IN THE UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

INTELLECTUAL VENTURES I LLC, Plaintiff, v. UBIQUITI, INC., Defendant.	Civil Action No. **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Intellectual Ventures I LLC ("Intellectual Ventures I" or "IV"), by and through its undersigned counsel, files this Complaint for Patent Infringement against Defendant Ubiquiti, Inc. ("Ubiquiti") as follows:

THE PARTIES

1. Intellectual Ventures I is a Delaware limited liability company having its principal place of business located at 3150 139th Avenue SE, Bellevue, Washington 98005.

2. Upon information and belief, Ubiquiti is a Delaware corporation having its principal place of business at 685 Third Avenue, 27th Floor, New York, NY, 10017.

3. Upon information and belief, Ubiquiti can be served with process through its registered agent, The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801.

NATURE OF THE ACTION, JURISDICTION, AND VENUE

4. IV brings this action for patent infringement pursuant to 35 U.S.C. § 271, *et seq.* This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Ubiquiti because: Defendant has minimum contacts within the state of Delaware and in this District; Defendant has purposefully availed itself of the privileges of conducting business in the state of Delaware and in this District; Defendant has sought protection and benefit from the laws of the State of Delaware and is incorporated there; Defendant regularly conducts business within the State of Delaware and within this District, and Plaintiff's causes of action arise directly from Defendant's business contacts and other activities in the State of Delaware and in this District.

6. More specifically, Ubiquiti, directly and/or through intermediaries, ships, distributes, makes, uses, imports, offers for sale, sells, and/or advertises its products and services in the United States, the State of Delaware, and in this District.

7. Upon information and belief, Ubiquiti solicits customers in the State of Delaware and in this District and has many paying customers who are residents of the State of Delaware and this District and who use its products in the State of Delaware and in this District. Ubiquiti is also incorporated in the State of Delaware and in this District.

8. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(c) and 1400(b) because Ubiquiti is incorporated in this District and has committed acts of patent infringement within this District.

FACTUAL BACKGROUND

9. Intellectual Ventures Management, LLC ("Intellectual Ventures") was founded in 2000. Intellectual Ventures fosters inventions and facilitates the filing of patent applications for those inventions; collaborates with others to develop and patent inventions; and manages the acquisition and licensing of patents from individual inventors, universities, corporations, and other

institutions. A significant aspect of Intellectual Ventures' business is managing the plaintiff in this case, Intellectual Ventures I.

10. One founder of Intellectual Ventures is Nathan Myhrvold, who worked at Microsoft from 1986 until 2000 in a variety of executive positions, culminating in his appointment as the company's first Chief Technology Officer ("CTO") in 1996. While at Microsoft, Dr. Myhrvold founded Microsoft Research in 1991 and was one of the world's foremost software experts. Between 1986 and 2000, Microsoft became the world's largest technology company.

11. Under Dr. Myhrvold's leadership, Intellectual Ventures managed the acquisition of thousands of patents covering many important inventions of the Internet era, including many pertaining to the networked computers that comprise the Internet. Many of these inventions coincided with Dr. Myhrvold's successful tenure at Microsoft.

Wireless Network Communications

12. An area of particular importance in today's computing environments is the efficiency of wireless communications systems. More specifically, wireless local area networks (WLANs) typically use IR or RF communication channels to communicate between portable or mobile computer terminals and stationary access points. The access points are in turn connected to a network infrastructure which links groups of access points together to form the LAN. But while efficiency improvements in wired LAN implementations have been rapidly developed, in part due to the availability and use of technology such as dedicated full-duplex connections, lack of signal attenuation in cables, and the need for less robust processing for error correction and retransmission of lost packets, wireless networks have lagged behind due to inherent restrictions in the wireless medium. Just some of these restrictions include limited bandwidth, a shared medium, interference, signal attenuation, latency and overhead, which are mitigated or eliminated

in wired networks. One standard that has been developed, in part to address the aforementioned inefficiencies, is the IEEE's 802.11 standard.

13. As the 802.11 standard has evolved, there was a focus on improving the overall efficiency, performance, and user experience in wireless networks, but not necessarily increasing throughput and lowering overhead. For example, channel selection improvements, prioritization mechanisms for high priority traffic, power management and load balancing techniques were developed. All of these things improved network efficiency but did not directly relate to increasing throughput or reducing the significant overhead required to send and receive data wirelessly among access points and stations, particularly in dense environments. In other words, these prior art solutions did not solve the need for reduced overhead and thus improved throughput. In fact, some of the prior art methods of improving network efficiency, such as channel sounding, contributed to the large overhead required to send and receive data wirelessly.

14. Therefore, it was realized that a system and method for improving throughput in 802.11 networks was essential. In particular, improved throughput would allow for increased bandwidth demand to be met as more and more devices connect to the network, increased support for multiple user environments, more efficient use of the spectrum, and increased scalability and future-proofing.

15. To address these and other problems in the art, Menzo Wentink, at the time an engineer for Conexant Systems, developed improved systems and methods of using transmit announcement indications in wireless networks, which include, but are not limited to, an improved scheme for reducing the overhead required to send and receive large amounts of information between stations and access points. In one embodiment, for example, an access point sends a first communication to a station which indicates a second communication will be coming, such as a

null data packet or other channel sounding mechanism. The announcement enables the access point to then send the second transmission without the address information typically required to identify the intended recipient. This is enabled in part using a short inter frame space (SIFS) following the announcement, ensuring that control of the channel is not lost in the time between the two communications. Therefore, rather than increasing the network overhead when adapting to channel conditions (which is necessary to implement important efficiency gaining mechanisms like beamforming, (e.g., channel sounding)), overall overhead is reduced thereby improving throughput. Furthermore, the claimed transmit announcement scheme can be used to achieve power savings, improve channel access, improve spatial reuse capabilities, and enable more efficient use of MU-MIMO by coordinating the transmissions of multiple devices.

16. Defendant makes, uses, and sells devices that include embedded wireless 802.11ac compliant chipsets configured to use transmit announcement indications in the VHT sounding protocol required for SU Beamforming, among other features, compliant with the 802.11ac standard, such as the Ubiquiti WiFi BaseStation XG (UAB XG)Wave 2 Access Points.

THE PATENT-IN-SUIT

17. On November 26, 2013, the United States Patent and Trademark Office issued United States Patent No. 8,594,122 ("the '122 patent"), titled TRANSMIT ANNOUNCEMENT INDICATION. The '122 patent is valid and enforceable. A copy of the '122 patent is attached as Exhibit A.

18. Intellectual Ventures I LLC is the owner and assignee of all rights, title, and interest in the '122 patent, including the rights to grant licenses, to exclude others, and to recover past damages for infringement of that patent.

19. The ’122 patent is directed to a system and method for using transmit announcement indications to reduce the overhead in and enhance the network performance and efficiency of 802.11 networks. The systems and methods utilize transmit announcement indications to improve the wireless communication systems performance by notifying receiving devices about upcoming transmissions, allowing the transmitting device to remove addressing while enabling the access points to make more informed decisions about channel access, power saving, beamforming, quality of service and multi-user multiple-input operations.

20. The inventions claimed in the ’122 patent were conceived by Menzo Wentink, an engineer at Conexant Systems, a well-known software developer and fabless semiconductor company specializing in, among other things, wireless communications. Conexant’s wireless communications division was spun off to form Skyworks Solutions, Inc. in the early 2000’s and developed some of the foundational technology of that era with respect to wireless communications. Mr. Wentink has held Chair and Vice Chair positions at the IEEE and is currently a principal engineer at Qualcomm.

COUNT I

(Defendant’s Infringement of U.S. Patent No. 8,594,122)

21. The preceding paragraphs are reincorporated by reference as if fully set forth herein.

22. The ’122 patent claims and teaches, *inter alia*, systems and methods for utilizing transmit announcement indications to improve wireless communication system performance by notifying receiving devices about upcoming transmissions. This allows the transmitting device to remove addressing information of the recipient from the subsequent messages, which can improve overall throughput while enabling the access points to make more informed decisions about

channel access, power saving, beamforming, quality of service and multi-user multiple-input operations.

23. The inventions improved upon then-existing wireless medium performance enhancing mechanisms by enabling access points to notify receiving stations that a transmission was to be expected but would lack addressing information, thus enabling the access point to refrain from transmitting that addressing information in a subsequent transmission, which in turn reduced the transmission of network overhead data (the addressing information). It further provided that the second communication (i.e., the second transmission) would follow a SIFS, ensuring that control of the channel would be maintained by the notifying access point until the second communication was received.

24. Unlike in prior art solutions the transmit announcement notification system and methods claimed in the asserted claims allowed for more efficient channel sounding and information exchange without increasing the overhead of the wireless medium, thus enabling technologies like beamforming to be performed efficiently and in turn increasing throughput, among other benefits.

25. More specifically, one exemplary embodiment comprises an improved transmit announcement indication scheme in which a first communication frame from a first station to a second station is sent, which comprises an address of the second station as well as a transmit announcement indication indicating that a second communication frame intended for the second station will follow the first communication frame. Furthermore, this exemplary embodiment specifies that the second frame which was to be expected would not include the address of the second station which is normally required. Additionally, the second communication is configured

to be transmitted following a short interframe space (SIFS), ensuring that control over the channel is maintained while simultaneously reducing overhead and increasing throughput.

26. The systems and methods covered by the asserted claims, therefore, differ markedly from prior art systems in use at the time of this invention, which lacked the claimed combination of transmitting a first communication frame from a first station to a second station, wherein the first communication frame comprises an address of the second station and a transmit announcement indication indicating that a second communication frame intended for the second station will follow the first communication frame and that the second communication frame will not include the address of the second station, and where the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.

27. Defendant has directly infringed and continues to directly infringe at least claim 11 of the ’122 patent by making, using, selling, offering for sale, or importing products and/or services covered by the ’122 patent. Defendant’s products and/or services that infringe the ’122 patent include all wireless communication products that support IEEE 802.11ac SU Beamforming, including the transmission of transmit announcement indications, a.k.a. Very High Throughput (VHT) Sounding Protocol, or any other method or system of using a transmit announcement indication in 802.11ac networks, such that a transmission is sent to an intended recipient which notifies it of a forthcoming address-less transmission, thus reducing overhead and increasing throughput, and that are made, used, sold, or offered for sale by or on behalf of Defendant and/or its subsidiaries or parent companies (cumulatively, “the ’122 Accused Products”), including but not limited to, the Ubiquiti WiFi BaseStation XG Wave 2 Access Point.

28. Claim 11 of the ’122 patent is reproduced below:

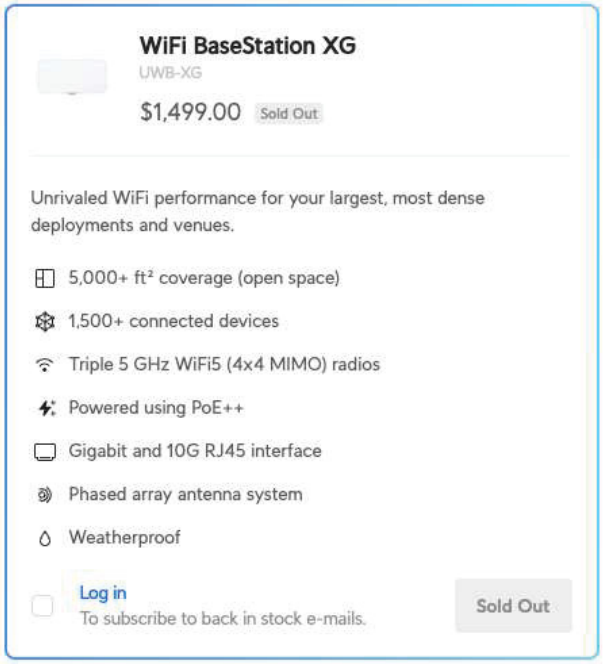
11. A non-transitory computer-readable medium having instructions stored thereon that, if executed by a computing device, cause the computing device to perform operations comprising:

transmitting a first communication frame from a first station to a second station;

wherein the first communication frame comprises an address of the second station and a transmit announcement indication indicating that a second communication frame intended for the second station will follow the first communication frame and that the second communication frame will not include the address of the second station, and

wherein the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.

29. The '122 Accused Products include a non-transitory computer-readable medium having instructions stored thereon that when executed by a computing device cause the device to perform the operation of transmitting a first communication frame from a first station to a second station. Specifically, the Accused Products implement 802.11ac transmit beamforming, which relies on the VHT sounding protocol, which in turn calls for a first communication frame to be transmitted from a first station to a second station:



Software

WiFi standards	802.11 a/n/r/k/v/ac/ac-wave2
Wireless security	WEP, WPA-PSK, WPA-Enterprise (WPA/WPA2, TKIP/AES), 802.11w/PMF
VLAN	802.1Q
Advanced QoS	Per-user rate limiting
Guest traffic isolation	Supported
Power save	Supported
Beamforming	Supported
WMM	Voice, video, best effort, and background
Concurrent clients	1500+

Source: https://store.ui.com/us/en/collections/unifi-wifi-mega-capacity

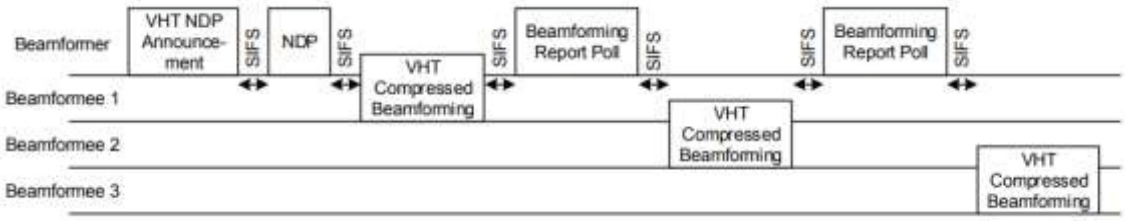
10.34.5 VHT sounding protocol

10.34.5.1 General

Transmit beamforming and DL-MU-MIMO require knowledge of the channel state to compute a steering matrix that is applied to the transmitted signal to optimize reception at one or more receivers. The STA transmitting using the steering matrix is called the *VHT beamformer*, and a STA for which reception is optimized is called a *VHT beamformee*. An explicit feedback mechanism is used where the VHT beamformee directly measures the channel from the training symbols transmitted by the VHT beamformer and sends back a transformed estimate of the channel state to the VHT beamformer. The VHT beamformer then uses this estimate, perhaps combining estimates from multiple VHT beamformees, to derive the steering matrix.

10.34.5.2 Rules for VHT sounding protocol sequences

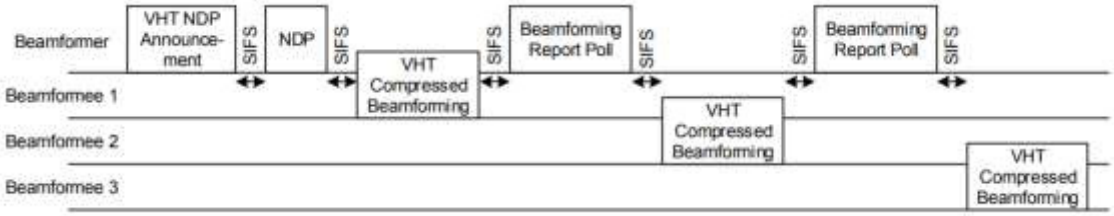
A VHT beamformer shall initiate a sounding feedback sequence by transmitting a VHT NDP Announcement frame followed by a VHT NDP after a SIFS. The VHT beamformer shall include in the VHT NDP Announcement frame one STA Info field for each VHT beamformee that is expected to prepare VHT Compressed Beamforming feedback and shall identify the VHT beamformee by including the VHT beamformee's AID in the AID subfield of the STA Info field. The VHT NDP Announcement frame shall include at least one STA Info field.



Source: IEEE 802.11-2016 at pp. 1488, 1490.

30. In the transmission operation performed by the '122 Accused Products, the first communication frame comprises an address of the second station. For example, the VHT NDP Announcement includes a "STA Info" field that includes the AID12 of the recipient, as seen below:

A VHT beamformer shall initiate a sounding feedback sequence by transmitting a VHT NDP Announcement frame followed by a VHT NDP after a SIFS. The VHT beamformer shall include in the VHT NDP Announcement frame one STA Info field for each VHT beamformee that is expected to prepare VHT Compressed Beamforming feedback and shall identify the VHT beamformee by including the VHT beamformee's AID in the AID subfield of the STA Info field. The VHT NDP Announcement frame shall include at least one STA Info field.



Source: IEEE Std 802.11-2016 pp. 1488, 1490.

	Frame Control	Duration	RA	TA	Sounding Dialog Token	STA Info 1	...	STA Info *n*	FCS
Octets:	2	2	6	6	1	2		2	4

Figure 9-49—VHT NDP Announcement frame format

	B0 B11	B12	B13 B15
	AID12	Feedback Type	Nc Index
Bits:	12	1	3

Figure 9-51—STA Info field

Table 9-25—STA Info subfields

Field	Description
AID12	Contains the 12 least significant bits of the AID of a STA expected to process the following VHT NDP and prepare the sounding feedback. Equal to 0 if the STA is an AP, mesh STA, or STA that is a member of an IBSS.

Source: IEEE Std 802.11-2016 pp. 685-86.

9.4.1.8 AID field

In infrastructure BSS operation, the AID field contains a value assigned by an AP or PCP during association. The field represents the 16-bit ID of a STA. In mesh BSS operation, the AID field is a value that represents the 16-bit ID of a neighbor peer mesh STA. An AID value is assigned by a mesh STA that receives and accepts a Mesh Peering Open frame to the transmitter of the Mesh Peering Open frame during the mesh peering establishment process (see 14.3.1). The length of the AID field is 2 octets. The AID field is illustrated in Figure 9-73.

	Association ID (AID)
Octets:	2

Figure 9-73—AID field

Source: IEEE Std. 802.11-2016, p. 731.

31. In the transmission operation performed by the '122 Accused Products, the first communication frame comprises a transmit announcement indication indicating that a second communication frame intended for the second station will follow the first communication frame. For example, the 802.11-2016 standard requires that every VHT NDP Announcement frame is followed by a VHT NDP transmission after a SIFS. Each VHT Announcement frame includes the recipient's address information as described above, thus indicating that the second communication is intended for the second station, as seen below:

10.34.5.2 Rules for VHT sounding protocol sequences

A VHT beamformer shall initiate a sounding feedback sequence by transmitting a VHT NDP Announcement frame followed by a VHT NDP after a SIFS. The VHT beamformer shall include in the VHT NDP Announcement frame one STA Info field for each VHT beamformee that is expected to prepare VHT Compressed Beamforming feedback and shall identify the VHT beamformee by including the VHT beamformee's AID in the AID subfield of the STA Info field. The VHT NDP Announcement frame shall include at least one STA Info field.

A VHT NDP shall be transmitted only following a SIFS after a VHT NDP Announcement frame. A VHT NDP Announcement frame shall be followed by a VHT NDP after SIFS.

Source: IEEE Std. 802.11-2016, p. 1488.

9.2.4.1 Frame Control field

9.2.4.1.1 General

The first three subfields of the Frame Control field are Protocol Version, Type, and Subtype. The remaining subfields of the Frame Control field depend on the setting of the Type and Subtype subfields.

9.2.4.1.3 Type and Subtype subfields

The Type subfield is 2 bits in length, and the Subtype subfield is 4 bits in length. The Type and Subtype subfields together identify the function of the frame. There are three frame types: control, data, and

Table 9-1—Valid type and subtype combinations

Type value B3 B2	Type description	Subtype value B7 B6 B5 B4	Subtype description
01	Control	0101	VHT NDP Announcement

Source: IEEE Std. 802.11-2016, pp. 638-39.

10.20 Group ID and partial AID in VHT PPDUs

The partial AID is a nonunique STA identifier defined in Table 10-9. The partial AID is carried in the TXVECTOR parameter PARTIAL_AID of a VHT SU PPDU and is limited to 9 bits.

A STA transmitting a VHT SU PPDU carrying one or more group addressed MPDUs or transmitting a VHT NDP intended for multiple recipients shall set the TXVECTOR parameters GROUP_ID to 63 and PARTIAL_AID to 0. The intended recipient of a VHT NDP is defined in 10.34.6.

Source: IEEE Std. 802.11-2016, p. 1373.

10.34.6 Transmission of a VHT NDP

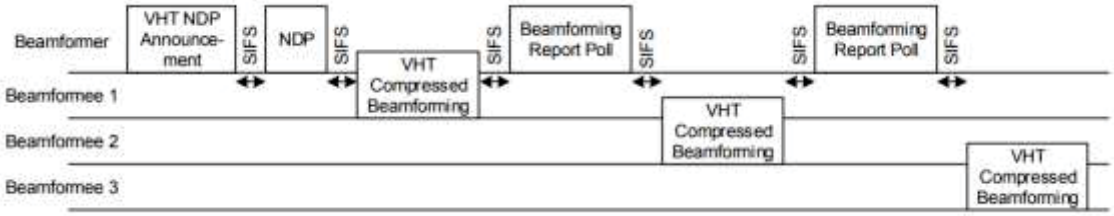
The destination of a VHT NDP is equal to the RA of the immediately preceding VHT NDP Announcement frame.

Source: IEEE Std. 802.11-2016, p. 1493.

10.34.5.2 Rules for VHT sounding protocol sequences

If the VHT NDP Announcement frame includes more than one STA Info field, the RA of the VHT NDP Announcement frame shall be set to the broadcast address. If the VHT NDP Announcement frame includes a single STA Info field, the RA of the VHT NDP Announcement frame shall be set to the MAC address of the VHT beamformee.

Source: IEEE Std. 802.11-2016, pp. 1488-89.



Source: IEEE Std. 802.11-2016, p. 1490.

32. In the transmission operation performed by the '122 Accused Products, the second communication frame will not include the address of the second station. For instance, the VHT NDP frame that follows the VHT NDP Announcement frame does not include the address of the second station:

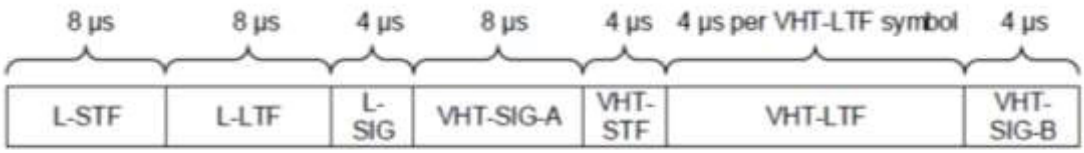


Figure 21-28—VHT NDP format

Source: IEEE Std. 802.11-2016, p. 2580.

21.3.8.3.3 VHT-SIG-A definition

The VHT-SIG-A field carries information required to interpret VHT PPDUs. The structure of the VHT-SIG-A field for the first part (VHT-SIG-A1) is shown in Figure 21-18 and for the second part (VHT-SIG-A2) is shown in Figure 21-19.

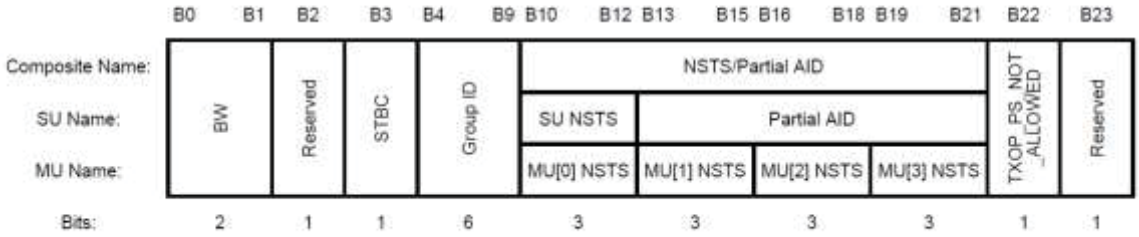


Figure 21-18—VHT-SIG-A1 structure

Source: IEEE Std. 802.11-2016, p. 2543.

10.20 Group ID and partial AID in VHT PPDUs

The partial AID is a nonunique STA identifier defined in Table 10-9. The partial AID is carried in the TXVECTOR parameter PARTIAL_AID of a VHT SU PPDU and is limited to 9 bits.

A STA transmitting a VHT SU PPDU carrying one or more group addressed MPDUs or transmitting a VHT NDP intended for multiple recipients shall set the TXVECTOR parameters GROUP_ID to 63 and PARTIAL_AID to 0. The intended recipient of a VHT NDP is defined in 10.34.6.

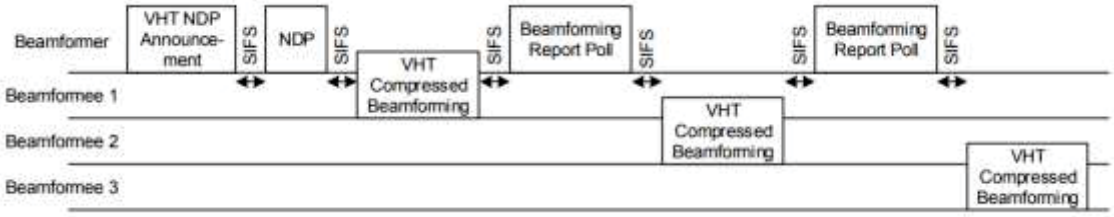
Source: IEEE Std. 802.11-2016, p. 1373.

33. In the operation performed by the '122 Accused Products, the second communication frame follows a short inter frame space (SIFS) after the first communication frame

with the transmit announcement indication. For example, the VHT NDP frame is transmitted to the second station after a SIFS interval following the transmission of the VHT NDP Announcement frame, as seen below:

10.34.5.2 Rules for VHT sounding protocol sequences

A VHT NDP shall be transmitted only following a SIFS after a VHT NDP Announcement frame. A VHT NDP Announcement frame shall be followed by a VHT NDP after SIFS.



Source: IEEE Std. 802.11-2016, pp. 1488, 1490.

34. Additionally, Defendant has been and currently is an active inducer of infringement of the ’122 patent under 35 U.S.C. § 271(b) and a contributory infringer of the ’122 patent under 35 U.S.C. § 271(c).

35. Defendant has actively induced, and continues to actively induce, infringement of the ’122 patent by causing others to use, offer for sale, or sell in the United States, products or services covered by the ’122 patent, including but not limited to the ’122 Accused Products and any other products or services that include the use of transmit announcement indications with a second communication without address information of the recipient following said announcement after a SIFS, such as, the VHT NDP sounding procedure for beamforming described herein. Defendant provides these products and services to others, such as customers, resellers, partners, and end-users, who, in turn, use, provide for use, offer for sale, or sell those products and services, which directly infringe the ’122 patent as described above. Defendant’s inducement includes requiring WiFi chipsets within the ’122 Accused Products to be compliant with the IEEE 802.11ac standard, in which the VHT NDP sounding procedure described above is mandatory, and

advertising and promoting such compliance—and functionality it enables, such as beamforming—to its customers, partners, re-sellers and the like, including the promotion, directions and instructions found at one or more of the following links, the provision of which is on-going as of the filing of this Complaint and much of the content of which is specifically illustrated above:

- https://dl.ubnt.com/datasheets/unifi/UniFi_UAP-AC-HD_DS.pdf
- https://dl.ubnt.com/qsg/uwb-xg.pdf
- https://community.ui.com/questions/Understanding-Gigabeam-LR-beamforming-information/dd76d048-11f5-4971-8b4c-d9feb5f13272
- https://community.ui.com/questions/GigaBeam-GBE-US-Questions-Help/1ba92cc3-eb0a-499b-bd95-4ffae146c1a7
- https://community.ui.com/questions/Does-Gigabeam-Plus-do-beamforming/020fb240-8548-4de6-ac30-713f15ba729f

36. Defendant has contributed to, and continues to contribute to, the infringement of the ’122 patent by others by knowingly providing one or more components, for example the 802.11ac WiFi chipset with transmit announcement functionality which enables the VHT sounding protocol used in beamforming, included in the ’122 Accused Products, a portion thereof, and/or the software/hardware modules responsible for the accused functionality described herein, that, when installed, configured, and used result in systems that, as intended by Defendant described above, directly infringe one or more claims of the ’122 patent.

37. Defendant knew of the ’122 patent, or should have known of the ’122 patent, but was willfully blind to its existence. Upon information and belief, Defendant had actual knowledge of the ’122 patent since at least as early as February 25, 2022, the date on which IV sent a notice letter to Ubiquiti identifying claim 1 of the ’122 patent as allegedly infringed and corresponding identification of the accused functionality in chart form. Additionally on May 24, 2022, IV presented a PowerPoint presentation to Ubiquiti regarding licensing opportunities that included identification of the Asserted Patent, among other information. Furthermore, since the time of the February notice letter IV has held several discussions with Ubiquiti regarding alleged infringement

of the asserted patents, including the exchange of claim charts. Additionally, Defendant has known of the ’122 patent since at least when it received a copy of this Complaint, or alternatively, at least as early as service upon Defendant of the Complaint in this action.

38. By the time of trial, Defendant will or should have known and intended (since receiving such notice) that its continued actions would infringe and would actively induce and contribute to the infringement of the ’122 patent.

39. Defendant has committed, and continues to commit, contributory infringement by selling products and services that directly infringe the ’122 patent when used by a third party, such as the Accused ’122 Products, and that are a material part of the invention, knowing them to be especially made or adapted for use in infringement of the ’122 patent and not staple articles or commodities of commerce suitable for substantial non-infringing use.

40. As a result of Defendant’s acts of infringement, IV has suffered and will continue to suffer damages in an amount to be determined at trial.

PRAYER FOR RELIEF

IV requests that the Court enter judgment as follows:

(A) that Defendant has infringed the ’122 patent;

(B) awarding damages sufficient to compensate IV for Defendant’s infringement under 35 U.S.C. § 284;

(C) finding this case exceptional under 35 U.S.C. § 285 and awarding IV its reasonable attorneys’ fees;

(D) awarding IV its costs and expenses incurred in this action;

(E) awarding IV prejudgment and post-judgment interest; and

(F) granting IV such further relief as the Court deems just and appropriate.

DEMAND FOR JURY TRIAL

IV demands trial by jury of all claims so triable under Federal Rule of Civil Procedure 38.

Dated: August 8, 2023.

Respectfully submitted,

/s/ Brian E. Farnan

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