

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

REDWOOD TECHNOLOGIES, LLC,

Plaintiff,

v.

EDIMAX TECHNOLOGY CO., LTD.,

Defendant.

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§ **JURY TRIAL DEMANDED**
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§ **C.A. NO. 2:22-cv-00209**
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PLAINTIFF’S COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Redwood Technologies, LLC (“Redwood”) files this Complaint against Defendant Edimax Technology Co., Ltd. (“Edimax” or “Defendant”) for infringement of U.S. Patent No. 7,688,901 (the “901 patent”), U.S. Patent No. 8,155,224 (the “224 patent”), U.S. Patent No. 8,218,501 (the “501 patent”), U.S. Patent No. 8,284,866 (the “866 patent”), and U.S. Patent No. 9,374,209 (the “209 patent”), collectively, the “Asserted Patents.”

THE PARTIES

1. Redwood Technologies, LLC is a Texas limited liability company, with a principal place of business at 812 West McDermott Dr. #1038, Allen, TX 75013.

2. On information and belief, Edimax is a corporation organized under the laws of Taiwan with a principal place of business at No. 278, Xinhu 1st Rd., Neihu District, Taipei City, Taiwan, R.O.C. Edimax is engaged in making, using, selling, offering for sale, and/or importing, and/or induces its subsidiaries, affiliates, retail partners, and customers in the making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, Wi-Fi compliant products accused of infringement. On information and belief, Edimax, along with other foreign and U.S.-based subsidiaries (which act as part of a global network of

overseas sales and manufacturing subsidiaries on behalf of Edimax), have operated as agents of one another and vicariously as parts of the same business group to work in concert together and enter into agreements that are nearer than arm's length to provide a distribution channel of infringing products within this District and the U.S. nationally.

3. Prior to the filing of the Complaint, Redwood sent a letter received by Edimax on November 8, 2021, where Redwood attempted to engage Edimax and/or its agents in licensing discussions related to the Asserted Patents for reasonable and non-discriminatory terms for a license to be taken in the absence of litigation. Edimax ignored Redwood's request to engage in licensing discussions. Indeed, Edimax has known about each of the Asserted Patents since at least November 8, 2021, when Edimax received notice of its infringement of the Asserted Patents via the letter sent by Redwood.

4. Prior to the filing of the Complaint, Redwood sent another letter received by Edimax on May 19, 2022, where Redwood again attempted to engage Edimax and/or its agents in licensing discussions related to the Asserted Patents for reasonable and non-discriminatory terms for a license to be taken in the absence of litigation. Edimax again ignored Redwood's request to engage in licensing discussions. Indeed, Edimax has known about each of the Asserted Patents since at least May 19, 2022, when Edimax received the second notice of its infringement of the Asserted Patents via the letter sent by Redwood.

5. Edimax's past and continuing making, using, selling, offering for sale, and/or importing, and/or inducing its subsidiaries, affiliates, retail partners, and customers in the making, using, selling, offering for sale, and/or importing the accused Wi-Fi compliant devices throughout the United States i) willfully infringe each of the Asserted Patents and ii) impermissibly take the significant benefits of Redwood's patented technologies without fair compensation to Redwood.

6. On information and belief, Edimax operates in agency with others, including its foreign and U.S.-based subsidiaries. *See, e.g.,* https://www.edimax.com/edimax/post/post/data/edimax/us/edimax_profile/ (“Edimax’s global presence spans across North America, Asia, and Europe. The company has branch offices in California, the Netherlands, the United Kingdom, Poland, Romania, France, Germany, Australia, India, Ukraine, UAE, Russia, Italy, Spain, China, Singapore and Hong Kong. Edimax currently serves over 70 countries via our worldwide distribution channels. Thanks to our international distribution centers and offices, we are able to offer timely logistic services and support to customers around the globe. Edimax prioritizes its customers and makes a concerted effort to fulfill all their local and global networking needs.”). Edimax is engaged in making, using, selling, offering for sale, and/or importing, and/or induces its subsidiaries, affiliates, retail partners, and customers in the making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, Wi-Fi compliant products accused of infringement. Edimax operates in agency with others, including its foreign and U.S.-based subsidiaries, to provide a distribution channel of infringing products within this District and the U.S. nationally. Edimax, itself and between and amongst its agents and foreign and U.S.-based subsidiaries, purposefully direct the Accused Products into established distribution channels within this District and the U.S. nationally.

7. On information and belief, Edimax maintains a corporate presence in the United States via at least its, U.S.-based sales subsidiaries including, Edimax Computer Company (“ECC”). ECC is a corporation organized under the laws of the State of California, with a principal place of business at 530 Technology Drive Suit 100, Irvine, California 92618. ECC is a wholly-owned subsidiary of Edimax. ECC provides sales, distribution, research, and development support

in North America for its parent Edimax, which wholly owns ECC. ECC is an agent of Edimax. At the direction and control of Edimax, U.S.-based sales subsidiaries including, ECC, import infringing Wi-Fi compliant products into the United States and this District.

8. On information and belief, Edimax and its U.S.-based sales subsidiaries (which act as part of a global network of overseas sales and manufacturing subsidiaries on behalf of Edimax) have operated as agents of one another and vicariously as parts of the same business group to work in concert together and enter into agreements that are nearer than arm's length. For example, Edimax, alone and via at least the activities of its U.S.-based sales subsidiaries (e.g., ECC), conducts business in the United States, including importing, distributing, and selling Wi-Fi compliant devices that incorporate devices, systems, and processes that infringe the Asserted Patents in Texas and this judicial district. *See Trois v. Apple Tree Auction Center, Inc.*, 882 F.3d 485, 490 (5th Cir. 2018) (“A defendant may be subject to personal jurisdiction because of the activities of its agent within the forum state....”); *see also Cephalon, Inc. v. Watson Pharmaceuticals, Inc.*, 629 F. Supp. 2d 338, 348 (D. Del. 2009) (“The agency theory may be applied not only to parents and subsidiaries, but also to companies that are ‘two arms of the same business group,’ operate in concert with each other, and enter into agreements with each other that are nearer than arm's length.”).

9. Through offers to sell, sales, imports, distributions, and other related agreements to transfer ownership of Edimax's Wi-Fi compliant devices with distributors and customers operating in and maintaining a significant business presence in the U.S. and/or its U.S. subsidiaries (e.g., ECC), Edimax does business in the U.S., the state of Texas, and in the Eastern District of Texas.

JURISDICTION AND VENUE

10. This action arises under the patent laws of the United States, namely 35 U.S.C. §§ 271, 281, and 284-285, among others.

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

12. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(c). The Defendant is a foreign entity and may be sued in any judicial district under 28 U.S.C. § 1391(c)(3).

13. This Court has general and specific personal jurisdiction over Defendant pursuant to due process and/or the Texas Long Arm Statute because, inter alia, (i) Defendant has done and continues to do business in Texas and (ii) Defendant has, directly and through intermediaries, committed and continue to commit acts of patent infringement in the State of Texas, including making, using, offering to sell, and/or selling accused products in Texas, and/or importing accused products into Texas, including by Internet sales and sales via retail and wholesale stores, inducing others to commit acts of patent infringement in Texas, and/or committing a least a portion of any other infringements alleged herein. Defendant has placed, and is continuing to place, infringing products into the stream of commerce, via an established distribution channel, with the knowledge and/or understanding that such products are sold in Texas, including in this District. Defendant has derived substantial revenues from its infringing acts occurring within Texas and within this District. Defendant has substantial business in this State and judicial district, including: (A) at least part of its infringing activities alleged herein; and (B) regularly doing or soliciting business, engaging in other persistent conduct, and/or deriving substantial revenue from infringing goods offered for sale, sold, and imported, and services provided to Texas residents vicariously through

and/or in concert with its alter egos, intermediaries, agents, distributors, importers, customers, subsidiaries, and/or consumers.

14. This Court has personal jurisdiction over Defendant, directly or through intermediaries, distributors, importers, customers, subsidiaries, and/or consumers including its U.S.-based sales subsidiaries, e.g., ECC. Through direction and control of such subsidiaries, Defendant has committed acts of direct and/or indirect patent infringement within Texas, and elsewhere within the United States, giving rise to this action and/or has established minimum contacts with Texas such that personal jurisdiction over Defendant would not offend traditional notions of fair play and substantial justice. ECC is a wholly-owned subsidiary of Edimax. The primary business of ECC is the marketing and sale of electronic products in the United States. Edimax has a 100% controlling ownership interest in ECC and maintains more than half of the voting rights for such subsidiaries as its basis for control. Upon information and belief, Edimax compensates ECC for its sales support services in the United States. As such, Edimax has a direct financial interest in its U.S.-based subsidiaries, and vice versa.

15. Personal jurisdiction is proper because Defendant has committed acts of infringement in this District. This Court has personal jurisdiction over Defendant because, *inter alia*, this action arises from activities Defendant purposefully directed towards the State of Texas and this District.

16. Exercising personal jurisdiction over Defendant in this District would not be unreasonable given Defendant's contacts in this District, the interest in this District of resolving disputes related to products sold herein, and the harm that would occur to Edimax.

17. In addition, Defendant has knowingly induced and continues to knowingly induce infringement within this District by advertising, marketing, offering for sale and/or selling devices

pre-loaded with infringing functionality within this District, to consumers, customers, manufacturers, distributors, resellers, partners, and/or end users, and providing instructions, user manuals, advertising, and/or marketing materials which facilitate, direct or encourage the use of infringing functionality with knowledge thereof.

18. Personal jurisdiction also exists specifically over Defendant because Defendant, directly or through affiliates, subsidiaries, agents, or intermediaries, transacts business in this State or purposefully directed at this State by making, importing, offering to sell, selling, and/or having sold infringing products within this State and District or purposefully directed at this State or District.

19. Personal jurisdiction also exists specifically because Defendant has overlapping executives, interlocking corporate structures, and close relationships as manufacturer, importer, and distributor of the products accused of infringement.

20. To the extent the foreign Defendant is not subject to jurisdiction in any state's court of general jurisdiction, exercising jurisdiction over Defendant in this State and this District would be consistent with due process and this State's long-arm statute and under national contacts in light of the facts alleged in this Complaint.

21. In addition, Defendant, directly or through affiliates, subsidiaries, agents, or intermediaries, places infringing products into the stream of commerce knowing they will be sold and used in Texas, and economically benefits from the retail sale of infringing products in this State. For example, Defendant's products have been sold and are available for sale in this District through online retailers such as Walmart and Amazon. Edimax also advertises its infringing products to consumers in Texas and this District through its agent's websites. *See, e.g.*, <https://www.edimax.com/edimax/us/>.

22. With respect to the '901 patent, the '224 patent, the '866 patent, and the '209 patent, the Accused Products are devices that include, but are not limited, to Defendant's devices that support IEEE 802.11n and/or IEEE 802.11ac and/or IEEE 802.11ax (e.g., CAP1300, CAP1750, WAP1750, CAP1200, IAP1200, WAP1200, CAP300, Office 1-2-3, OAP1300, OAP900, OAP1750, OAP1300 Office + 1, CAP1300 Office + 1, EW-7208APC (AC750), EW-7238RPD (N300 Dual-Band), BR-6473AX (AX3000), RE11 (AC1200), RE11S (AC1200), RG21S (AC2600), RE23S (AC2600), BR-6476AC (AC1200), BR-6478AC V3 (AC1200), BR-6478AC V2 (AC1200), BR-6478AC (AC1200), BR-6208AC V2 (AC750), BR-6208ACD (AC750), BR-6208AC (AC750), BR-6428ns V5 (N300), BR-6428ns V4 (N300), BR-6428ns V3 (N300), BR-6428ns V2 (N300), BR-6428ns + 9dBi (N300), BR-6428nC (N300), BR-6574n (N300), BR-6428ns (N300), BR-6475nD (N300 Dual-Band), EW-7428HCn (N300), EW-7438AC (AC750 Dual-Band), EW-7438PTn (N300), EW-7438RPn (N300), EW-7438RPn Air (N300), EW-7438RPn Mini (N300), EW-7438RPn V2 (N300), EW-7478AC (AC1200 Dual-Band), EW-7478APC (AC1200), EW-7612PIn V2 (N300), EW-7722UTN V2 (N300), EW-7722UTn V3 (N300), EW-7822UAC (AC1200 Dual-Band), EW-7822UAD (AC1200 Dual-Band), EW-7822ULC (AC1200 Dual-Band), EW-7822UMX (AX1800), EW-7822UTC (AC1200 Dual-Band), EW-7833AXP (AX3000), EW-7833UAC (AC1750 Dual-Band), WP-4500K (AC1200), IC-7113W, and IC-7112W) and other devices, as well as, their components, and processes related to the same. With respect to the '501 patent, the Accused Products are devices that include, but are not limited, to Defendant's devices that support IEEE 802.11r (e.g., CAP1300, WAP1750, CAP1200, and EW-7833AXP (AX3000), as well as, their components, and processes related to the same. On information and belief, Edimax controls or otherwise directs and authorizes all activities of its U.S.-based sales subsidiaries, including ECC. Such directed and authorized

activities include, the U.S.-based subsidiaries' using, offering for sale, selling, and/or importing the Accused Products, their components, and/or products containing the same that incorporate the fundamental technologies covered by the Asserted Patents. The Defendant's U.S.-based sales subsidiaries (e.g., ECC) are authorized to import, distribute, sell, or offer for sale the Accused Products on behalf of Defendant. For example, Edimax researches, designs, develops, and manufactures the Accused products, and then directs its U.S.-based sales subsidiaries to import, distribute, offer for sale, and sell the Accused Products in the United States. *See, e.g., United States v. Hui Hsiung*, 778 F.3d 738, 743 (9th Cir. 2015) (finding that the sale of infringing products to third parties rather than for direct import into the U.S. did not "place [defendants'] conduct beyond the reach of United States law [or] escape culpability under the rubric of extraterritoriality"). Furthermore, Defendant's U.S.-based sales subsidiaries also administer, on behalf of Defendant, requests for service for the Accused Products sold in the U.S., including in Texas and this judicial district. *See, e.g.,* https://www.edimax.com/edimax/form/contact_us/data/edimax/us/contact_us/. Thus, Defendant's U.S.-based sales subsidiaries, including ECC, conduct infringing activities on behalf of Defendant.

23. On information and belief, Defendant's U.S.-based sales subsidiaries' corporate presence in the United States gives Edimax substantially the same business advantages that it would have enjoyed if it conducted its business through its own offices or paid agents in the state. Defendant's U.S.-based sales subsidiaries are authorized to import, distribute, sell, and offer for sale Defendant's products, including Defendant's Accused Products, as well as their components and processes related to the same, on behalf of Defendant. For example, Defendant's U.S.-based sales subsidiaries operate within Defendant's global network of sales subsidiaries. In the U.S., including within the Eastern District of Texas, Defendant's Accused Products, as well as their

components and processes related to the same, are imported, distributed, offered for sale, and/or sold.

24. Via Defendant's alter egos, agents, intermediaries, distributors, importers, customers, subsidiaries, and/or consumers maintaining a business presence, operating in, and/or residing in the U.S., Defendant's products, including products and processes accused of infringing the Asserted Patents, are or have been widely distributed and sold in retail stores, brick and mortar and/or online, in Texas including within this judicial district. *See Litecubes, LLC v. Northern Light Products, Inc.*, 523 F.3d 1353, 1369-70 (Fed. Cir. 2008) (“[T]he sale [for purposes of § 271] occurred at the location of the buyer.”); *see also Semcon IP Inc. v. Kyocera Corp.*, No. 2:18-cv-00197-JRG, 2019 WL 1979930, at *3 (E.D. Tex. May 3, 2019) (denying accused infringer's motion to dismiss because plaintiff sufficiently plead that purchases of infringing products outside of the United States for importation into and sales to end users in the U.S. may constitute an offer to sell under § 271(a)). For example, Defendant's Accused Products are sold to end users by the U.S.-based subsidiaries, distributors, and customers, including, but not limited to, ECC, online and/or at retail stores located throughout the Eastern District of Texas.

25. On information and belief, Edimax has placed and continues to place infringing products and/or products that practice infringing processes into the stream of commerce via established distribution channels comprising at least subsidiaries and distributors, such as ECC, and customers such as Walmart and Amazon, with the knowledge and/or intent that those products are and/or will be imported, used, offered for sale, sold, and continue to be sold in the United States and Texas, including in this judicial district. As a result, Edimax has, vicariously through and/or in concert with its alter egos, agents, intermediaries, distributors, importers, customers, subsidiaries, and/or consumers, placed the Accused Products into the stream of commerce via

established distribution channels with the knowledge and/or intent that those products were sold and continue to be sold in the United States and Texas, including in this judicial district.

26. In the alternative, the Court has personal jurisdiction over Defendant under Federal Rule of Civil Procedure 4(k)(2), because the claims for patent infringement in this action arise under federal law, Defendant is not subject to the jurisdiction of the courts of general jurisdiction of any state, and exercising jurisdiction over Defendant is consistent with the U.S. Constitution.

27. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391 because, among other things, Defendant is not a resident in the United States, and thus may be sued in any judicial district, including this one, pursuant to 28 U.S.C. § 1391(c)(3). *See In re HTC Corp.*, 889 F.3d 1349, 1357 (Fed. Cir. 2018) (“The Court’s recent decision in *TC Heartland* does not alter” the alien-venue rule.).

COUNT I

(INFRINGEMENT OF U.S. PATENT NO. 7,688,901)

28. Plaintiff incorporates paragraphs 1 through 27 herein by reference.

29. Redwood is the assignee of the '901 patent, entitled “Transmission Method, Transmission Apparatus, and Reception Apparatus,” with ownership of all substantial rights in the '901 patent, including the right to exclude others and to enforce, sue, and recover damages for past and future infringements.

30. The '901 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The '901 patent issued from U.S. Patent Application No. 10/486,895.

31. Edimax has and continues to directly and/or indirectly infringe (by inducing infringement) one or more claims of the '901 patent in this judicial district and elsewhere in Texas and the United States.

32. Edimax directly infringes the '901 patent via 35 U.S.C. § 271(a) by using and/or testing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '901 patent. For example, Edimax directly infringes the '901 patent by providing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '901 patent, to its alter egos, subsidiaries, and agents that use and/or test those Accused Products. Furthermore, on information and belief, Edimax sells and makes the Accused Products outside of the United States, delivers those products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States it does so intending and/or knowing that those products are destined for the United States and/or designing those products for sale in the United States. *See, e.g., Lake Cherokee Hard Drive Techs., L.L.C. v. Marvell Semiconductor, Inc.*, 964 F. Supp. 2d 653, 658 (E.D. Tex. 2013). Furthermore, Edimax directly infringes the '901 patent through its direct involvement in the activities of its subsidiaries, including ECC, that use and/or test the Accused Products that constitute direct infringement of the '901 patent under 35 U.S.C. § 271(a). Further, Edimax is vicariously liable for this infringing conduct of its U.S.-based sales subsidiaries, e.g., ECC, (under both the alter ego and agency theories) because, as an example and on information and belief, Edimax and ECC are essentially the same company, and Edimax has the right and ability to control its subsidiaries infringing acts and receives a direct financial benefit from the infringement of its U.S.-based sales subsidiaries, e.g., ECC.

33. For example, Edimax infringes claim 1 of the '901 patent via the Accused Products. The Accused Products perform a method of transmitting modulation signals. *See, e.g.,* Sections

19.1.1 and 19.1.2 of Part 11: Wireless LAN Medium Access Control (MAC) and Physical (PHY) Specifications of IEEE Std 802.11™ -2016 (“IEEE 802.11 2016”).

34. The Accused Products each generate a plurality of modulation signals each of which is to be transmitted from a different one of a plurality of antennas, where each modulation signal is to include one or more preamble symbol groups each consisting of a plurality of preamble symbols used for demodulation. For example, the Accused Products generate modulation signals (e.g., HT-mixed format PPDU) which are transmitted from a plurality of antennas. *See, e.g.*, Sections 19.3.3 of IEEE 802.11 2016. Each OFDM symbol within a modulation signal comprises a pilot symbol sequence consisting of four pilot symbols used for demodulation. *See, e.g.*, Sections 17.3.5.9 and 19.3.11.10 of IEEE 802.11 2016.

35. The Accused Products each insert the one or more preamble symbol groups at the same one or more temporal points in each modulation signal, wherein the one or more preamble symbol groups at the one or more temporal points are orthogonal to other preamble symbol groups at the same one or more temporal points with zero mutual correlation among the plurality of modulation signals, each preamble symbol having a non-zero amplitude, and each preamble symbol group consisting of preamble symbols the quantity of which is greater than that of the plurality of modulation signals to be transmitted. For example, each of the Accused Products insert one or more OFDM symbols comprising a pilot symbol sequence in each modulation signal, where each modulation signal sent from different antennas are transmitted simultaneously in time. *See, e.g.*, Section 19.3.11.10 of IEEE 802.11 2016. The pilot symbol sequences corresponding to different spatial streams are orthogonal at the same one or more temporal points with zero mutual correlation among the plurality of spatial streams. *See, e.g.*, Table 19-19 of IEEE 802.11 2016. The pilot symbols are BPSK modulated and have a non-zero amplitude. *See, e.g.*, Section 17.3.5.9

of IEEE 802.11 2016. Each pilot symbol sequence contains four pilot symbols, which is greater than the modulation signals to be transmitted by two or three antennas utilized by the Accused Products. *See, e.g.*, Sections 19.1.1 and 19.3.11.10 of IEEE 802.11 2016.

36. The Accused Products each transmit the plurality of modulation signals, each comprising transmission data, which is different between the plurality of modulation signals, and the one or more preamble symbol groups, from the plurality of antennas, respectively, in an identical frequency band. For example, each of the Accused Products transmit the plurality of modulation signals comprising transmission data and the pilot symbol sequence from the two or three antennas in the same channel having a particular width (e.g., 20 MHz). *See, e.g.*, Section 19.3.15.1, Tables 19-28, 19-29, and 19-30, and Figure 17-13 of IEEE 802.11 2016. Each stream of data to be transmitted is divided into multiple spatial streams to form respective modulation signals having different transmission data during the encoding process. *See, e.g.*, Section 19.3.4 of IEEE 802.11 2016.

37. The technology discussion above and the exemplary Accused Products provide context for Plaintiff's infringement allegations.

38. At a minimum, Edimax has known of the '901 patent at least as early as the filing date of the complaint. In addition, Edimax has known about the '901 patent since at least November 8, 2021, when Edimax received notice of its infringement via a letter. Furthermore, Edimax has known about the '901 patent since at least May 19, 2022, when Edimax received notice of its infringement via a second letter.

39. On information and belief, since at least the above-mentioned date when Edimax was on notice of its infringement, Edimax has actively induced, under U.S.C. § 271(b), its distributors, customers, subsidiaries, testing outfits, and/or consumers that use the Accused

Products comprising all of the limitations of one or more claims of the '901 patent to directly infringe one or more claims of the '901 patent by using the '901 Accused Products. Since at least the notice provided on the above-mentioned date, Edimax does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '901 patent. Edimax intends to cause, and has taken affirmative steps to induce infringement by its distributors, importers, customers, subsidiaries, and/or consumers by at least, inter alia, creating advertisements that promote the infringing use of the Accused Products, creating and/or maintaining established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products in conformity with U.S. laws and regulations, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, testing and certifying features related to infringing features in the Accused Products, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

40. On information and belief, despite having knowledge of the '901 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '901 patent, Edimax has nevertheless continued its infringing conduct and disregarded an objectively high likelihood of infringement. Edimax's infringing activities relative to the '901 patent have been, and continue to be, willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, characteristic of a pirate, and an egregious case of misconduct beyond typical infringement such that Plaintiff is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the amount found or assessed.

41. Redwood has been damaged as a result of Edimax's infringing conduct described in this Count. Edimax is, thus, liable to Redwood in an amount that adequately compensates

Redwood for Edimax's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT II

(INFRINGEMENT OF U.S. PATENT NO. 8,155,224)

42. Plaintiff incorporates paragraphs 1 through 41 herein by reference.

43. Redwood is the assignee of the '224 patent, entitled "Transmission Method, Transmission Apparatus, and Reception Apparatus," with ownership of all substantial rights in the '224 patent, including the right to exclude others and to enforce, sue, and recover damages for past and future infringements.

44. The '224 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The '224 patent issued from U.S. Patent Application No. 12/698,917.

45. Edimax has and continues to directly and/or indirectly infringe (by inducing infringement) one or more claims of the '224 patent in this judicial district and elsewhere in Texas and the United States.

46. Edimax directly infringes the '224 patent via 35 U.S.C. § 271(a) by using and/or testing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '224 patent. For example, Edimax directly infringes the '224 patent by providing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '224 patent, to its alter egos, subsidiaries, and agents that use and/or test those Accused Products. Furthermore, on information and belief, Edimax sells and makes the Accused Products outside of the United States, delivers those products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the

United States it does so intending and/or knowing that those products are destined for the United States and/or designing those products for sale in the United States. *See, e.g., Lake Cherokee Hard Drive Techs., L.L.C. v. Marvell Semiconductor, Inc.*, 964 F. Supp. 2d 653, 658 (E.D. Tex. 2013). Furthermore, Edimax directly infringes the '224 patent through its direct involvement in the activities of its subsidiaries, including ECC, that use and/or test the Accused Products that constitute direct infringement of the '224 patent under 35 U.S.C. § 271(a). Further, Edimax is vicariously liable for this infringing conduct of its U.S.-based sales subsidiaries, e.g., ECC, (under both the alter ego and agency theories) because, as an example and on information and belief, Edimax and ECC are essentially the same company, and Edimax has the right and ability to control its subsidiaries infringing acts and receives a direct financial benefit from the infringement of its U.S.-based sales subsidiaries, e.g., ECC.

47. For example, Edimax infringes claim 1 of the '224 patent via the Accused Products. The Accused Products perform a method of transmitting modulation signals. *See, e.g.,* Sections 19.1.1 and 19.1.2 of IEEE 802.11 2016.

48. The Accused Products each generate a plurality of modulation signals, where each modulation signal to be transmitted from a different one of a plurality of antennas, where each modulation signal includes a pilot symbol sequence consisting of a plurality of pilot symbols used for demodulation. For example, each of the Accused Products generates modulation signals (e.g., HT-mixed format PPDU) which are to be sent to a plurality of antennas. *See, e.g.,* Section 19.3.3 of IEEE 802.11 2016. Each OFDM symbol includes a pilot symbol sequence consisting of four pilot symbols used for demodulation. *See, e.g.,* Sections 17.3.5.9 and 19.3.11.10 of IEEE 802.11 2016.

49. Each of the Accused Products insert each of the pilot symbol sequences at the same temporal point in each modulation signal, wherein the pilot symbol sequences are orthogonal to each other with zero mutual correlation among the plurality of modulation signals, where each pilot symbol has a non-zero amplitude, where the quantity of the plurality of pilot symbols in each sequence being greater than the quantity of the plurality of modulation signals to be transmitted. For example, the Accused Products insert each of the four pilot symbol sequences at the same temporal point in each modulation signal. *See, e.g.*, Section 19.3.11.10 of IEEE 802.11 2016. The pilot symbol sequences corresponding to different spatial streams are orthogonal and have zero mutual correlation. *See, e.g.*, Table 19-19 of IEEE 802.11 2016. The pilot symbols are BPSK modulated and have a non-zero amplitude. *See, e.g.*, Section 17.3.5.9 of IEEE 802.11 2016. Each pilot symbol sequence contains four pilot symbols, which is greater than the modulation signals to be transmitted by two or three antennas utilized by the Accused Products. *See, e.g.*, Sections 19.1.1 and 19.3.11.10 of IEEE 802.11 2016.

50. Each of the Accused Products transmit in an identical frequency band the plurality of modulation signals from the plurality of antennas, where each modulation signal comprises different transmission data and one of the pilot symbol sequences. For example, each of the Accused Products transmit the plurality of modulation signals in the same channel having a particular width (e.g., 20 MHz) from two or three antennas. *See, e.g.*, Sections 19.3.15.1, Tables 19-28, 19-29, and 19-30, and Figure 17-13 of IEEE 802.11 2016. Each stream of data is divided into multiple spatial streams by the Accused Products to form respective modulation signals comprising different transmission data during encoding. *See, e.g.*, Section 19.3.4 of IEEE 802.11 2016. Further, each of the modulation signals comprises one of the pilot symbol sequences. *See, e.g.*, Section 19.3.11.10 of IEEE 802.11 2016.

51. The technology discussion above and the exemplary Accused Products provide context for Plaintiff's infringement allegations.

52. At a minimum, Edimax has known of the '224 patent at least as early as the filing date of the complaint. In addition, Edimax has known about the '224 patent since at least November 8, 2021, when Edimax received notice of its infringement via a letter. Furthermore, Edimax has known about the '224 patent since at least May 19, 2022, when Edimax received notice of its infringement via a second letter.

53. On information and belief, since at least the above-mentioned date when Edimax was on notice of its infringement, Edimax has actively induced, under U.S.C. § 271(b), its distributors, customers, testing outfits, subsidiaries, and/or consumers that use the Accused Products comprising all of the limitations of one or more claims of the '224 patent to directly infringe one or more claims of the '224 patent by using the '224 Accused Products. Since at least the notice provided on the above-mentioned date, Edimax does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '224 patent. Edimax intends to cause, and has taken affirmative steps to induce infringement by its distributors, importers, customers, testing outfits, subsidiaries, and/or consumers by at least, inter alia, creating advertisements that promote the infringing use of the Accused Products, creating and/or maintaining established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products in conformity with U.S. laws and regulations, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, testing and certifying features related to infringing features in the Accused Products, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

54. On information and belief, despite having knowledge of the '224 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '224 patent, Edimax has nevertheless continued its infringing conduct and disregarded an objectively high likelihood of infringement. Edimax's infringing activities relative to the '224 patent have been, and continue to be, willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, characteristic of a pirate, and an egregious case of misconduct beyond typical infringement such that Plaintiff is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the amount found or assessed.

55. Redwood has been damaged as a result of Edimax's infringing conduct described in this Count. Edimax is, thus, liable to Redwood in an amount that adequately compensates Redwood for Edimax's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT III

(INFRINGEMENT OF U.S. PATENT NO. 8,218,501)

56. Plaintiff incorporates paragraphs 1 through 55 herein by reference.

57. Redwood is the assignee of the '501 patent, entitled "Data Forwarding Controller, Communication Terminal Apparatus, Data Communication System and Method, and Computer Program for Performing Handover for a Mobile Node," with ownership of all substantial rights in the '501 patent, including the right to exclude others and to enforce, sue, and recover damages for past and future infringements.

58. The '501 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The '501 patent issued from U.S. Patent Application No. 12/116,779.

59. Edimax has and continues to directly and/or indirectly infringe (by inducing infringement) one or more claims of the '501 patent in this judicial district and elsewhere in Texas and the United States.

60. Edimax directly infringes the '501 patent via 35 U.S.C. § 271(a) by making, offering for sale, using, testing, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '501 patent. For example, Edimax directly infringes the '501 patent by offering for sale, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '501 patent, to its alter egos, agents, intermediaries, distributors, importers, customers, subsidiaries, and/or consumers. Furthermore, on information and belief, Edimax sells and makes the Accused Products outside of the United States, delivers those products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States it does so intending and/or knowing that those products are destined for the United States and/or designing those products for sale in the United States, thereby directly infringing the '501 patent. *See, e.g., Lake Cherokee Hard Drive Techs., L.L.C. v. Marvell Semiconductor, Inc.*, 964 F. Supp. 2d 653, 658 (E.D. Tex. 2013). Furthermore, Edimax directly infringes the '501 patent through its direct involvement in the activities of its subsidiaries, including ECC, including by selling and offering for sale the Accused Products directly to such subsidiaries and importing the Accused Products into the United States for such subsidiaries. Such subsidiaries conduct activities that constitute direct infringement of the '501 patent under 35 U.S.C. § 271(a) by making, using, testing, offering for sale, selling, and/or importing those Accused Products. On information and belief, Edimax offers for sale, sells, and

imports the Accused Products within the U.S. to, for example, its distributors, customers, subsidiaries, importers, and/or consumers. Further, Edimax is vicariously liable for this infringing conduct of its U.S.-based sales subsidiaries, e.g., ECC, (under both the alter ego and agency theories) because, as an example and on information and belief, Edimax and ECC are essentially the same company, and Edimax has the right and ability to control its subsidiaries infringing acts and receives a direct financial benefit from the infringement of its U.S.-based sales subsidiaries, e.g., ECC.

61. For example, Edimax infringes claim 1 of the '501 patent via the Accused Products. The Accused Products comprise a mobile communication terminal apparatus which performs data transmission/reception via a network and which changes access points based on data receiving conditions. *See, e.g.*, Figure 13-5 of IEEE 802.11 2016.

62. The Accused Products each comprise circuitry and/or components (hardware and/or software) configured to acquire a MAC address of a next access point to which the Accused Products are scheduled to be connected next after a handover from a current access point, and broadcast a handover start message containing the acquired MAC address of the next access point. For example, each of the Accused Products are configured to scan for beacon frames from neighborhood access points in a Neighbor Report element comprising the BSSID and BSSID information of neighborhood access points capable of Fast BSS Transition, where the Accused Products are configured to acquire the BSSID and BSSID information of a received beacon of a target access point to be connected to next after a handover from a current access point. *See, e.g.*, Figures 9-295, 9-296, 13-5 and Sections 9.4.2.37, 11.11.10.2, 11.11.10.3, and 13.3 of IEEE 802.11 2016. Further, each of the Accused Products are configured to broadcast a start message requesting

a handover that comprises the BSSID of the target access point. *See, e.g.*, Figure 13-5 and Section 13.5.3 of IEEE 802.11 2016.

63. The Accused Products each comprise circuitry and/or components (hardware and/or software) configured to perform a handover process on condition that the Accused Products receive a handover setting completion message from a data forwarding controller as a response to the handover start message. For example, each of the Accused Products are configured to receive a handover setting completion message from a station management entity (“SME”) of the target access point in response to the handover start message, where the Accused Products are configured to perform a handover after receiving the handover setting completion message. *See, e.g.*, Figure 13-6 and Sections 9.4.1.9, 13.5.3, and 13.8.3 of IEEE 802.11 2016.

64. The Accused Products each comprise circuitry and/or components (hardware and/or software) configured to perform a background scanning process by which all wireless channels are periodically scanned to acquire and store a source MAC address of a received beacon as the MAC address of the next access point. For example, each of the Accused Products are configured to periodically scan for beacon frames from neighborhood access points in a Neighbor Report element comprising the BSSID and BSSID information of neighborhood access points capable of Fast BSS Transition, where the Accused Products are configured to acquire and store the BSSID and BSSID information of a received beacon of the target access point. *See, e.g.*, Figures 9-295, 9-296, 13-5 and Sections 9.4.2.37, 11.11.10.2, 11.11.10.3, and 13.3 of IEEE 802.11 2016.

65. The technology discussion above and the exemplary Accused Products provide context for Plaintiff’s infringement allegations.

66. At a minimum, Edimax has known of the '501 patent at least as early as the filing date of the complaint. In addition, Edimax has known about the '501 patent since at least November 8, 2021, when Edimax received notice of its infringement via a letter. Furthermore, Edimax has known about the '501 patent since at least May 19, 2022, when Edimax received notice of its infringement via a second letter.

67. On information and belief, since at least the above-mentioned date when Edimax was on notice of its infringement, Edimax has actively induced, under U.S.C. § 271(b), its distributors, customers, subsidiaries, importers, and/or consumers that import, use, purchase, offer to sell, or sell the Accused Products comprising all of the limitations of one or more claims of the '501 patent to directly infringe one or more claims of the '501 patent by using, offering for sale, selling, and/or importing the Accused Products. Since at least the notice provided on the above-mentioned date, Edimax does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '501 patent. Edimax intends to cause, and has taken affirmative steps to induce infringement by its distributors, importers, customers, subsidiaries, and/or consumers by at least, inter alia, creating advertisements that promote the infringing use of the Accused Products, creating and/or maintaining established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products in conformity with U.S. laws and regulations, distributing or making available instructions or manuals for these products to purchasers and prospective buyers, testing and certifying features related to infringing features in the Accused Products, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

68. On information and belief, despite having knowledge of the '501 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '501 patent,

Edimax has nevertheless continued its infringing conduct and disregarded an objectively high likelihood of infringement. Edimax's infringing activities relative to the '501 patent have been, and continue to be, willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, characteristic of a pirate, and an egregious case of misconduct beyond typical infringement such that Plaintiff is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the amount found or assessed.

69. Redwood has been damaged as a result of Edimax's infringing conduct described in this Count. Edimax is, thus, liable to Redwood in an amount that adequately compensates Redwood for Edimax's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT IV

(INFRINGEMENT OF U.S. PATENT NO. 8,284,866)

70. Plaintiff incorporates paragraphs 1 through 69 herein by reference.

71. Redwood is the assignee of the '866 patent, entitled "OFDM Transmission Signal Generation Apparatus and Method, and OFDM Reception Data Generation Apparatus and Method," with ownership of all substantial rights in the '866 patent, including the right to exclude others and to enforce, sue, and recover damages for past and future infringements.

72. The '866 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The '866 patent issued from U.S. Patent Application No. 13/171,121.

73. Edimax has and continues to directly and/or indirectly infringe (by inducing infringement) one or more claims of the '866 patent in this judicial district and elsewhere in Texas and the United States.

74. Edimax directly infringes the '866 patent via 35 U.S.C. § 271(a) by making, offering for sale, using, testing, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '866 patent. For example, Edimax directly infringes the '866 patent by offering for sale, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '866 patent, to its alter egos, agents, intermediaries, distributors, importers, customers, subsidiaries, and/or consumers. Furthermore, on information and belief, Edimax sells and makes the Accused Products outside of the United States, delivers those products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States it does so intending and/or knowing that those products are destined for the United States and/or designing those products for sale in the United States, thereby directly infringing the '866 patent. *See, e.g., Lake Cherokee Hard Drive Techs., L.L.C. v. Marvell Semiconductor, Inc.*, 964 F. Supp. 2d 653, 658 (E.D. Tex. 2013). Furthermore, Edimax directly infringes the '866 patent through its direct involvement in the activities of its subsidiaries, including ECC, including by selling and offering for sale the Accused Products directly to such subsidiaries and importing the Accused Products into the United States for such subsidiaries. Such subsidiaries conduct activities that constitute direct infringement of the '866 patent under 35 U.S.C. § 271(a) by making, using, testing, offering for sale, selling, and/or importing those Accused Products. On information and belief, Edimax offers for sale, sells, and imports the Accused Products within the U.S. to, for example, its distributors, customers, subsidiaries, importers, and/or consumers. Further, Edimax is vicariously liable for this infringing conduct of its U.S.-based sales subsidiaries, e.g., ECC, (under both the alter ego and agency

theories) because, as an example and on information and belief, Edimax and ECC are essentially the same company, and Edimax has the right and ability to control its subsidiaries infringing acts and receives a direct financial benefit from the infringement of its U.S.-based sales subsidiaries, e.g., ECC.

75. For example, Edimax infringes claim 1 of the '866 patent via the Accused Products. The Accused Products comprise an OFDM transmission signal generation apparatus. *See, e.g.*, Figure 19-3 of IEEE 802.11 2016.

76. The Accused Products each comprise circuitry and/or components (hardware and/or software) configured to form a plurality of transmission signals, where each of the plurality of transmission signals comprises several pilot carriers, which are located in identical carrier positions among the plurality of transmission signals. For example, each of the Accused Products comprises a spatial mapper configured to form a plurality of OFDM signals. *See, e.g.*, Section 19.3.3 and Figure 19-3 of IEEE 802.11 2016. Further, each of the OFDM signals contains, for example, four pilot carriers, in a 20MHz transmission, inserted in carrier positions of -21, -7, 7, and 21, or six pilot carriers, in a 40MHz transmission, inserted in carrier positions of -53, -25, -11, 11, 25, and 53. *See, e.g.*, Section 19.3.11.10 and Equation 19-54 of IEEE 802.11 2016. Orthogonal pilot sequences are assigned to identical time slots of pilot carriers in identical carrier positions among the plurality of OFDM signals, and identical pilot sequences are assigned to at least two of the OFDM signals. *See, e.g.*, Section 19.3.11.10 and Table 19-19 of IEEE 802.11 2016.

77. The Accused Products each comprise circuitry and/or components (hardware and/or software) of an Inverse Fourier transform section configured to convert the plurality of transmission signals to a plurality of OFDM signals to be transmitted over an identical frequency band at an identical time. *See, e.g.*, Section 19.3.3 and Figure 19-3 of IEEE 802.11 2016. For

example, the Accused Products are configured to send simultaneous transmissions that are transmitted using the same channel (e.g., a channel having a width of 20 MHz). *See, e.g.*, Section 19.3.15.1 and Tables 19-28, 19-29, and 19-30 of IEEE 802.11 2016.

78. The technology discussion above and the exemplary Accused Products provide context for Plaintiff's infringement allegations.

79. At a minimum, Edimax has known of the '866 patent at least as early as the filing date of the complaint. In addition, Edimax has known about the '866 patent since at least November 8, 2021, when Edimax received notice of its infringement via a letter and list of relevant patents. Furthermore, Edimax has known about the '866 patent since at least May 19, 2022, when Edimax received notice of its infringement via a second letter.

80. On information and belief, since at least the above-mentioned date when Edimax was on notice of its infringement, Edimax has actively induced, under U.S.C. § 271(b), its distributors, customers, testing outfits, subsidiaries, and/or consumers that use the Accused Products comprising all of the limitations of one or more claims of the '866 patent to directly infringe one or more claims of the '866 patent by using the Accused Products. Since at least the notice provided on the above-mentioned date, Edimax does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '866 patent. Edimax intends to cause, and has taken affirmative steps to induce infringement by its distributors, importers, customers, testing outfits, subsidiaries, and/or consumers by at least, *inter alia*, creating advertisements that promote the infringing use of the Accused Products, creating and/or maintaining established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products in conformity with U.S. laws and regulations, distributing or making available instructions or manuals for these products to purchasers and

prospective buyers, testing and certifying features related to infringing features in the Accused Products, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

81. On information and belief, despite having knowledge of the '866 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '866 patent, Edimax has nevertheless continued its infringing conduct and disregarded an objectively high likelihood of infringement. Edimax's infringing activities relative to the '866 patent have been, and continue to be, willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, characteristic of a pirate, and an egregious case of misconduct beyond typical infringement such that Plaintiff is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the amount found or assessed.

82. Redwood has been damaged as a result of Edimax's infringing conduct described in this Count. Edimax is, thus, liable to Redwood in an amount that adequately compensates Redwood for Edimax's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT V

(INFRINGEMENT OF U.S. PATENT NO. 9,374,209)

83. Plaintiff incorporates paragraphs 1 through 82 herein by reference.

84. Redwood is the assignee of the '209 patent, entitled "Transmission Signal Generation Apparatus, Transmission Signal Generation Method, Reception Signal Apparatus, and Reception Signal Method," with ownership of all substantial rights in the '209 patent, including the right to exclude others and to enforce, sue, and recover damages for past and future infringements.

85. The '209 patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code. The '209 patent issued from U.S. Patent Application No. 14/703,938.

86. Edimax has and continues to directly and/or indirectly infringe (by inducing infringement) one or more claims of the '209 patent in this judicial district and elsewhere in Texas and the United States.

87. Edimax directly infringes the '209 patent via 35 U.S.C. § 271(a) by making, offering for sale, using, testing, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '209 patent. For example, Edimax directly infringes the '209 patent by offering for sale, selling, and/or importing those Accused Products, their components and processes, and/or products containing the same that incorporate the fundamental technologies covered by the '209 patent, to its alter egos, agents, intermediaries, distributors, importers, customers, subsidiaries, and/or consumers. Furthermore, on information and belief, Edimax sells and makes the Accused Products outside of the United States, delivers those products to its customers, distributors, and/or subsidiaries in the United States, or in the case that it delivers the Accused Products outside of the United States it does so intending and/or knowing that those products are destined for the United States and/or designing those products for sale in the United States, thereby directly infringing the '209 patent. *See, e.g., Lake Cherokee Hard Drive Techs., L.L.C. v. Marvell Semiconductor, Inc.*, 964 F. Supp. 2d 653, 658 (E.D. Tex. 2013). Furthermore, Edimax directly infringes the '209 patent through its direct involvement in the activities of its subsidiaries, including ECC, including by selling and offering for sale the Accused Products directly to such subsidiaries and importing the Accused Products into the United States for such

subsidiaries. Such subsidiaries conduct activities that constitute direct infringement of the '209 patent under 35 U.S.C. § 271(a) by making, using, testing, offering for sale, selling, and/or importing those Accused Products. On information and belief, Edimax offers for sale, sells, and imports the Accused Products within the U.S. to, for example, its distributors, customers, subsidiaries, importers, and/or consumers. Further, Edimax is vicariously liable for this infringing conduct of its U.S.-based sales subsidiaries, e.g., ECC, (under both the alter ego and agency theories) because, as an example and on information and belief, Edimax and ECC are essentially the same company, and Edimax has the right and ability to control its subsidiaries infringing acts and receives a direct financial benefit from the infringement of its U.S.-based sales subsidiaries, e.g., ECC.

88. For example, Edimax infringes claim 11 of the '209 patent via the Accused Products. The Accused Products comprise a transmission signal generation apparatus configured to generate transmission signals (e.g., HT-mixed format transmission signals). *See, e.g.*, Figure 19-2 of IEEE 802.11 2016.

89. The Accused Products each comprise circuitry and/or components (hardware and/or software) configured to generate one or more transmission signals, where each transmission signal includes a data frame having preamble information, pilot information, and data information. *See, e.g.*, Sections 19.3.3 and 19.3.20 and Figure 19-2 of IEEE 802.11 2016. Further, each of the transmission signals include the PHY preamble, at least four pilot symbols, and data information. *See, e.g.*, Sections 19.3.1, 19.3.11.10, and 19.3.20 of IEEE 802.11 2016.

90. Each of the one or more transmission signals includes an associated preamble multiplied by a factor so that an average reception power of the associated preamble corresponds to an average reception power of the data information received with the associated preamble. For

example, each of the transmission signals is multiplied by a normalization factor corresponding to the modulation scheme to achieve the same average power for all mappings, where the preamble and data information can have different modulation types and therefore different corresponding normalization factors. *See, e.g.*, Section 17.3.5.8, Table 17-11, Equation 17-20, and Figure 17.1 of IEEE 802.11 2016.

91. Each of the one or more transmission signals includes plural pilot symbol sequences. For example, each of the transmission signals include at least four pilot symbols inserted in, for example, carrier positions -21, -7, 7, and 21. *See, e.g.*, Section 19.3.11.10 and Figure 19-3 of IEEE 802.11 2016.

92. The Accused Products each comprise circuitry and/or components (hardware and/or software) of an Inverse Fourier transformer configured to generate for each of the one or more transmission signals a corresponding OFDM signal for transmission by a corresponding one of one or more antennas by Inverse Fourier transforming each of the transmission signals. *See, e.g.*, Section 19.3.3 and Figure 19-3 of IEEE 802.11 2016.

93. The Inverse Fourier transformer of each of the Accused Products is configured to arrange the pilot symbol sequences in corresponding pilot carriers during a first time period. For example, the Inverse Fourier transformer is configured to arrange pilot sequences in the pilot carriers of each OFDM symbol transmitted during a first time period (e.g., the 3.2 μ s DFT period). *See, e.g.*, Section 19.3.6, 19.3.11.10, 19.3.21, 19.4.3, and Equation 19-90 of IEEE 802.11 2016.

94. The transmitter of each of the Accused Products is configured to arrange sets of the pilot carriers in a same carrier position in the OFDM signal, where the plural pilot symbol sequences are all orthogonal to each other. For example, the transmitter is configured to arrange pilot sequences for each space-time stream, where each of the OFDM signals contains four pilot

carriers inserted in, for example, carrier positions -21, -7, 7, and 21. *See, e.g.*, Section 19.3.11.10, Equation 19-54, and Table 19-19 of IEEE 802.11 2016. Pilot sequences corresponding to different spatial streams are orthogonal to each other. *See, e.g.*, Table 19-19 of IEEE 802.11 2016.

95. The technology discussion above and the exemplary Accused Products provide context for Plaintiff's infringement allegations.

96. At a minimum, Edimax has known of the '209 patent at least as early as the filing date of the complaint. In addition, Edimax has known about the '209 patent since at least November 8, 2021, when Edimax received notice of its infringement via a letter and list of relevant patents. Furthermore, Edimax has known about the '209 patent since at least May 19, 2022, when Edimax received notice of its infringement via a second letter.

97. On information and belief, since at least the above-mentioned date when Edimax was on notice of its infringement, Edimax has actively induced, under U.S.C. § 271(b), its distributors, customers, testing outfits, subsidiaries, and/or consumers that use the Accused Products comprising all of the limitations of one or more claims of the '209 patent to directly infringe one or more claims of the '209 patent by using the Accused Products. Since at least the notice provided on the above-mentioned date, Edimax does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '209 patent. Edimax intends to cause, and has taken affirmative steps to induce infringement by its distributors, importers, customers, testing outfits, subsidiaries, and/or consumers by at least, *inter alia*, creating advertisements that promote the infringing use of the Accused Products, creating and/or maintaining established distribution channels for the Accused Products into and within the United States, manufacturing the Accused Products in conformity with U.S. laws and regulations, distributing or making available instructions or manuals for these products to purchasers and

prospective buyers, testing and certifying features related to infringing features in the Accused Products, and/or providing technical support, replacement parts, or services for these products to these purchasers in the United States.

98. On information and belief, despite having knowledge of the '209 patent and knowledge that it is directly and/or indirectly infringing one or more claims of the '209 patent, Edimax has nevertheless continued its infringing conduct and disregarded an objectively high likelihood of infringement. Edimax's infringing activities relative to the '209 patent have been, and continue to be, willful, wanton, malicious, in bad-faith, deliberate, consciously wrongful, flagrant, characteristic of a pirate, and an egregious case of misconduct beyond typical infringement such that Plaintiff is entitled under 35 U.S.C. § 284 to enhanced damages up to three times the amount found or assessed.

99. Redwood has been damaged as a result of Edimax's infringing conduct described in this Count. Edimax is, thus, liable to Redwood in an amount that adequately compensates Redwood for Edimax's infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

CONCLUSION

100. Plaintiff Redwood is entitled to recover from Edimax the damages sustained by Plaintiff as a result of Edimax's wrongful acts, and willful infringement, in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court.

101. Plaintiff has incurred and will incur attorneys' fees, costs, and expenses in the prosecution of this action. The circumstances of this dispute may give rise to an exceptional case

within the meaning of 35 U.S.C. § 285, and Plaintiff is entitled to recover its reasonable and necessary attorneys' fees, costs, and expenses.

JURY DEMAND

102. Plaintiff hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

103. Plaintiff respectfully requests that the Court find in its favor and against Edimax, and that the Court grant Plaintiff the following relief:

1. A judgment that Edimax has infringed the Asserted Patents as alleged herein, directly and/or indirectly by way of inducing infringement of such patents;
2. A judgment for an accounting of all damages sustained by Plaintiff as a result of the acts of infringement by Edimax;
3. A judgment and order requiring Edimax to pay Plaintiff damages under 35 U.S.C. § 284, including up to treble damages as provided by 35 U.S.C. § 284, and any royalties determined to be appropriate;
4. A judgment and order requiring Edimax to pay Plaintiff pre-judgment and post-judgment interest on the damages awarded;
5. A judgment and order finding this to be an exceptional case and requiring Edimax to pay the costs of this action (including all disbursements) and attorneys' fees as provided by 35 U.S.C. § 285; and
6. Such other and further relief as the Court deems just and equitable.

Dated: June 16, 2022

Respectfully submitted,

/s/ Patrick J. Conroy

Patrick J. Conroy
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