approximately \$1.55 billion) in 2022 alone. (Wall
18 Street Journal, *Ruijie Networks Co. Ltd. A*, [<https://perma.cc/5TV4-VRTN>].) On
19 information and belief, these sales are made both directly and through third-party
20 distributors.

21 19. Ruijie's Wi-Fi routers and other products utilize wireless FEMs. Ruijie
22 has historically purchased these wireless FEMs from Skyworks but has recently
23 started shipping products that contain KCT wireless FEMs that KCT advertises as
24 pin-for-pin compatible with Skyworks' products. (*See, e.g.*, Dkt. 1-4 [KCT Product
25 Roadmap Presentation] at 8-24.) On information and belief, the KCT wireless FEMs
26 used in Ruijie's products directly copy Skyworks' technology, including the
27 technology covered by the Asserted Patents.

28 **JURISDICTION AND VENUE**

1 20. This is a civil action for patent infringement under the patent laws of
2 the United States, 35 U.S.C. § 1 *et seq*, including 35 U.S.C. §§ 271, 281, 283, 284,
3 and 285.

4 21. This Court has subject matter jurisdiction pursuant to 28 U.S.C.
5 §§ 1331 and 1338(a).

6 A. **The KCT Defendants**

7 i) *KXComTech*

8 22. KXComTech is subject to this Court’s specific and general personal
9 jurisdiction due at least to its substantial business in this State and District, including
10 by regularly doing or soliciting business, engaging in other persistent conduct
11 targeting residents of California and this District, and/or deriving substantial revenue
12 from infringing goods offered for sale, sold, and imported vicariously through and/or
13 in concert with its related entities, alter egos, intermediaries, agents, distributors,
14 partners, subsidiaries, clients, customers, affiliates, and/or consumers.

15 23. For instance, GCLI is responsible for selling KXComTech’s products
16 to customers in the United States and for developing KXComTech’s business in U.S.
17 markets. GCLI is 100% owned by KXComTech (Wi-Fi Now, *David L. Recker*,
18 [<https://perma.cc/AJT7-MDWU>] (identifying GCLI as a “[w]holly owned US
19 subsidiary of KXcomtech”)), and KXComTech’s chairman, Dr. Ping Peng, is
20 GCLI’s corporate president, treasurer, and sole director (Dkt. 1-5 [GCLI Corporate
21 Registration]). GCLI is registered to do business in California and maintains its
22 principal place of business in this District located at 14151 Newport Ave., Suite 204,
23 Tustin. (Dkt. 1-3 [GCLI California Corporation Registration].)

24 24. On information and belief, KXComTech also directs and authorizes the
25 sale and distribution of infringing products in California, including in this District.
26 For instance, KXComTech’s website lists an individual employed by GCLI as its
27 General Representative of North America for sales. (KXComTech, *Sales Support*,
28 [<https://perma.cc/2PTT-F9XZ>].) Further, KXComTech’s website lists Disman

1 Bakner as its United States distributor for the California market. (KXComTech,
2 *Distributors*, [<https://perma.cc/FYC6-XH8A>].) On information and belief,
3 KXComTech directs and authorizes both GCLI and Disman Bakner to distribute
4 infringing products in California.

5 25. Venue is proper in this District as to KXComTech because it is a foreign
6 corporation organized under the laws of China, with a principal place of business in
7 Shanghai, China. Because KXComTech is not a resident of the United States, it may
8 be sued in any judicial district pursuant to 28 U.S.C. § 1391(c)(3).

9 ii) GCLI

10 26. This Court has personal jurisdiction over GCLI because it is domiciled
11 in California and lists its principal place of business in California. (Dkt. 1-3 [GCLI
12 California Corporation Registration].)

13 27. This Court also has personal jurisdiction over GCLI because it regularly
14 transacts business in this District by, among other things, offering infringing
15 products to customers, business affiliates, and partners located in the District. For
16 instance, an individual employed by GCLI is listed on KXComTech’s website as
17 KXComTech’s General Representative of North America for sales. (KXComTech,
18 *Sales Support*, [<https://perma.cc/2PTT-F9XZ>].)

19 28. Venue is proper in this District as to GCLI pursuant to at least 28 U.S.C.
20 §§ 1391(b)(1), 1391(b)(2), 1391(c)(2), 1391(d), and 1400(b) because GCLI is
21 subject to personal jurisdiction in this District, has a regular and established place of
22 business in this District, and has committed acts of infringement in this District. For
23 example, GCLI lists its principal place of business as 14151 Newport Ave., Suite
24 204, Tustin, CA 92780, which is located in this District less than five miles from the
25 Ronald Reagan Federal Building and United States Courthouse. (Dkt. 1-3 [GCLI
26 California Corporation Registration].)

27 **B. The D-Link Defendants**

28 i) D-Link Corporation

1 29. D-Link Corporation is subject to this Court’s specific and general
2 personal jurisdiction due at least to its substantial business in this State and District,
3 including by regularly doing or soliciting business, engaging in other persistent
4 conduct targeting residents of California and this District, and/or deriving substantial
5 revenue from infringing goods offered for sale, sold, and imported vicariously
6 through and/or in concert with its related entities, alter egos, intermediaries, agents,
7 distributors, partners, subsidiaries, clients, customers, affiliates, and/or consumers.

8 30. For instance, D-Link Systems, Inc. is responsible for selling D-Link
9 Corporation’s products in the United States. D-Link Systems, Inc. is 100% owned
10 by D-Link Corporation. (D-Link Corporation, *2023 Annual Report*,
11 [<https://perma.cc/9QWC-HUSZ>] at 148.) D-Link Systems, Inc. is registered to do
12 business in California and has a corporate office in this District located at 14420
13 Myford Road, #100, Irvine, CA 92606. (Ex. 1 [D-Link Systems, Inc. California
14 Corporation Registration].)

15 31. Venue is proper in this District as to D-Link Corporation because it is
16 a foreign corporation organized under the laws of Taiwan, with a principal place of
17 business in Taiwan. Since D-Link Corporation is not a resident of the United States
18 it may be sued in any judicial district pursuant to 28 U.S.C. § 1391(c)(3).

19 ii) *D-Link Systems, Inc.*

20 32. This Court has personal jurisdiction over D-Link Systems, Inc. because
21 it is domiciled in California and lists its principal place of business in California.
22 (Ex. 1 [D-Link Systems, Inc. California Corporation Registration].)

23 33. This Court also has personal jurisdiction over D-Link Systems, Inc.
24 because it regularly transacts business in this District by, among other things,
25 offering infringing products to customers, business affiliates, and partners located in
26 the District.

27 34. Venue is proper in this District as to D-Link Systems, Inc. pursuant to
28 at least 28 U.S.C. §§ 1391(b)(1), 1391(b)(2), 1391(c)(2), 1391(d), and 1400(b)

1 because D-Link Systems, Inc. is subject to personal jurisdiction in this District, has
2 a regular and established place of business in this District, and has committed acts
3 of infringement in this District.

4 35. For example, D-Link Systems, Inc. lists its principal place of business
5 as 14420 Myford Road, #100, Irvine, CA 92606. (Ex. 1 [D-Link Systems, Inc.
6 California Corporation Registration].) Further, since 2019, D-Link Systems, Inc.
7 has received 350 shipments of products—including, on information and belief,
8 products that infringe the Asserted Patents—at the Port of Los Angeles, which is
9 located in this District. (ImportInfo, *D-Link Systems, Inc.*, [[https://perma.cc/WDL3-
10 B72B](https://perma.cc/WDL3-B72B)].) In fact, since 2019, D-Link Systems, Inc. has received more shipments at
11 the Port of Los Angeles than any other port in the United States. (*Id.*)

12 **C. Ruijie**

13 36. Ruijie is subject to this Court’s specific and general personal
14 jurisdiction due at least to its substantial business in this State and District, including
15 by regularly doing or soliciting business, engaging in other persistent conduct
16 targeting residents of California and this District, and/or deriving substantial revenue
17 from infringing goods offered for sale, sold, and imported vicariously through and/or
18 in concert with its related entities, alter egos, intermediaries, agents, distributors,
19 partners, subsidiaries, clients, customers, affiliates, and/or consumers.

20 37. This Court has personal jurisdiction over Ruijie because it sells
21 infringing products in the District. For instance, Ruijie purposefully engages in
22 selling infringing products in California, including in this District, via Amazon.com.
23 (Ex. 2 [Amazon Ruijie Listing]; Ex. 3 [Amazon Purchase Receipt].) Skyworks’
24 cause of action arises directly from Ruijie’s business contacts and other activities in
25 the State of California and the Central District of California.

26 38. On information and belief, Ruijie has derived revenues from its
27 infringing acts occurring within the State of California and within the District.
28

1 39. Venue is proper in this District as to Ruijie because it is a foreign
2 corporation organized under the laws of China, with a principal place of business in
3 China. Since Ruijie is not a resident of the United States it may be sued in any
4 judicial district pursuant to 28 U.S.C. § 1391(c)(3).

5 **FACTUAL BACKGROUND**

6 **A. Technology Background**

7 40. The Asserted Patents relate to an innovative collection of technologies
8 for improving the performance and design of wireless FEMs, including Wi-Fi FEMs.
9 These technologies relate to various aspects and features of FEMs, including power
10 amplifiers, low-noise amplifiers, and radio frequency switches.

11 41. Skyworks has been at the forefront of advancing wireless connectivity
12 technologies, and its commitment to innovation can be seen across all of its business
13 segments, including its wireless FEM product offerings.

14 42. Wireless FEMs are integrated circuits contained in wireless routers
15 (and many other devices) that enable the wireless router to facilitate wireless
16 communication with a user device (*e.g.*, a computer or a cell phone) so that the user
17 device can communicate with other systems, such as using the internet. As noted
18 above, wireless FEMs are typically located between the wireless router's antenna
19 and its transceiver and are generally comprised of semiconductor components,
20 including but not limited to, power amplifiers, low noise amplifiers, and switches.
21 They perform the critical task of conditioning wireless signals that are transmitted
22 and received by a device.

23 43. When a user device accesses the internet, for example, it sends signals
24 requesting data and receives the data in response. When a user device uses Wi-Fi to
25 request access to the internet, it sends a wireless signal to the wireless router. The
26 wireless router processes the signal and passes it to the internet. When the internet
27 responds, the wireless router processes the response, determines which user device
28

1 to send the response to (if there are multiple user devices connected to the wireless
2 router), and wirelessly sends the response to the appropriate user device.

3 44. Proper wireless communication between a user device and a wireless
4 router requires transmission of strong and clear wireless signals. However, myriad
5 external factors can weaken or warp the signal during transmission. As a result,
6 signals received by a wireless router often need to be adjusted so that they can reach
7 their intended destination in a discernable fashion. This signal adjustment is
8 typically performed by the wireless router's FEM.

9 45. For example, during the transmission of a wireless signal from the
10 wireless router to a user device, outside noise sources may disrupt the transmitted
11 signal. This disruption is commonly referred to as "interference," and it can decrease
12 the strength and quality of the signal sent from the wireless router to the user device.
13 To prevent this, the router sends the signal from its transceiver to the wireless FEM
14 for adjustment for wireless transmission. The wireless FEM uses power amplifiers
15 to strengthen the signal without distorting it. This reduces the impact of any
16 interference the signal might experience during transmission so that a strong and
17 clear signal can be received by the user device.

18 46. Further, when the wireless router receives a signal from the user device,
19 factors such as the distance between the wireless router and the user device can
20 reduce the signal strength. To account for this, the router uses the wireless FEM for
21 adjustment of the received wireless signal. The FEM can use its low-noise amplifier
22 to both amplify the strength of the signal and isolate the signal from interference.
23 This ensures that the signal received by the wireless router is strong enough for the
24 wireless router to properly process and route.

25 47. The Asserted Patents reflect Skyworks' many years of dedication to and
26 investment in research and development related to wireless FEMs. Designing
27 wireless FEM chips that can keep pace with new wireless networking capabilities
28 has posed significant challenges for FEM producers—especially given the

1 increasing need for smaller and more efficient chips. The technologies of the
2 Asserted Patents address these challenges by enhancing wireless FEM performance
3 in a power-efficient manner through use of improved circuitry associated with power
4 amplifiers and innovative RF switch systems.

5 **B. The Asserted Patents**³

6 59. As set forth below, KCT, D-Link, and Ruijie have been and are still
7 infringing the Asserted Patents by making, using, offering for sale, selling, or
8 importing wireless FEMs and/or products that contain wireless FEMs that practice
9 the Asserted Patents, or by contributing to infringement or inducing others to
10 infringe. Each Defendant’s acts of infringement have occurred within this District
11 and elsewhere throughout the United States.

12 i) The ’101 Patent

13 60. The ’101 patent, entitled “Apparatus and methods for biasing power
14 amplifiers,” was duly and legally issued on May 6, 2014, and has been in full force
15 and effect since its issuance. A true and correct copy of the ’101 patent has been
16 filed on the case docket at Dkt-1-6.

17 61. Skyworks owns all rights to the ’101 patent, including the full and
18 exclusive right to enforce the patent and seek all legal and equitable remedies for
19 infringement thereof.

20 62. The ’101 patent relates generally to radio frequency (“RF”) power
21 amplifier systems and methods for biasing of power amplifiers.

22 63. The ’101 patent explains that prior art power amplifiers struggled to
23 granularly manage the “amplification of a RF signal,” which is necessary because
24

25 ³ All non-technical descriptions of the Asserted Patents included in this First
26 Amended Complaint for Patent Infringement are presented to give a general
27 background to the patents. Statements made in connection with these non-technical
28 descriptions are not intended nor should they be used for purposes of patent claim
construction. Skyworks presents these statements subject to and without waiver of
its right to argue that claim terms should be construed in a particular way under claim
interpretation jurisprudence and the relevant evidence.

1 “amplifying the RF signal to an incorrect power level can cause a wireless device to
2 transmit out of band.” (Dkt 1-6 [’101 patent] at 1:28-30.) As such, the ’101 patent
3 explains that there was a need for “improved power amplifier systems” and
4 “improving power amplifier biasing.” (*Id.* at 1:31-33.)

5 64. The ’101 patent addresses this problem, for example, through a “power
6 amplifier system” that may contain a “bias block [that] includes a time dependent
7 signal generator configured to shape an enable signal of the power amplifier to
8 generate a control current, a current amplifier configured to amplify the control
9 current to generate a correction current, and a primary biasing circuit configured to
10 generate a bias current for the power amplifier based at least partly on the correction
11 current.” (*Id.* at 1:37-46.) According to the ’101 patent, such a power amplifier
12 system “correct[s] for a variation in gain of the power amplifier when the power
13 amplifier is enabled” (*id.* at 1:46-48), which “can improve the power amplifier’s
14 performance” (*id.* at 4:39-42).

15 ii) *The ’563 Patent*

16 65. The ’563 patent, entitled “Apparatus and methods for biasing of power
17 amplifiers,” was duly and legally issued on March 13, 2018, and has been in full
18 force and effect since its issuance.⁴ A true and correct copy of the ’563 patent has
19 been filed on the case docket at Dkt-1-7.

20 66. Skyworks owns all rights to the ’563 patent, including the full and
21 exclusive right to enforce the patent and seek all legal and equitable remedies for
22 infringement thereof.

23 67. The ’563 patent relates generally to RF power amplifier systems and
24 methods for biasing of power amplifiers.

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27 ⁴ The ’563 patent is a continuation of U.S. patent application No. 14/825,053, which
28 is a continuation of U.S. patent application No. 14/242,150, which is a continuation
of U.S. patent application No. 13/468,749 that issued as the ’101 patent that
Skyworks asserts in this First Amended Complaint for Patent Infringement.

1 68. The '563 patent explains that prior art power amplifiers struggled to
2 granularly manage the “amplification of a RF signal,” which is important because
3 “amplifying the RF signal to an incorrect power level can cause a wireless device to
4 transmit out of band.” (Dkt 1-7 ['563 patent] at 1:38-41.) As such, the '563 patent
5 explains that there was a need for “improved power amplifier systems” and
6 “improving power amplifier biasing.” (*Id.* at 1:42-44.)

7 69. The '563 patent addresses this problem, for example, through a “power
8 amplifier system” that may contain a “bias block [that] includes a time dependent
9 signal generator configured to shape an enable signal of the power amplifier to
10 generate a control current, a current amplifier configured to amplify the control
11 current to generate a correction current, and a primary biasing circuit configured to
12 generate a bias current for the power amplifier based at least partly on the correction
13 current.” (*Id.* at 1:48-58.) According to the '563 patent, such a power amplifier
14 system “correct[s] for a variation in gain of the power amplifier when the power
15 amplifier is enabled” (*id.* at 1:58-60), which “can improve the power amplifier’s
16 performance” (*id.* at 4:52-55). Additionally, the '563 patent describes techniques to
17 arrange the components of its inventive power amplifier system in a way that can
18 allow “the magnitude of the components of the time-dependent signal generator [to]
19 be reduced to a size suitable for on-chip integration.” (*Id.* at 9:1-7.)

20 iii) *The '579 Patent*

21 70. The '579 patent, entitled “Radio frequency devices having reduced
22 intermodulation distortion,” was duly and legally issued on September 20, 2016, and
23 has been in full force and effect since its issuance.⁵ A true and correct copy of the
24 '579 patent has been filed on the case docket at Dkt-1-8.

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28 ⁵ The '579 patent is a division of application No. 13/936,175, filed on July 6, 2013,
which issued as U.S. Patent No. 9,148,194.

1 71. Skyworks owns all rights to the '579 patent, including the full and
2 exclusive right to enforce the patent and seek all legal and equitable remedies for
3 infringement thereof.

4 72. The '579 patent relates generally to “a radio-frequency (RF) switch
5 system” designed to reduce signal interference. (Dkt. 1-8 ['579 patent] at 1:34-37.)

6 73. The '579 patent explains that “mixing products from other RF signals”
7 can cause “an unwanted signal [to be] added to a desired signal” and that “[s]uch an
8 effect can be particularly dominant in a multi-mode, multi-band environment.” (*Id.*
9 at 9:2-5.) The '579 patent refers to the unwanted signal as “intermodulation
10 distortion” or “IMD” and notes that it can “yield frequencies that are not harmonic
11 frequencies.” (*Id.* at 9:5-7.) The '579 patent explains that this is problematic
12 because it “can contribute to the introduction of spurious signals into the RF system,
13 thereby contributing to degradation of overall RF system linearity and IMD
14 performance.” (*Id.* at 6:49-53.)

15 74. The '579 patent addresses this problem, for example, through an RF
16 device designed to reduce IMD. (*Id.* at Abstract.) The RF device may contain an
17 RF switch system that “includes a switch having a stack of field-effect transistors
18 (FETs) connected in series between first and second nodes” (*id.* at 1:34-37) and “a
19 capacitor connected in series with the switch configured to inhibit a low-frequency
20 blocker system from mixing with a fundamental-frequency signal in the switch” (*id.*
21 at 1:37-40). According to the '579 patent, this system can allow for “a low-
22 frequency jammer signal [to] be blocked or reduced from mixing with any ON or
23 OFF paths” (*id.* at 9:49-53), which can improve the “linearity of the system building
24 blocks,” leading to a decrease in “the overall susceptibility of a system to
25 interference” (*id.* at 9:9-14).

26 iv) *The '194 Patent*

27 75. The '194 patent, entitled “Radio-frequency switch system having
28 improved intermodulation distortion performance,” was duly and legally issued on

1 September 29, 2015, and has been in full force and effect since its issuance. A true
2 and correct copy of the '194 patent has been filed on the case docket at Dkt-1-9.

3 76. Skyworks owns all rights to the '194 patent, including the full and
4 exclusive right to enforce the patent and seek all legal and equitable remedies for
5 infringement thereof.

6 77. The '194 patent relates generally to “a radio-frequency (RF) switch
7 system” designed to reduce signal interference. (Dkt. 1-9 ['194 patent] at 1:31-37.)

8 78. The '194 patent explains that “mixing products from other RF signals”
9 can cause “an unwanted signal [to be] added to a desired signal” and that “[s]uch an
10 effect can be particularly dominant in a multi-mode, multi-band environment.” (*Id.*
11 at 8:55-60.) The '194 patent refers to the unwanted signal as “intermodulation
12 distortion” or “IMD” and notes that it can “yield frequencies that are not harmonic
13 frequencies.” (*Id.*) The '194 patent explains that this is problematic because it “can
14 contribute to the introduction of spurious signals into the RF system, thereby
15 contributing to degradation of overall RF system linearity and IMD performance.”
16 (*Id.* at 6:38-44.)

17 79. The '194 patent addresses this problem through, for example, an RF
18 device designed to reduce IMD. (*Id.* at Abstract.) The RF device may contain an
19 RF switch system that “includes a switch having a stack of field-effect transistors
20 (FETs) connected in series between first and second nodes” (*id.* at 1:31-34) and “a
21 capacitor connected in series with the switch and configured to inhibit a low-
22 frequency blocker signal from mixing with a fundamental-frequency signal in the
23 switch” (*id.* at 1:34-37). According to the '194 patent, this system can allow for “a
24 low-frequency jammer signal [to] be blocked or reduced from mixing with any ON
25 or OFF paths,” which can “lead to improvement in IMD performance, especially for
26 low-frequency blocker signals.” (*Id.* at 9:35-38.)

27 **COUNT I – INFRINGEMENT OF U.S. PATENT NO. 8,717,101**

28 80. Skyworks re-alleges and incorporates by reference the allegations of

1 the preceding paragraphs of this First Amended Complaint for Patent Infringement,
2 as if fully set forth herein.

3 81. The '101 patent is valid and enforceable under the United States Patent
4 Laws.

5 **A. Infringement by the KCT Defendants**

6 82. KCT has been and is still infringing, directly or indirectly, literally or
7 under the doctrine of equivalents, the '101 patent by making, using, offering for sale,
8 selling, or importing infringing wireless FEMs, including, but not limited to KCT's
9 KCT8547HE, KCT8539S, KCT8239S, and KCT8576HE FEM products (the
10 "Accused KCT Products").⁶

11 83. The Accused KCT Products infringe at least claims 1, 2, 10-11, 17, 18,
12 20, 21, and 22 of the '101 patent.

13 84. For instance, the Accused KCT Products infringe independent claims
14 1, 17, and 21 of the '101 patent for at least the reasons described in Skyworks'
15 exemplary infringement charts attached to this First Amended Complaint for Patent
16 Infringement as Exhibit 4 (KCT8547HE infringement chart), Exhibit 5 (KCT8539S
17 infringement chart), and those filed on the docket at Dkt 1-12 (KCT8576HE
18 infringement chart) and Dkt. 1-13 (KCT8239S infringement chart).

19 85. With respect to claims 2 and 22, the Accused KCT Products further
20 contain a resistor-capacitor (RC) network in a time-dependent signal generator.
21 Thus, the Accused KCT Products infringe claims 2 and 22 of the '101 patent.

22 86. With respect to claim 10, the Accused KCT Products further contain a
23 bipolar transistor in a power amplifier. The bipolar transistor has an emitter, a base,
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⁶ Skyworks' infringement allegations regarding the '101 patent extend to all KCT wireless FEMs embodying an infringing power amplifier system, including without limitation KCT's Wi-Fi 6, 6E, and 7 FEMs.

1 and a collector, the base configured to receive a radio frequency (RF) signal and a
2 bias current. Thus, the Accused KCT Products infringe claim 10 of the '101 patent.

3 87. With respect to claim 11, the bipolar transistor contained in Accused
4 KCT Products has an emitter electrically connected to a power low voltage. The
5 bipolar transistor has a collector configured to generate an amplified version of the
6 RF signal. Thus, the Accused KCT Products infringe claim 11 of the '101 patent.

7 88. With respect to claim 18, the Accused KCT Products further use a
8 resistor-capacitor (RC) network of a time-dependent signal generator. Thus, the
9 Accused KCT Products infringe claim 18 of the '101 patent.

10 89. With respect to claim 20, when generating a bias current, the Accused
11 KCT Products further shape the bias current so as to compensate for a gain variation
12 of a transistor. On information and belief, the transistor is a heterojunction bipolar
13 transistor (HBT). Thus, the Accused KCT Products infringe claim 20 of the '101
14 patent.

15 90. KCT has had knowledge of the '101 patent at least since March 7, 2023,
16 when Skyworks sent a letter to KCT's President informing KCT that its 2.4 GHz
17 and 5 GHz wireless FEMs infringed the claims of certain Skyworks patents,
18 including (but not limited to) the '101 patent family, and including without limitation
19 U.S. Patent Nos. 9,136,803, 9,667,203, 9,917,563, and 10,566,943. (Dkt. 1-14 [2023
20 Notice Letter] at 1-2.) Skyworks met with KCT and gave a presentation outlining
21 KCT's infringement. Skyworks further sent a letter to KCT on April 23, 2024
22 providing notice of KCT's infringement of each Asserted Patent, including the '101
23 patent. (Dkt. 1-15 [2024 KCT Notice Letter].) Moreover, on May 8, 2024, KCT
24 issued a press release confirming its knowledge of Skyworks's infringement
25 allegations based on the '101 patent (among other patents). (Ex. 7 [Machine
26 Translated KCT Press Release].) Despite receiving notice of its infringement, KCT
27 has continued to infringe Skyworks' patented technology, including the technology
28 claimed in the '101 patent, and made no effort to avoid infringement. These actions

1 demonstrate KCT's willful, blatant, and egregious disregard for Skyworks' patent
2 rights.

3 91. On information and belief, KCT actively, knowingly, and intentionally
4 induced infringement of the '101 patent by, for example, controlling the design and
5 manufacture of, offering for sale, selling, supplying, and otherwise providing
6 instruction and guidance regarding the Accused KCT Products, with the knowledge
7 and specific intent to encourage and facilitate infringing uses of such products by
8 resellers and retailers of the Accused KCT Products and end products containing the
9 Accused KCT Products, both inside and outside the United States. For example,
10 KCT's website advertises the Accused KCT Products as integrating "a high-
11 efficiency high-linearity power amplifier (PA)" that includes a "power detector" for
12 "accurately monitoring [] output power from the [power amplifier]." (KXComTech,
13 *KCT8547HE-1*, [<https://perma.cc/7QFB-L3FW>]; KXComTech, *KCT8539S*,
14 [<https://perma.cc/WRA7-GDPD>]; KXComTech, *KCT8576HE*,
15 [<https://perma.cc/A72U-RFMF>]); *see also* KXComTech, *KCT8239S*,
16 [<https://perma.cc/NS2E-VPYU>] (describing the KCT8239S product as "a fully
17 integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which
18 incorporates key RF functionality," which is "integrated with a high-efficiency
19 power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated
20 matching network and a single-pole, double-throw (SPDT) switch all in one
21 device".) Further, KCT advertises the Accused KCT Products as being pin-to-pin
22 replacements for Skyworks' products. For instance, KCT's product roadmap
23 presentation published in the second quarter of 2023 indicated that the accused
24 KCT8576HE product is pin-to-pin compatible with Skyworks' SKY85746-11
25 product. (Dkt. 1-4 [KCT Product Roadmap Presentation] at 13.) On information
26 and belief, KCT sells and distributes infringing products to customers in the United
27 States both directly and through third-party distributors like Disman Bakner.
28 (KXComTech, *Sales Support*, [<https://perma.cc/2PTT-F9XZ>]; KXComTech,

1 *Distributors*, [<https://perma.cc/FYC6-XH8A>].) On information and belief, KCT
2 also sells the Accused KCT Products to the D-Link and Ruijie Defendants with
3 knowledge that the Accused KCT Products will be incorporated into wireless routers
4 sold by D-Link and Ruijie in the United States. On information and belief, KCT's
5 distributors, customers, and end users directly infringe the '101 patent by, for
6 example, making, using, offering to sell, and/or selling within the United States, and
7 importing into the United States, without authority or license, both the Accused KCT
8 Products themselves and/or products containing the Accused KCT Products.

9 92. KCT also contributes to infringement of the '101 patent by selling for
10 importation into the United States, importing into the United States, and/or selling
11 within the United States after importation the Accused KCT Products, which are not
12 suitable for substantial non-infringing use and which embody a material part of the
13 invention described in the '101 patent. These Accused KCT Products are known by
14 KCT to be especially made or especially adapted for use in the infringement of the
15 '101 patent. Specifically, on information and belief, KCT sells the Accused KCT
16 Products to resellers, retailers, and end product manufacturers with knowledge that
17 such entities perform acts of direct infringement with the Accused KCT Products.
18 On information and belief, KCT sells and distributes infringing products to
19 customers in the United States both directly and through third-party distributors like
20 Disman Bakner. (KXComTech, *Sales Support*, [<https://perma.cc/2PTT-F9XZ>];
21 KXComTech, *Distributors*, [<https://perma.cc/FYC6-XH8A>].) On information and
22 belief, KCT's distributors, customers, and end users directly infringe the '101 patent
23 by, for example, making, using, offering to sell, selling within the United States,
24 and/or importing into the United States, without authority or license, both the
25 Accused KCT Products themselves and/or products containing the Accused KCT
26 Products.

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1 93. As a result of KCT’s infringement of the ’101 patent, Skyworks has
2 been damaged. Skyworks is entitled to recover for damages sustained as a result of
3 KCT’s wrongful acts in an amount subject to proof at trial.

4 94. In addition, KCT’s infringing acts have caused and are causing
5 immediate and irreparable harm to Skyworks.

6 95. On information and belief, KCT’s infringement of the ’101 patent has
7 been and continues to be willful. As noted above, KCT has had knowledge of the
8 ’101 patent and its infringement of the ’101 patent since at least March 7, 2023.
9 KCT has deliberately continued to infringe in a wanton, malicious, and egregious
10 manner, with reckless disregard for Skyworks’ patent rights. Thus, KCT’s
11 infringing actions have been and continue to be consciously willful.

12 96. Based on the information alleged in this claim, Skyworks is informed
13 and believes, and thereon alleges, that this is an exceptional case—including because
14 of KCT’s copying of Skyworks’ technology in the Accused KCT Products—which
15 warrants an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

16 **B. Infringement by the D-Link Defendants**

17 97. D-Link has been and is still infringing, directly or indirectly, literally
18 or under the doctrine of equivalents, the ’101 patent by making, using, offering for
19 sale, selling, or importing wireless routers that include one or more of the Accused
20 KCT Products that practice the ’101 patent, including but not limited to the D-Link
21 AX1800 wireless router.

22 98. The D-Link AX1800 wireless router infringes the ’101 patent because
23 it contains a KCT8547HE wireless FEM. For the reasons described above (*supra*
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¶¶ 83-89), the KCT8547HE wireless FEM infringes at least claims 1, 2, 10-11, 17, 18, 20, 21, and 22 of the '101 patent.

99. An exemplary infringement chart showing infringement of independent claims 1, 17, and 21 of the '101 patent by the D-Link AX1800 wireless router is set forth as Exhibit 4.

100. D-Link actively, knowingly, and intentionally induces, and continues to actively, knowingly, and intentionally induce infringement of the '101 patent by its customers and end users. D-Link has known of the '101 patent and Skyworks' infringement allegations since at least April 23, 2024, when Skyworks sent a letter to D-Link providing notice that D-Link's AX1800 wireless router infringed enumerated claims of the '101 patent through its use of Accused KCT Products. (Ex. 8 [2024 D-Link Notice Letter].) Despite notice, D-Link nevertheless actively induces its customers, including end-users of the D-Link AX1800, to directly infringe the '101 patent by instructing, directing, and encouraging these end-users to purchase and use the D-Link AX1800 wireless router and the Accused KCT Products it contains. On information and belief, D-Link instructs, directs, and encourages its customers to infringe by advertising the AX1800 wireless router (D-Link, *AX-1800*, [<https://perma.cc/6JQD-5DVR>] (contending that the AX1800 wireless router provides "faster and more reliable Wi-Fi speeds" on both 2.4Ghz and 5GHz Wi-Fi bands in advertising materials), and providing at least installation/technical manuals, troubleshooting guides, and/or product tutorials. For instance, the D-Link AX1800's user manual lists a series of troubleshooting strategies that the end-user can perform to resolve connectivity issues, including "unplug[ing] the power to the router for 10 seconds and plug[ing] back in" and then connecting the router to the desired computer device. (D-Link, *D-Link R18 User Manual*, [[https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00\(WW\).pdf](https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00(WW).pdf)] at 141-42.) The process of starting the D-Link AX1800 wireless router

1 and connecting it to a user device like a computer is an infringing use of the Accused
2 KCT Product contained within that router, including without limitation because
3 following this instruction from D-Link causes the Accused KCT Product inside the
4 D-Link router to perform the method steps claimed in the '101 patent.

5 101. D-Link also contributes to infringement of the '101 patent by selling
6 for importation into the United States, importing into the United States, and/or
7 selling within the United States after importation the D-Link AX1800 wireless
8 router, which is not suitable for a substantial non-infringing use and which embodies
9 a material part of the invention described in the '101 patent. The D-Link AX1800
10 wireless router is known by D-Link to contain the KCT8547HE Wi-Fi FEM, which
11 is especially made or especially adapted for use in the infringement of the '101
12 patent. Specifically, on information and belief, D-Link sells the D-Link AX1800
13 wireless router to resellers, retailers, and end users with knowledge that the D-Link
14 AX1800 wireless router contains the KCT8547HE, which is used for infringement.
15 D-Link's customers directly infringe the '101 patent by, for example, using, without
16 authority or license, the D-Link AX1800 wireless router, including to perform the
17 method steps claimed by the '101 patent.

18 102. As a result of D-Link's infringement of the '101 patent, Skyworks has
19 been damaged. Skyworks is entitled to recover for damages sustained as a result of
20 D-Link's wrongful acts in an amount subject to proof at trial.

21 103. In addition, D-Link's infringing acts have caused and are causing
22 immediate and irreparable harm to Skyworks.

23 104. On information and belief, D-Link's infringement of the '101 patent
24 has been and continues to be willful. As noted above, D-Link has had knowledge of
25 the '101 patent and its infringement of the '101 patent since at least April 23, 2024.
26 D-Link has deliberately continued to infringe in a wanton, malicious, and egregious
27 manner, with reckless disregard for Skyworks' patent rights. Thus, D-Link's
28 infringing actions have been and continue to be consciously willful.

1 105. Based on the information alleged in this claim, Skyworks is informed
2 and believes, and thereon alleges, that this is an exceptional case—including because
3 of D-Link’s use of the KCT8547HE wireless FEM, which on information and belief
4 copies Skyworks’ technology, in the D-Link AX1800 wireless router—that warrants
5 an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

6 **C. Infringement by Ruijie**

7 106. Ruijie has been and is still infringing, directly or indirectly, literally or
8 under the doctrine of equivalents, the ’101 patent by making, using, offering for sale,
9 selling, or importing wireless routers that include one or more of the Accused KCT
10 Products that practice the ’101 patent, including but not limited to the Ruijie Reyee
11 E5 AX3200 wireless router.

12 107. The Ruijie Reyee E5 AX3200 wireless router infringes the ’101 patent
13 because it contains a KCT8539S Wi-Fi FEM. For the reasons described above
14 (*supra* ¶¶ 83-89), the KCT8539S Wi-Fi FEM infringes at least claims 1, 2, 10-11,
15 17, 18, 20, 21, and 22 of the ’101 patent.

16 108. An exemplary infringement chart showing infringement of independent
17 claims 1, 17, and 21 of the ’101 patent by the Ruijie Reyee E5 AX3200 wireless
18 router is set forth as Exhibit 5.

19 109. Ruijie actively, knowingly, and intentionally induces, and continues to
20 actively, knowingly, and intentionally induce infringement of the ’101 patent by its
21 customers and end users. Ruijie has known of the ’101 patent and Skyworks’
22 infringement allegations since at least April 23, 2024, when Skyworks sent a letter
23 to Ruijie providing notice that Ruijie infringes enumerated claims of the ’101 patent
24 through its use of Accused KCT Products in its Wi-Fi routers. (Ex. 9 [2024 Ruijie
25 Notice Letter].) Despite this notice, Ruijie’s infringement has continued unabated.
26 On July 11, 2024, for example, Skyworks purchased a Ruijie Reyee E5 AX3200
27 wireless router in the United States that, upon tear-down inspection, contained
28 several of the accused KCT8539S wireless FEMs. (Ex. 17 [Ruijie Product Purchase

1 Receipt]; Ex. 10 [Ruijie Board Photo].) Ruijie thus continues to actively induce
2 customers and end-users of its wireless router products containing KCT FEMs to
3 directly infringe the '101 patent, including for example by instructing, directing, and
4 encouraging these customers and end-users to purchase and use Ruijie wireless
5 routers and the Accused KCT Products they contain. On information and belief,
6 Ruijie instructs, directs, and encourages its customers to infringe by, for example,
7 advertising the Reyee E5 AX3200 wireless router (Amazon, *Ruijie Reyee E5*
8 *AX3200*, [<https://perma.cc/P8B8-NNP9>] (contending that the Reyee E5 AX3200
9 contains 8 Wi-Fi FEMs, which allows the router to provide higher Wi-Fi speeds in
10 advertising materials), and providing at least installation/technical manuals,
11 troubleshooting guides, and/or product tutorials. For instance, the Ruijie Reyee E5
12 AX3200 wireless router's user manual outlines certain steps to configure the router
13 to connect with a user device, including powering on the router, selecting the router's
14 internet connection on a user device, and connecting the device to the router. (Ruijie,
15 *Reyee E5 AX3200 User Guide*, [[https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)
16 [6-router-manual.pdf](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)] at 3-4.) The process of connecting the Ruijie Reyee E5
17 AX3200 wireless router to a user device like a computer is an infringing use of the
18 Accused KCT Product contained within that router, including without limitation
19 because following this instruction from Ruijie causes the Accused KCT Product
20 inside the Ruijie router to perform the method steps claimed in the '101 patent.

21 110. Ruijie also contributes to infringement of the '101 patent by selling for
22 importation into the United States, importing into the United States, and/or selling
23 within the United States after importation the Ruijie Reyee E5 AX3200 wireless
24 router, which is not suitable for a substantial non-infringing use and which embodies
25 a material part of the invention described in the '101 patent. The Ruijie Reyee E5
26 AX3200 wireless router is known by Ruijie to contain the KCT8539S Wi-Fi FEM,
27 which is especially made or especially adapted for use in the infringement of the
28 '101 patent. Specifically, on information and belief, Ruijie sells the Ruijie Reyee

1 E5 AX3200 wireless router to resellers, retailers, and end users with knowledge that
2 the Ruijie Reyee E5 AX3200 wireless router contains the KCT8539S, which is used
3 for infringement. Ruijie’s customers directly infringe the ’101 patent by, for
4 example, using, without authority or license, the Ruijie Reyee E5 AX3200 wireless
5 router, including to perform the method steps claimed by the ’101 patent.

6 111. As a result of Ruijie’s infringement of the ’101 patent, Skyworks has
7 been damaged. Skyworks is entitled to recover for damages sustained as a result of
8 Ruijie’s wrongful acts in an amount subject to proof at trial.

9 112. In addition, Ruijie’s infringing acts have caused and are causing
10 immediate and irreparable harm to Skyworks.

11 113. On information and belief, Ruijie’s infringement of the ’101 patent has
12 been and continues to be willful. As noted above, Ruijie has had knowledge of the
13 ’101 patent and its infringement of the ’101 patent since at least April 23, 2024.
14 Ruijie has deliberately continued to infringe in a wanton, malicious, and egregious
15 manner, with reckless disregard for Skyworks’ patent rights. Thus, Ruijie’s
16 infringing actions have been and continue to be consciously willful.

17 114. Based on the information alleged in this claim, Skyworks is informed
18 and believes, and thereon alleges, that this is an exceptional case—including because
19 of Ruijie’s use of the KCT8539S wireless FEM, which on information and belief
20 copies Skyworks’ technology, in the Ruijie Reyee E5 AX3200 wireless router —
21 that warrants an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

22 **COUNT II – INFRINGEMENT OF U.S. PATENT NO. 9,917,563**

23 115. Skyworks re-alleges and incorporates by reference the allegations of
24 the preceding paragraphs of this First Amended Complaint for Patent Infringement,
25 as if fully set forth herein.

26 116. The ’563 patent is valid and enforceable under the United States Patent
27 Laws.

28 **A. Infringement by the KCT Defendants**

1 117. KCT has been and is still infringing, directly or indirectly, literally or
2 under the doctrine of equivalents, the '563 patent by making, using, offering for sale,
3 selling, or importing wireless FEMs that infringe the '563 patent, including but not
4 limited to the Accused KCT Products.⁷

5 118. The Accused KCT Products infringe at least claims 14, 15, 17, and 20
6 of the '563 patent.

7 119. For instance, the Accused KCT Products infringe independent claim 14
8 of the '563 patent for at least reasons described in Skyworks' exemplary
9 infringement charts set forth as Exhibit 11 (KCT8547HE infringement chart),
10 Exhibit 12 (KCT8539S infringement chart), and those filed on the case docket at
11 Dkt. 1-18 (KCT8576HE infringement chart) and Dkt. 1-19 (KCT8239S
12 infringement chart).

13 120. With respect to claim 15, the Accused KCT Products further contain a
14 first transistor in a primary bias circuit. The correction current as in claim 14 (Exs.
15 11-12, Dkt 1-18, Dkt. 1-19), is configured to change a current flowing through the
16 first transistor. Thus, the Accused KCT Products infringe claim 15 of the '563
17 patent.

18 121. With respect to claim 17, the Accused KCT Products further contain a
19 current mirror in a gain correction circuit. The current mirror is configured to
20 generate the correction current by mirroring the control current as in claim 14. The
21 current mirror is further configured to receive a power amplifier enable signal. Thus,
22 the Accused KCT Products infringe claim 17 of the '563 patent.

23 122. With respect to claim 20, the Accused KCT Products further contain a
24 second transistor in a primary bias circuit. The second transistor is electrically
25 coupled to the first transistor as in claim 15. The second transistor is further
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28 ⁷ Skyworks' infringement allegations regarding the '563 patent extend, without
limitation, to all KCT wireless FEMs embodying an infringing power amplifier
system, including, without limitation, KCT's Wi-Fi 6, 6E, and 7 certified FEMs.

1 configured to provide a bias signal to a power amplifier. Thus, the Accused KCT
2 Products infringe claim 20 of the '563 patent.

3 123. KCT has had knowledge of the '563 patent at least since March 7, 2023,
4 when Skyworks sent a letter to KCT's President informing KCT that its 2.4 GHz
5 and 5 GHz wireless FEMs infringed the claims of certain Skyworks patents,
6 including (but not limited to) the '563 patent. (Dkt. 1-14 [2023 Notice Letter] at 1-
7 2.) Skyworks met with KCT and gave a presentation outlining KCT's infringement.
8 Skyworks further sent a letter to KCT on April 23, 2024, providing notice of KCT's
9 infringement of each Asserted Patent, including the '563 patent. (Dkt. 1-15 [2024
10 KCT Notice Letter].) Moreover, on May 8, 2024, KCT issued a press release
11 confirming knowledge of Skyworks' infringement allegations based on the '563
12 patent (among other patents). (Ex. 7 [Machine Translated KCT Press Release].)
13 Despite receiving notice of its infringement, KCT has continued to infringe
14 Skyworks' patented technology, including the technology claimed in the '563 patent,
15 and made no effort to avoid infringement. These actions demonstrate KCT's willful,
16 blatant, and egregious disregard for Skyworks' patent rights.

17 124. KCT actively, knowingly, and intentionally has induced and continues
18 to induce infringement of the '563 patent by, for example, controlling the design and
19 manufacture of, offering for sale, selling, supplying, and otherwise providing
20 instruction and guidance regarding the Accused KCT Products, with the knowledge
21 and specific intent to encourage and facilitate acts of direct infringement with respect
22 to such products, including by resellers, retailers, end product manufacturers, and
23 end users of the Accused KCT Products, both inside and outside the United States.
24 For example, KCT's website advertises the Accused KCT Products as integrating "a
25 high-efficiency high-linearity power amplifier (PA)" that includes a "power
26 detector" for "accurately monitoring [] output power from the [power amplifier]."
27 (KXComTech, *KCT8547HE-1*, [<https://perma.cc/7QFB-L3FW>]; KXComTech,
28 *KCT8539S*, [<https://perma.cc/WRA7-GDPD>]; KXComTech, *KCT8576HE*,

1 [https://perma.cc/A72U-RFMF]); *see also* KXComTech, *KCT8239S*,
2 [https://perma.cc/NS2E-VPYU] (describing the KCT8239S product as “a fully
3 integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which
4 incorporates key RF functionality,” which is “integrated with a high-efficiency
5 power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated
6 matching network and a single-pole, double-throw (SPDT) switch all in one
7 device”).) Further, KCT advertises the Accused KCT Products as being pin-to-pin
8 replacements for Skyworks’ products. For instance, KCT’s product roadmap
9 presentation published in the second quarter of 2023 indicated that the accused
10 KCT8576HE product is pin-to-pin compatible with Skyworks’ SKY85746-11
11 product. (Dkt. 1-4 [KCT Product Roadmap Presentation] at 13.) On information
12 and belief, KCT sells and distributes infringing products to customers in the United
13 States both directly and through third-party distributors like Disman Bakner.
14 (KXComTech, *Sales Support*, [https://perma.cc/2PTT-F9XZ]; KXComTech,
15 *Distributors*, [https://perma.cc/FYC6-XH8A].) On information and belief, KCT
16 also sells the Accused KCT Products to the D-Link and Ruijie Defendants with
17 knowledge that the Accused KCT Products will be incorporated into wireless routers
18 sold by D-Link and Ruijie in the United States. On information and belief, KCT’s
19 distributors, customers, and end users directly infringe the ’563 patent by, for
20 example, making, using, offering to sell, and/or selling within the United States, and
21 importing into the United States, without authority or license, both the Accused KCT
22 Products themselves and/or products containing the Accused KCT Products.

23 125. KCT also contributes to infringement of the ’563 patent by selling for
24 importation into the United States, importing into the United States, and/or selling
25 within the United States after importation the Accused KCT Products, which are not
26 suitable for substantial non-infringing use and which embody a material part of the
27 invention described in the ’563 patent. These Accused KCT Products are known by
28 KCT to be especially made or especially adapted for use in the infringement of the

1 '563 patent. Specifically, on information and belief, KCT sells the Accused KCT
2 Products to resellers, retailers, and end product manufacturers with knowledge that
3 such entities perform acts of direct infringement with the Accused KCT Products.
4 On information and belief, KCT sells and distributes infringing products to
5 customers in the United States both directly and through third-party distributors like
6 Disman Bakner. (KXComTech, *Sales Support*, [<https://perma.cc/2PTT-F9XZ>];
7 KXComTech, *Distributors*, [<https://perma.cc/FYC6-XH8A>].) On information and
8 belief, KCT's distributors, customers, and end users directly infringe the '563 patent
9 by, for example, making, using, offering to sell, selling within the United States,
10 and/or importing into the United States, without authority or license, both the
11 Accused KCT Products themselves and/or products containing the Accused KCT
12 Products.

13 126. As a result of KCT's infringement of the '563 patent, Skyworks has
14 been damaged. Skyworks is entitled to recover for damages sustained as a result of
15 KCT's wrongful acts in an amount subject to proof at trial.

16 127. In addition, KCT's infringing acts have caused and are causing
17 immediate and irreparable harm to Skyworks.

18 128. On information and belief, KCT's infringement of the '563 patent has
19 been and continues to be willful. As noted above, KCT has had knowledge of the
20 '563 patent and its infringement of the '563 patent since at least March 7, 2023.
21 KCT has deliberately continued to infringe in a wanton, malicious, and egregious
22 manner, with reckless disregard for Skyworks' patent rights. Thus, KCT's
23 infringing actions have been and continue to be consciously willful.

24 129. Based on the information alleged in this claim, Skyworks is informed
25 and believes, and thereon alleges, that this is an exceptional case—including because
26 of KCT's copying of Skyworks' technology in the Accused KCT Products—which
27 warrants an award of attorney's fees to Skyworks pursuant to 35 U.S.C. § 285.

28 **B. Infringement by the D-Link Defendants**

1 130. D-Link has been and is still infringing, directly or indirectly, literally
2 or under the doctrine of equivalents, the '563 patent by making, using, offering for
3 sale, selling, or importing wireless routers that include one or more of the Accused
4 KCT Products that practice the '563 patent, including but not limited to the D-Link
5 AX1800 wireless router.

6 131. The D-Link AX1800 wireless router infringes the '563 patent because
7 it contains a KCT8547HE wireless FEM. For the reasons described above (*supra*
8 ¶¶ 118-122), the KCT8547HE wireless FEM infringes at least claims 14, 15, 17, and
9 20 of the '563 patent.

10 132. An exemplary infringement chart showing infringement of independent
11 claim 14 of the '563 patent by the D-Link AX1800 wireless router is set forth as
12 Exhibit 11.

13 133. D-Link actively, knowingly, and intentionally induces, and continues
14 to actively, knowingly, and intentionally induce infringement of the '563 patent by
15 its customers and end users. D-Link has known of the '563 patent and Skyworks'
16 infringement allegations since at least April 23, 2024, when Skyworks sent a letter
17 to D-Link providing notice that D-Link's AX1800 wireless router infringed
18 enumerated claims of the '563 patent through its use of Accused KCT Products. (Ex.
19 8 [2024 D-Link Notice Letter].) Despite notice, D-Link nevertheless actively
20 induces its customers, including end-users of the D-Link AX1800, to directly
21 infringe the '563 patent by instructing, directing, and encouraging these end-users
22 to purchase and use the D-Link AX1800 wireless router and the Accused KCT
23 Product it contains. On information and belief, D-Link instructs, directs, and
24 encourages its customers to infringe by advertising the AX1800 wireless router (D-
25 Link, *AX-1800*, [<https://perma.cc/6JQD-5DVR>] (contending that the AX1800
26 wireless router provides "faster and more reliable Wi-Fi speeds" on both 2.4Ghz and
27 5GHz Wi-Fi bands in advertising materials), and providing at least
28 installation/technical manuals, troubleshooting guides, and/or product tutorials. For

1 instance, the D-Link AX1800's user manual lists a series of troubleshooting
2 strategies that the end-user can perform to resolve connectivity issues, including
3 "unplug[ing] the power to the router for 10 seconds and plug[ing] back in" and then
4 connecting the router to the desired computer device. (D-Link, *D-Link R18 User*
5 *Manual*,
6 [[https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00\(WW\).pdf](https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00(WW).pdf)] at 141-42.) D-Link's customers directly infringe because following the
7 steps D-Link instructs them to perform, including starting the D-Link router and
8 connecting it to a user device like a computer, results in an infringing use of the
9 Accused KCT Product contained within that router.
10

11 134. D-Link also contributes to infringement of the '563 patent by selling
12 for importation into the United States, importing into the United States, and/or
13 selling within the United States after importation the D-Link AX1800 wireless
14 router, which is not suitable for a substantial non-infringing use and which embodies
15 a material part of the invention described in the '563 patent. The D-Link AX1800
16 wireless router is known by D-Link to contain the KCT8547HE Wi-Fi FEM, which
17 is especially made or especially adapted for use in the infringement of the '563
18 patent. Specifically, on information and belief, D-Link sells the D-Link AX1800
19 wireless router to resellers, retailers, and end users with knowledge that the D-Link
20 AX1800 wireless router contains the KCT8547HE, which is used for infringement.
21 D-Link's customers directly infringe the '563 patent by, for example, without
22 authority or license using the D-Link AX1800 wireless router and the KCT Accused
23 Product it contains.

24 135. As a result of D-Link's infringement of the '563 patent, Skyworks has
25 been damaged. Skyworks is entitled to recover for damages sustained as a result of
26 D-Link's wrongful acts in an amount subject to proof at trial.

27 136. In addition, D-Link's infringing acts have caused and are causing
28 immediate and irreparable harm to Skyworks.

1 137. On information and belief, D-Link’s infringement of the ’563 patent
2 has been and continues to be willful. As noted above, D-Link has had knowledge of
3 the ’563 patent and its infringement of the ’563 patent since at least April 23, 2024.
4 D-Link has deliberately continued to infringe in a wanton, malicious, and egregious
5 manner, with reckless disregard for Skyworks’ patent rights. Thus, D-Link’s
6 infringing actions have been and continue to be consciously willful.

7 138. Based on the information alleged in this claim, Skyworks is informed
8 and believes, and thereon alleges, that this is an exceptional case—including because
9 of D-Link’s use of the KCT8547HE Wi-Fi FEM, which on information and belief
10 copies Skyworks’ technology, in the D-Link AX1800 wireless router—that warrants
11 an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

12 **C. Infringement by Ruijie**

13 139. Ruijie has been and is still infringing, directly or indirectly, literally or
14 under the doctrine of equivalents, the ’563 patent by making, using, offering for sale,
15 selling, or importing wireless routers that include one or more of the Accused KCT
16 Products that practice the ’563 patent, including but not limited to the Ruijie Reyee
17 E5 AX3200 wireless router.

18 140. The Ruijie Reyee E5 AX3200 wireless router infringes the ’563 patent
19 because it contains a KCT8539S wireless FEM. For the reasons described above
20 (*supra* ¶¶ 118-122), the KCT8539S Wi-Fi FEM infringes at least claims 14, 15, 17,
21 and 20 of the ’563 patent.

22 141. An exemplary infringement chart showing infringement of independent
23 claim 14 of the ’563 patent by the Ruijie Reyee E5 AX3200 wireless router is set
24 forth as Exhibit 12.

25 142. Ruijie actively, knowingly, and intentionally induces, and continues to
26 actively, knowingly, and intentionally induce infringement of the ’563 patent by its
27 customers and end users. Ruijie has known of the ’563 patent and Skyworks’
28 infringement allegations since at least April 23, 2024, when Skyworks sent a letter

1 to Ruijie providing notice that Ruijie infringes enumerated claims of the '563 patent
2 through its use of Accused KCT Products in its Wi-Fi routers. (Ex. 9 [2024 Ruijie
3 Notice Letter].) Despite this notice, Ruijie's infringement has continued unabated.
4 On July 11, 2024, for example, Skyworks purchased a Ruijie Reyee E5 AX3200
5 wireless router in the United States that, upon tear-down inspection, contained
6 several of the accused KCT8539S wireless FEMs. (Ex. 17 [Ruijie Product Purchase
7 Receipt]; Ex. 10 [Ruijie Board Photo].) Ruijie thus continues to actively induce
8 customers and end-users of its wireless router products containing KCT FEMs to
9 directly infringe the '563 patent, including for example by instructing, directing, and
10 encouraging these customers and end-users to purchase and use Ruijie wireless
11 routers and the Accused KCT Products they contain. On information and belief,
12 Ruijie instructs, directs, and encourages its customers to infringe by, for example,
13 advertising Ruijie instructs, directs, and encourages its customers to infringe by
14 advertising the Reyee E5 AX3200 wireless router (Amazon, *Ruijie Reyee E5*
15 *AX3200*, [<https://perma.cc/P8B8-NNP9>] (contending that the Reyee E5 AX3200
16 contains 8 Wi-Fi FEMs, which allows the router to provide higher Wi-Fi speeds in
17 advertising materials), and providing at least installation/technical manuals,
18 troubleshooting guides, and/or product tutorials. For instance, the Ruijie Reyee E5
19 AX3200 wireless router's user manual outlines certain steps to configure the router
20 to connect with a user device, including powering on the router, selecting the router's
21 internet connection on a user device, and connecting the device to the router. (Ruijie,
22 *Reyee E5 AX3200 User Guide*, [[https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)
23 [6-router-manual.pdf](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)] at 3-4.) Ruijie's customers directly infringe because following
24 the steps Ruijie instructs them to perform, including starting the Ruijie router and
25 connecting it to a user device like a computer, results in an infringing use of the
26 Accused KCT Product contained within that router.

27 143. Ruijie also contributes to infringement of the '563 patent by selling for
28 importation into the United States, importing into the United States, and/or selling

1 within the United States after importation the Ruijie Reyee E5 AX3200 wireless
2 router, which is not suitable for a substantial non-infringing use and which embodies
3 a material part of the invention described in the '563 patent. The Ruijie Reyee E5
4 AX3200 wireless router is known by Ruijie to contain the KCT8539S Wi-Fi FEM,
5 which is especially made or especially adapted for use in the infringement of the
6 '563 patent. Specifically, on information and belief, Ruijie sells the Ruijie Reyee
7 E5 AX3200 wireless router to resellers, retailers, and end users with knowledge that
8 the Ruijie Reyee E5 AX3200 wireless router contains the KCT8539S, which is used
9 for infringement. Ruijie's customers directly infringe the '563 patent by, for
10 example, without authority or license using the Reyee E5 AX3200 wireless router
11 and the Accused KCT Product it contains.

12 144. As a result of Ruijie's infringement of the '563 patent, Skyworks has
13 been damaged. Skyworks is entitled to recover for damages sustained as a result of
14 Ruijie's wrongful acts in an amount subject to proof at trial.

15 145. In addition, Ruijie's infringing acts have caused and are causing
16 immediate and irreparable harm to Skyworks.

17 146. On information and belief, Ruijie's infringement of the '563 patent has
18 been and continues to be willful. As noted above, Ruijie has had knowledge of the
19 '563 patent and its infringement of the '563 patent since at least since at least April
20 23, 2024. Ruijie has deliberately continued to infringe in a wanton, malicious, and
21 egregious manner, with reckless disregard for Skyworks' patent rights. Thus,
22 Ruijie's infringing actions have been and continue to be consciously willful.

23 147. Based on the information alleged in this claim, Skyworks is informed
24 and believes, and thereon alleges, that this is an exceptional case—including because
25 of Ruijie's use of the KCT8539S wireless FEM, which on information and belief
26 copies Skyworks' technology, in the Ruijie Reyee E5 AX3200 wireless router—that
27 warrants an award of attorney's fees to Skyworks pursuant to 35 U.S.C. § 285.

28 **COUNT III – INFRINGEMENT OF U.S. PATENT NO. 9,450,579**

1 148. Skyworks re-alleges and incorporates by reference the allegations of
2 the preceding paragraphs of this First Amended Complaint for Patent Infringement,
3 as if fully set forth herein.

4 149. The '579 patent is valid and enforceable under the United States Patent
5 Laws.

6 **A. Infringement by the KCT Defendants**

7 150. KCT has been and is still infringing, directly or indirectly, literally or
8 under the doctrine of equivalents, the '579 patent by making, using, offering for sale,
9 selling, or importing wireless FEMs that practice the '579 patent, including but not
10 limited to the Accused KCT Products.⁸

11 151. The Accused KCT Products infringe at least claims 1 and 7 of the '579
12 patent.

13 152. For instance, the Accused KCT Products infringe independent claims 1
14 and 7 of the '579 patent for at least the reasons described in Skyworks' exemplary
15 infringement charts set forth as Exhibits 13 (KCT8547HE infringement chart),
16 Exhibit 14 (KCT8539S infringement chart), and those filed on the docket as Dkt. 1-
17 22 (KCT8576HE infringement chart) and Dkt. 1-23 (KCT8239S infringement
18 chart).

19 153. KCT has had knowledge of the '579 patent and its infringement of the
20 '579 patent at least since April 23, 2024, when Skyworks sent a letter to KCT
21 providing notice of KCT's infringement of each Asserted Patent, including the '579
22 patent. (Dkt. 1-15 [2024 KCT Notice Letter].) Even before April 23, 2024, KCT
23 was, at a minimum, willfully blind to its infringement of the '579 patent. For
24 instance, KCT touts that "most of [its] R&D team[]" had prior overseas industry
25 experience before being hired to work at KCT, including at Skyworks. (Dkt. 1-2
26 [KCT Press Release] ("Most of the R&D teams ... have overseas work experience
27

28 ⁸ Skyworks' infringement allegations regarding the '579 patent extend, without
limitation, to all KCT wireless FEMs embodying an infringing RF switch system,
including, without limitation, KCT's Wi-Fi 6, 6E, and 7 certified FEMs.

1 [at] RFaxis (acquired by Skyworks in 2016), RFMD (merged into Qorvo), Anadigics
2 and other internationally renowned RF front-end chip companies[.]”).) KCT also
3 touts that the products developed by this team of engineers—including engineers
4 who, on information and belief, were formerly employed by Skyworks or Skyworks
5 affiliates—are “pin-to-pin” copies of Skyworks’ wireless FEM chips (Dkt. 1-4 [KCT
6 Product Roadmap Presentation] at 13), and allegedly are comparable “in terms of
7 linearity, efficiency, noise figure, and other performance metrics” (KXComTech,
8 *IPO Press Release*, [<https://perma.cc/6D7X-VUU6>]). At the same time, KCT has
9 been aware that Skyworks patented the technologies contained in its wireless FEM
10 products, and that KCT’s “pin-to-pin” copies infringed these patents, at least since
11 March 7, 2023, when Skyworks sent a letter to KCT’s President informing KCT that
12 its 2.4GHz and 5 GHz Wi-Fi FEMs infringed. (Dkt. 1-14 [2023 Notice Letter] at 1-
13 2.) Indeed, Skyworks met with KCT and gave a presentation outlining KCT’s
14 infringement. Moreover, on May 8, 2024, KCT issued a press release confirming
15 knowledge of Skyworks’s infringement allegations based on the ’579 patent (among
16 other patents). (Ex. 7 [Machine Translated KCT Press Release].) Under the
17 circumstances present here, KCT knew or should have known of the high probability
18 that it infringed Skyworks’ patented technologies, including the ’579 patent, by
19 making, using, selling, offering for sale, and importing its own pin-to-pin compatible
20 wireless FEM chips.

21 154. KCT actively, knowingly, and intentionally has induced and continues
22 to induce infringement of the ’579 patent by, for example, controlling the design and
23 manufacture of, offering for sale, selling, supplying, and otherwise providing
24 instruction and guidance regarding the Accused KCT Products, with the knowledge
25 and specific intent to encourage and facilitate acts of direct infringement with respect
26 to such products, including by resellers, retailers, end product manufacturers, and
27 end users of the Accused KCT Products, both inside and outside the United States.
28 For example, KCT’s website advertises the Accused KCT Products as integrating “a

1 high-efficiency high-linearity power amplifier (PA)” that includes a “power
2 detector” for “accurately monitoring [] output power from the [power amplifier].”
3 (KXComTech, *KCT8547HE-1*, [<https://perma.cc/7QFB-L3FW>]; KXComTech,
4 *KCT8539S*, [<https://perma.cc/WRA7-GDPD>]; KXComTech, *KCT8576HE*,
5 [<https://perma.cc/A72U-RFMF>]); *see also* KXComTech, *KCT8239S*,
6 [<https://perma.cc/NS2E-VPYU>] (describing the KCT8239S product as “a fully
7 integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which
8 incorporates key RF functionality,” which is “integrated with a high-efficiency
9 power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated
10 matching network and a single-pole, double-throw (SPDT) switch all in one
11 device”).) Further, KCT advertises the Accused KCT Products as being pin-to-pin
12 replacements for Skyworks’ products. For instance, KCT’s product roadmap
13 presentation published in the second quarter of 2023 indicated that the accused
14 KCT8576HE product is pin-to-pin compatible with Skyworks’ SKY85746-11
15 product. (Dkt. 1-4 [KCT Product Roadmap Presentation] at 13.) KCT sells and
16 distributes infringing products to customers in the United States both directly and
17 through third-party distributors like Disman Bakner. (KXComTech, *Sales Support*,
18 [<https://perma.cc/2PTT-F9XZ>]; KXComTech, *Distributors*,
19 [<https://perma.cc/FYC6-XH8A>].) KCT also sells the Accused KCT Products to the
20 D-Link and Ruijie Defendants with knowledge that the Accused KCT Products will
21 be incorporated into wireless routers sold by D-Link and Ruijie in the United States.
22 KCT’s distributors, customers, and end users directly infringe the ’579 patent by, for
23 example, making, using, offering to sell, and/or selling within the United States, and
24 importing into the United States, without authority or license, both the Accused KCT
25 Products themselves and/or products containing the Accused KCT Products.

26 155. KCT also contributes to infringement of the ’579 patent by selling for
27 importation into the United States, importing into the United States, and/or selling
28 within the United States after importation the Accused KCT Products, which are not

1 suitable for substantial non-infringing use and which embody a material part of the
2 invention described in the '579 patent. These Accused KCT Products are known by
3 KCT to be especially made or especially adapted for use in the infringement of the
4 '579 patent. Specifically, on information and belief, KCT sells the Accused KCT
5 Products to resellers, retailers, and end product manufacturers with knowledge that
6 such entities perform acts of direct infringement with the Accused KCT Products.
7 KCT sells and distributes infringing products to customers in the United States both
8 directly and through third-party distributors like Disman Bakner. (KXComTech,
9 *Sales Support*, [<https://perma.cc/2PTT-F9XZ>]; KXComTech, *Distributors*,
10 [<https://perma.cc/FYC6-XH8A>].) KCT's distributors, customers, and end users
11 directly infringe the '579 patent by, for example, making, using, offering to sell,
12 selling within the United States, and/or importing into the United States, without
13 authority or license, both the Accused KCT Products themselves and/or products
14 containing the Accused KCT Products.

15 156. As a result of KCT's infringement of the '579 patent, Skyworks has
16 been damaged. Skyworks is entitled to recover for damages sustained as a result of
17 KCT's wrongful acts in an amount subject to proof at trial.

18 157. In addition, KCT's infringing acts have caused and are causing
19 immediate and irreparable harm to Skyworks.

20 158. On information and belief, KCT's infringement of the '579 patent has
21 been and continues to be willful. As noted above, KCT has had, or should have had,
22 knowledge of the '579 patent and its infringement of the '579 patent since at least
23 April 23, 2024. KCT has deliberately continued to infringe in a wanton, malicious,
24 and egregious manner, with reckless disregard for Skyworks' patent rights. Thus,
25 KCT's infringing actions have been and continue to be consciously willful.

26 159. Based on the information alleged in this claim, Skyworks is informed
27 and believes, and thereon alleges, that this is an exceptional case—including because
28

1 of KCT’s copying of Skyworks’ technology in the Accused KCT Products—which
2 warrants an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

3 **B. Infringement by the D-Link Defendants**

4 160. D-Link has been and is still infringing, directly or indirectly, literally
5 or under the doctrine of equivalents, the ’579 patent by making, using, offering for
6 sale, selling, or importing wireless routers that include one or more of the Accused
7 KCT Products that practice the ’579 patent, including but not limited to the D-Link
8 AX1800 wireless router.

9 161. The D-Link AX1800 wireless router infringes the ’579 patent because
10 it contains a KCT8547HE Wi-Fi FEM. For the reasons described above (*supra* ¶¶
11 151-152), the KCT8547HE Wi-Fi FEM infringes at least claims 1 and 7 of the ’579
12 patent.

13 162. Exemplary infringement charts showing infringement of independent
14 claims 1 and 7 of the ’579 patent by the D-Link AX1800 wireless router are set forth
15 as Exhibit 13.

16 163. D-Link actively, knowingly, and intentionally induces, and continues
17 to actively, knowingly, and intentionally induce infringement of the ’579 patent by
18 its customers and end users. D-Link has known of the ’579 patent and Skyworks’
19 infringement allegations since at least April 23, 2024, when Skyworks sent a letter
20 to D-Link providing notice that D-Link’s AX1800 wireless router infringed
21 enumerated claims of the ’579 patent through its use of Accused KCT Products. (Ex.
22 8 [2024 D-Link Notice Letter].) Despite notice, D-Link nevertheless actively
23 induces its customers, including end-users of the D-Link AX1800, to directly
24 infringe the ’579 patent by instructing, directing, and encouraging these end-users
25 to purchase and use the D-Link AX1800 wireless router and the Accused KCT
26 Products it contains. On information and belief, D-Link instructs, directs, and
27 encourages its customers to infringe by advertising the AX1800 wireless router (D-
28 Link, AX-1800, [<https://perma.cc/6JQD-5DVR>] (contending that the AX1800

1 wireless router “reduce[s] interference between different Wi-Fi networks” in
2 advertising materials), and providing at least installation/technical manuals,
3 troubleshooting guides, and/or product tutorials. For instance, the D-Link AX1800’s
4 user manual lists a series of troubleshooting strategies that the end-user can perform
5 to resolve connectivity issues, including “unplug[ing] the power to the router for 10
6 seconds and plug[ing] back in” and then connecting the router to the desired
7 computer device. (D-Link, *D-Link R18 User Manual*,
8 [[https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00\(](https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00(WW).pdf)
9 [WW\).pdf](https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00(WW).pdf)] at 141-42.) The process of starting the D-Link AX1800 wireless router
10 and connecting it to a user device like a computer is an infringing use of the Accused
11 KCT Products contained within that router, including without limitation, because
12 following this instruction from D-Link causes the Accused KCT Products inside the
13 D-Link router to perform the method steps claimed in the ’579 patent.

14 164. D-Link also contributes to infringement of the ’579 patent by selling
15 for importation into the United States, importing into the United States, and/or
16 selling within the United States after importation the D-Link AX1800 wireless
17 router, which is not suitable for a substantial non-infringing use and which embodies
18 a material part of the invention described in the ’579 patent. The D-Link AX1800
19 wireless router is known by D-Link to contain the KCT8547HE Wi-Fi FEM, which
20 is especially made or especially adapted for use in the infringement of the ’579
21 patent. Specifically, on information and belief, D-Link sells the D-Link AX1800
22 wireless router to resellers, retailers, and end users with knowledge that the D-Link
23 AX1800 wireless router contains the KCT8547HE, which is used for infringement.
24 D-Link’s customers directly infringe the ’579 patent by, for example, using, without
25
26
27
28

1 authority or license, the D-Link AX1800 wireless router, including to perform the
2 method steps claimed by the '579 patent.

3 165. As a result of D-Link's infringement of the '579 patent, Skyworks has
4 been damaged. Skyworks is entitled to recover for damages sustained as a result of
5 D-Link's wrongful acts in an amount subject to proof at trial.

6 166. In addition, D-Link's infringing acts have caused and are causing
7 immediate and irreparable harm to Skyworks.

8 167. On information and belief, D-Link's infringement of the '579 patent
9 has been and continues to be willful. As noted above, D-Link has had, or should
10 have had, knowledge of the '579 patent and its infringement of the '579 patent since
11 at least April 23, 2024. D-Link has deliberately continued to infringe in a wanton,
12 malicious, and egregious manner, with reckless disregard for Skyworks' patent
13 rights. Thus, D-Link's infringing actions have been and continue to be consciously
14 willful.

15 168. Based on the information alleged in this claim, Skyworks is informed
16 and believes, and thereon alleges, that this is an exceptional case—including because
17 of D-Link's use of the KCT8547HE wireless FEM, which on information and belief
18 copies Skyworks' technology, in the D-Link AX1800 wireless router—that warrants
19 an award of attorney's fees to Skyworks pursuant to 35 U.S.C. § 285.

20 **C. Infringement by Ruijie**

21 169. Ruijie has been and is still infringing, directly or indirectly, literally or
22 under the doctrine of equivalents, the '579 patent by making, using, offering for sale,
23 selling, or importing wireless routers that include one or more of the Accused KCT
24 Products that practice the '579 patent, including but not limited to the Ruijie Reyee
25 E5 AX3200 wireless router.

26 170. The Ruijie Reyee E5 AX3200 wireless router infringes the '579 patent
27 because it contains a KCT8539S Wi-Fi FEM. For the reasons described above
28

1 (*supra* ¶¶ 151-152), the KCT8539S Wi-Fi FEM infringes at least claims 1 and 7 of
2 the '579 patent.

3 171. Exemplary infringement charts showing infringement of independent
4 claims 1 and 7 of the '579 patent by the Ruijie Reyee E5 AX3200 wireless router
5 are set forth as Exhibit 14.

6 172. Ruijie actively, knowingly, and intentionally induces, and continues to
7 actively, knowingly, and intentionally induce infringement of the '579 patent by its
8 customers and end users. Ruijie has known of the '579 patent and Skyworks'
9 infringement allegations since at least April 23, 2024, when Skyworks sent a letter
10 to Ruijie providing notice that Ruijie infringes enumerated claims of the '579 patent
11 through its use of Accused KCT Products in its Wi-Fi routers. (Ex. 9 [2024 Ruijie
12 Notice Letter].) Despite this notice, Ruijie's infringement has continued unabated.
13 On July 11, 2024, for example, Skyworks purchased a Ruijie Reyee E5 AX3200
14 wireless router in the United States that, upon tear-down inspection, contained
15 several of the accused KCT8539S wireless FEMs. (Ex. 17 [Ruijie Product Purchase
16 Receipt]; Ex. 10 [Ruijie Board Photo].) Ruijie thus continues to actively induce
17 customers and end-users of its wireless router products containing KCT FEMs to
18 directly infringe the '579 patent, including for example by instructing, directing, and
19 encouraging these customers and end-users to purchase and use Ruijie wireless
20 routers and the Accused KCT Products they contain. On information and belief,
21 Ruijie instructs, directs, and encourages its customers to infringe by, for example,
22 advertising the Reyee E5 AX3200 wireless router (Amazon, *Ruijie Reyee E5*
23 *AX3200*, [<https://perma.cc/P8B8-NNP9>] (contending that the Reyee E5 AX3200
24 contains 8 Wi-Fi FEMs, which allows the router to provide higher Wi-Fi speeds in
25 advertising materials), and providing at least installation/technical manuals,
26 troubleshooting guides, and/or product tutorials. For instance, the Ruijie Reyee E5
27 AX3200 wireless router's user manual outlines certain steps to configure the router
28 to connect with a user device, including powering on the router, selecting the router's

1 internet connection on a user device, and connecting the device to the router. (Ruijie,
2 *Reyee E5 AX3200 User Guide*, [[https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)
3 [6-router-manual.pdf](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)] at 3-4.) The process of starting the Ruijie Reyee E5 AX3200
4 wireless router and connecting it to a user device like a computer is an infringing use
5 of the Accused KCT Products contained within that router, including without
6 limitation, because following this instruction from Ruijie causes the Accused KCT
7 Products inside the Ruijie router to perform the method steps claimed in the '579
8 patent.

9 173. Ruijie also contributes to infringement of the '579 patent by selling for
10 importation into the United States, importing into the United States, and/or selling
11 within the United States after importation the Ruijie Reyee E5 AX3200 wireless
12 router, which is not suitable for a substantial non-infringing use and which embodies
13 a material part of the invention described in the '579 patent. The Ruijie Reyee E5
14 AX3200 wireless router is known by Ruijie to contain the KCT8539S Wi-Fi FEM,
15 which is especially made or especially adapted for use in the infringement of the
16 '579 patent. Specifically, on information and belief, Ruijie sells the Ruijie Reyee
17 E5 AX3200 wireless router to resellers, retailers, and end users with knowledge that
18 the Ruijie Reyee E5 AX3200 wireless router contains the KCT8539S, which is used
19 for infringement. Ruijie's customers directly infringe the '579 patent by, for
20 example, using, without authority or license, the Ruijie Reyee E5 AX3200 wireless
21 router, including to perform the method steps claimed by the '579 patent.

22 174. As a result of Ruijie's infringement of the '579 patent, Skyworks has
23 been damaged. Skyworks is entitled to recover for damages sustained as a result of
24 Ruijie's wrongful acts in an amount subject to proof at trial.

25 175. In addition, Ruijie's infringing acts have caused and are causing
26 immediate and irreparable harm to Skyworks.

27 176. On information and belief, Ruijie's infringement of the '579 patent has
28 been and continues to be willful. As noted above, Ruijie has had, or should have

1 had, knowledge of the '579 patent and its infringement of the '579 patent since at
2 least April 23, 2024. Ruijie has deliberately continued to infringe in a wanton,
3 malicious, and egregious manner, with reckless disregard for Skyworks' patent
4 rights. Thus, Ruijie's infringing actions have been and continue to be consciously
5 willful.

6 177. Based on the information alleged in this claim, Skyworks is informed
7 and believes, and thereon alleges, that this is an exceptional case—including because
8 of Ruijie's use of the KCT8539S wireless FEM, which on information and belief
9 copies Skyworks' technology, in the Ruijie Reyee E5 AX3200 wireless router—that
10 warrants an award of attorney's fees to Skyworks pursuant to 35 U.S.C. § 285.

11 **COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 9,148,194**

12 178. Skyworks re-alleges and incorporates by reference the allegations of
13 the preceding paragraphs of this First Amended Complaint for Patent Infringement,
14 as if fully set forth herein.

15 179. The '194 patent is valid and enforceable under the United States Patent
16 Laws.

17 **A. Infringement by the KCT Defendants**

18 180. KCT has been and is still infringing, directly or indirectly, literally or
19 under the doctrine of equivalents, the '194 patent by making, using, offering for sale,
20 selling, or importing wireless FEMs that practice the '194 patent, including but not
21 limited to the Accused KCT Products).⁹

22 181. The Accused KCT Products infringe at least claim 4 of the '194 patent
23 for at least the reasons described in Skyworks' exemplary infringement chart set
24 forth as Exhibits 15 (KCT8547HE infringement chart), Exhibit 16 (KCT8539S
25
26
27

28 ⁹ Skyworks' infringement allegations regarding the '194 patent extend, without limitation, to all KCT wireless FEMs embodying an infringing RF switch system, including, without limitation, KCT's Wi-Fi 6, 6E, and 7 certified FEMs.

1 infringement chart), and those filed on the case docket at Dkt. 1-26 (KCT8576HE
2 infringement chart) and Dkt. 1-27 (KCT8239S infringement chart).

3 182. KCT has had knowledge of the '194 patent and its infringement of the
4 '194 patent at least since April 23, 2024, when Skyworks sent a letter to KCT
5 providing notice of KCT's infringement of each Asserted Patent, including the '194
6 patent. (Dkt. 1-15 [2024 KCT Notice Letter].) Even before April 23, 2024, KCT
7 was, at a minimum, willfully blind to its infringement of the '194 patent. For
8 instance, KCT touts that “most of [its] R&D team[.]” had prior overseas industry
9 experience before being hired to work at KCT, including at Skyworks. (Dkt. 1-2
10 [KCT Press Release] (“Most of the R&D teams ... have overseas work experience
11 [at] RFaxis (acquired by Skyworks in 2016), RFMD (merged into Qorvo), Anadigics
12 and other internationally renowned RF front-end chip companies[.]”).) KCT also
13 touts that the products developed by this team of engineers—comprised at least in
14 part of engineers who, on information and belief, were formerly employed by
15 Skyworks or Skyworks affiliates—are “pin-to-pin” copies of Skyworks’ wireless
16 FEM chips (Dkt. 1-4 [KCT Product Roadmap Presentation] at 13), and allegedly are
17 comparable “in terms of linearity, efficiency, noise figure, and other performance
18 metrics” (KXComTech, *IPO Press Release*, [<https://perma.cc/6D7X-VUU6>]). At
19 the same time, KCT has been aware that Skyworks patented the technologies
20 contained in its wireless FEM products, and that KCT’s “pin-to-pin” copies
21 infringed these patents, at least since March 7, 2023, when Skyworks sent a letter to
22 KCT’s President informing KCT that its 2.4GHz and 5 GHz Wi-Fi FEMs infringed
23 other patents in Skyworks’ portfolio. (Dkt. 1-14 [2023 Notice Letter] at 1-2.)
24 Indeed, Skyworks even met with KCT and gave a presentation outlining KCT’s
25 infringement. Moreover, on May 8, 2024, KCT issued a press release confirming
26 knowledge of Skyworks’s infringement allegations based on the '194 patent (among
27 other patents). (Ex. 7 [Machine Translated KCT Press Release].) Under the
28 circumstances present here, KCT knew or should have known of the high probability

1 that it infringed Skyworks' patented technologies, including the '194 patent, by
2 making, using, selling, offering for sale, and importing its own pin-to-pin compatible
3 wireless FEM chips.

4 183. KCT actively, knowingly, and intentionally has induced and continues
5 to induce infringement of the '194 patent by, for example, controlling the design and
6 manufacture of, offering for sale, selling, supplying, and otherwise providing
7 instruction and guidance regarding the Accused KCT Products, with the knowledge
8 and specific intent to encourage and facilitate acts of direct infringement with respect
9 to such products, including by resellers, retailers, end product manufacturers, and
10 end users of the Accused KCT Products, both inside and outside the United States.
11 For example, KCT's website advertises the Accused KCT Products as integrating "a
12 high-efficiency high-linearity power amplifier (PA)" that includes a "power
13 detector" for "accurately monitoring [] output power from the [power amplifier]."
14 (KXComTech, *KCT8547HE-1*, [<https://perma.cc/7QFB-L3FW>]; KXComTech,
15 *KCT8539S*, [<https://perma.cc/WRA7-GDPD>]; KXComTech, *KCT8576HE*,
16 [<https://perma.cc/A72U-RFMF>]); *see also* KXComTech, *KCT8239S*,
17 [<https://perma.cc/NS2E-VPYU>] (describing the KCT8239S product as "a fully
18 integrated 802.11b/g/n/ac/ax WLAN RF Front-end module (FEM) which
19 incorporates key RF functionality," which is "integrated with a high-efficiency
20 power amplifier (PA), a low noise amplifier (LNA) with bypass, the associated
21 matching network and a single-pole, double-throw (SPDT) switch all in one
22 device").) Further, KCT advertises the Accused KCT Products as being pin-to-pin
23 replacements for Skyworks' products. For instance, KCT's product roadmap
24 presentation published in the second quarter of 2023 indicated that the accused
25 KCT8576HE product is pin-to-pin compatible with Skyworks' SKY85746-11
26 product. (Dkt. 1-4 [KCT Product Roadmap Presentation] at 13.) KCT sells and
27 distributes infringing products to customers in the United States both directly and
28 through third-party distributors like Disman Bakner. (KXComTech, *Sales Support*,

1 [https://perma.cc/2PTT-F9XZ]; KXComTech, *Distributors*,
2 [https://perma.cc/FYC6-XH8A].) KCT also sells the Accused KCT Products to the
3 D-Link and Ruijie Defendants with knowledge that the Accused KCT Products will
4 be incorporated into wireless routers sold by D-Link and Ruijie in the United States.
5 KCT's distributors, customers, and end users directly infringe the '194 patent by, for
6 example, making, using, offering to sell, and/or selling within the United States, and
7 importing into the United States, without authority or license, both the Accused KCT
8 Products themselves and/or products containing the Accused KCT Products.

9 184. KCT also contributes to infringement of the '194 patent by selling for
10 importation into the United States, importing into the United States, and/or selling
11 within the United States after importation the Accused KCT Products, which are not
12 suitable for substantial non-infringing use and which embody a material part of the
13 invention described in the '194 patent. These Accused KCT Products are known by
14 KCT to be especially made or especially adapted for use in the infringement of the
15 '194 patent. Specifically, on information and belief, KCT sells the Accused KCT
16 Products to resellers, retailers, and end product manufacturers with knowledge that
17 such entities perform acts of direct infringement with the Accused KCT Products.
18 KCT sells and distributes infringing products to customers in the United States both
19 directly and through third-party distributors like Disman Bakner. (KXComTech,
20 *Sales Support*, [https://perma.cc/2PTT-F9XZ]; KXComTech, *Distributors*,
21 [https://perma.cc/FYC6-XH8A].) KCT's distributors, customers, and end users
22 directly infringe the '194 patent by, for example, making, using, offering to sell,
23 selling within the United States, and/or importing into the United States, without
24 authority or license, both the Accused KCT Products themselves and/or products
25 containing the Accused KCT Products.

26 185. As a result of KCT's infringement of the '194 patent, Skyworks has
27 been damaged. Skyworks is entitled to recover for damages sustained as a result of
28 KCT's wrongful acts in an amount subject to proof at trial.

1 186. In addition, KCT’s infringing acts have caused and are causing
2 immediate and irreparable harm to Skyworks.

3 187. On information and belief, KCT’s infringement of the ’194 patent has
4 been and continues to be willful. As noted above, KCT has had, or should have had,
5 knowledge of the ’194 patent and its infringement of the ’194 patent since at least
6 April 23, 2024. KCT has deliberately continued to infringe in a wanton, malicious,
7 and egregious manner, with reckless disregard for Skyworks’ patent rights. Thus,
8 KCT’s infringing actions have been and continue to be consciously willful.

9 188. Based on the information alleged in this claim, Skyworks is informed
10 and believes, and thereon alleges, that this is an exceptional case—including because
11 of KCT’s copying of Skyworks’ technology in the Accused KCT Products—which
12 warrants an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

13 **B. Infringement by the D-Link Defendants**

14 189. D-Link has been and is still infringing, directly or indirectly, literally
15 or under the doctrine of equivalents, the ’194 patent by making, using, offering for
16 sale, selling, or importing wireless routers that include one or more of the Accused
17 KCT Products that practice the ’194 patent, including but not limited to the D-Link
18 AX1800 wireless router.

19 190. The D-Link AX1800 wireless router infringes the ’194 patent because
20 it contains a KCT8547HE Wi-Fi FEM. For the reasons described above (*supra* ¶
21 181), the KCT8547HE Wi-Fi FEM infringes at least claim 4 of the ’194 patent.

22 191. An exemplary infringement chart showing infringement of independent
23 claim 4 of the ’194 patent by the D-Link AX1800 wireless router is set forth as
24 Exhibit 15.

25 192. D-Link actively, knowingly, and intentionally induces, and continues
26 to actively, knowingly, and intentionally induce infringement of the ’194 patent by
27 its customers and end users. D-Link has known of the ’194 patent and Skyworks’
28 infringement allegations since at least April 23, 2024, when Skyworks sent a letter

1 to D-Link providing notice that D-Link's AX1800 wireless router infringed
2 enumerated claims of the '194 patent through its use of Accused KCT Products. (Ex.
3 8 [2024 D-Link Notice Letter].) Despite notice, D-Link nevertheless actively
4 induces its customers, including end-users of the D-Link AX1800, to directly
5 infringe the '194 patent by instructing, directing, and encouraging these end-users
6 to purchase and use the D-Link AX1800 wireless router and the Accused KCT
7 Products it contains. On information and belief, D-Link instructs, directs, and
8 encourages its customers to infringe by advertising the AX1800 wireless router (D-
9 Link, *AX-1800*, [<https://perma.cc/6JQD-5DVR>] (contending that the AX1800
10 wireless router "reduce[s] interference between different Wi-Fi networks" in
11 advertising materials), and providing at least installation/technical manuals,
12 troubleshooting guides, and/or product tutorials. For instance, the D-Link AX1800's
13 user manual lists a series of troubleshooting strategies that the end-user can perform
14 to resolve connectivity issues, including "unplug[ing] the power to the router for 10
15 seconds and plug[ing] back in" and then connecting the router to the desired
16 computer device. (D-Link, *D-Link R18 User Manual*,
17 [[https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00\(WW\).pdf](https://support.dlink.com/resource/products/R18/REVA/R18_A1_Manual_v1.00(WW).pdf)] at 141-42.) D-Link customers directly infringe because following the
18 steps D-Link instructs them to perform, including starting the D-Link router and
19 connecting it to a user device like a computer, results in an infringing use of the
20 Accused KCT Product contained within that router.
21

22 193. D-Link also contributes to infringement of the '194 patent by selling
23 for importation into the United States, importing into the United States, and/or
24 selling within the United States after importation the D-Link AX1800 wireless
25 router, which is not suitable for a substantial non-infringing use and which embodies
26 a material part of the invention described in the '194 patent. The D-Link AX1800
27 wireless router is known by D-Link to contain the KCT8547HE Wi-Fi FEM, which
28 is especially made or especially adapted for use in the infringement of the '194

1 patent. Specifically, on information and belief, D-Link sells the D-Link AX1800
2 wireless router to resellers, retailers, and end users with knowledge that the D-Link
3 AX1800 wireless router contains the KCT8547HE, which is used for infringement.
4 D-Link's customers directly infringe the '194 patent by, for example, without
5 authority or license using the D-Link AX1800 wireless router and the Accused KCT
6 Product it contains.

7 194. As a result of D-Link's infringement of the '194 patent, Skyworks has
8 been damaged. Skyworks is entitled to recover for damages sustained as a result of
9 D-Link's wrongful acts in an amount subject to proof at trial.

10 195. In addition, D-Link's infringing acts have caused and are causing
11 immediate and irreparable harm to Skyworks.

12 196. On information and belief, D-Link's infringement of the '194 patent
13 has been and continues to be willful. As noted above, D-Link has had, or should
14 have had, knowledge of the '194 patent and its infringement of the '194 patent since
15 at least April 23, 2024. D-Link has deliberately continued to infringe in a wanton,
16 malicious, and egregious manner, with reckless disregard for Skyworks' patent
17 rights. Thus, D-Link's infringing actions have been and continue to be consciously
18 willful.

19 197. Based on the information alleged in this claim, Skyworks is informed
20 and believes, and thereon alleges, that this is an exceptional case—including because
21 of D-Link's use of the KCT8547HE wireless FEM, which on information and belief
22 copies Skyworks' technology, in the D-Link AX1800 wireless router—that warrants
23 an award of attorney's fees to Skyworks pursuant to 35 U.S.C. § 285.

24 **C. Infringement by Ruijie**

25 198. Ruijie has been and is still infringing, directly or indirectly, literally or
26 under the doctrine of equivalents, the '194 patent by making, using, offering for sale,
27 selling, or importing wireless routers that include one or more of the Accused KCT
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1 Products that practice the '194 patent, including but not limited to the Ruijie Reyee
2 E5 AX3200 wireless router.

3 199. The Ruijie Reyee E5 AX3200 wireless router infringes the '194 patent
4 because it contains a KCT8539S Wi-Fi FEM. For the reasons described above
5 (*supra* ¶ 181), the KCT8539S Wi-Fi FEM infringes at least claim 4 of the '194
6 patent.

7 200. An exemplary infringement chart showing infringement of independent
8 claim 4 of the '194 patent by the Ruijie Reyee E5 AX3200 wireless router is set forth
9 as Exhibit 16.

10 201. Ruijie actively, knowingly, and intentionally induces, and continues to
11 actively, knowingly, and intentionally induce infringement of the '194 patent by its
12 customers and end users. Ruijie has known of the '194 patent and Skyworks'
13 infringement allegations since at least April 23, 2024, when Skyworks sent a letter
14 to Ruijie providing notice that Ruijie infringes enumerated claims of the '194 patent
15 through its use of Accused KCT Products. (Ex. 9 [2024 Ruijie Notice Letter].)
16 Despite this notice, Ruijie's infringement has continued unabated. On July 11, 2024,
17 for example, Skyworks purchased a Ruijie Reyee E5 AX3200 wireless router in the
18 United States that, upon tear-down inspection, contained several of the accused
19 KCT8539S wireless FEMs. (Ex. 17 [Ruijie Product Purchase Receipt]; Ex. 10
20 [Ruijie Board Photo].) Ruijie thus continues to actively induce customers and end-
21 users of its wireless router products containing KCT FEMs to directly infringe the
22 '194 patent, including for example by instructing, directing, and encouraging these
23 customers and end-users to purchase and use Ruijie wireless routers and the Accused
24 KCT Products they contain. On information and belief, Ruijie instructs, directs, and
25 encourages its customers to infringe by, for example, advertising the Reyee E5
26 AX3200 wireless router (Amazon, Ruijie Reyee E5 AX3200,
27 [<https://perma.cc/P8B8-NNP9>] (contending that the Reyee E5 AX3200 contains 8
28 Wi-Fi FEMs, which allows the router to provide higher Wi-Fi speeds in advertising

1 materials), and providing at least installation/technical manuals, troubleshooting
2 guides, and/or product tutorials. For instance, the Ruijie Reyee E5 AX3200 wireless
3 router's user manual outlines certain steps to configure the router to connect with a
4 user device, including powering on the router, selecting the router's internet
5 connection on a user device, and connecting the device to the router. (Ruijie, Reyee
6 E5 AX3200 User Guide, [[https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-
7 router-manual.pdf](https://manuals.plus/reyee/rg-e5-mesh-smart-wifi-6-router-manual.pdf)] at 3-4.) Ruijie customers directly infringe because following the
8 steps Ruijie instructs them to perform, including starting the Ruijie router and
9 connecting it to a user device like a computer, results in an infringing use of the
10 Accused KCT Product contained within that router.

11 202. Ruijie also contributes to infringement of the '194 patent by selling for
12 importation into the United States, importing into the United States, and/or selling
13 within the United States after importation the Ruijie Reyee E5 AX3200 wireless
14 router, which is not suitable for a substantial non-infringing use and which embodies
15 a material part of the invention described in the '194 patent. The Ruijie Reyee E5
16 AX3200 wireless router is known by Ruijie to contain the KCT8539S Wi-Fi FEM,
17 which is especially made or especially adapted for use in the infringement of the
18 '194 patent. Specifically, on information and belief, Ruijie sells the Ruijie Reyee
19 E5 AX3200 wireless router to resellers, retailers, and end users with knowledge that
20 the Ruijie Reyee E5 AX3200 wireless router contains the KCT8539S, which is used
21 for infringement. Ruijie's customers directly infringe the '194 patent by, for
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1 example, without authority or license using the Ruijie Reyee E5 AX3200 wireless
2 router and the Accused KCT Product it contains.

3 203. As a result of Ruijie’s infringement of the ’194 patent, Skyworks has
4 been damaged. Skyworks is entitled to recover for damages sustained as a result of
5 Ruijie’s wrongful acts in an amount subject to proof at trial.

6 204. In addition, Ruijie’s infringing acts have caused and are causing
7 immediate and irreparable harm to Skyworks.

8 205. On information and belief, Ruijie’s infringement of the ’194 patent has
9 been and continues to be willful. As noted above, Ruijie has had, or should have
10 had, knowledge of the ’194 patent and its infringement of the ’194 patent since at
11 least April 23, 2024. Ruijie has deliberately continued to infringe in a wanton,
12 malicious, and egregious manner, with reckless disregard for Skyworks’ patent
13 rights. Thus, Ruijie’s infringing actions have been and continue to be consciously
14 willful.

15 206. Based on the information alleged in this claim, Skyworks is informed
16 and believes, and thereon alleges, that this is an exceptional case—including because
17 of Ruijie’s use of the KCT8539S wireless FEM, which on information and belief
18 copies Skyworks’ technology, in the Ruijie Reyee E5 AX3200 wireless router—that
19 warrants an award of attorney’s fees to Skyworks pursuant to 35 U.S.C. § 285.

20 **PRAYER FOR RELIEF**

21 WHEREFORE, Skyworks respectfully requests that this Court enter judgment
22 in its favor as follows and award Skyworks the following relief:

- 23 a) A judgment that each of KCT, D-Link, and Ruijie have infringed at least one
24 or more claims of the Asserted Patents, directly and/or indirectly, literally
25 and/or under the doctrine of equivalents;
- 26 b) An award of damages sufficient to compensate Skyworks for each of KCT’s,
27 D-Link’s, and Ruijie’s infringement under 35 U.S.C. § 284;
- 28

- 1 c) An adjudication that each of KCT's, D-Link's, and Ruijie's infringement has
- 2 been willful and deliberate, and an award to Skyworks of treble damages and
- 3 pre-judgment interest under 35 U.S.C. § 284;
- 4 d) An adjudication that this case is exceptional under 35 U.S.C. § 285, and an
- 5 award to Skyworks of its reasonable attorneys' fees;
- 6 e) An award to Skyworks of its costs and expenses in this action;
- 7 f) A permanent injunction restraining and enjoining each of KCT, D-Link, and
- 8 Ruijie and their officers, directors, agents, servants, employees, successors,
- 9 assigns, parents, subsidiaries, affiliated or related companies, attorneys, and
- 10 all others in active concert or participation with any of the foregoing, from
- 11 directly or indirectly infringing the Asserted Patents;
- 12 g) Such other and further relief as the Court deems just and proper.

13 **DEMAND FOR JURY TRIAL**

14 Pursuant to Rule 38 of the Federal Rules of Civil Procedure and Local Rule
15 38-1 of this Court, Skyworks hereby demands a trial by jury as to all issues so triable.

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Dated: July 17, 2024

Respectfully Submitted,

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