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EXAMINER	
RAHMAN, SHAH M	

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2413	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 17/332,012	Applicant(s) HAN et al.	
	Examiner SHAH M RAHMAN	Art Unit 2413	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 06 January 2023.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 25-41 is/are pending in the application.

5a) Of the above claim(s) 25-27 and 39-41 is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 28-35 is/are rejected.

8) ☑ Claim(s) 36-38 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 27 May 2021 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☑ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 05/27/2021, 01/07/2022 and 03/18/2022.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 05/27/2021, 01/07/2022 and 03/18/2022 have been placed in record and considered by the examiner.

Response to Applicant's Response to Election/Restriction Requirement

3. The Examiner notes that the Applicant has elected Species B for further examination according to Applicant's response filed 01/06/2023.

However, Applicant's suggestion to examine all Species A, Species B and Species C together has not been be agreed at this time since each of the Species has distinct separate elements which requires additional different search and consideration for each of the respective Species.

The Examiner understands that the Applicant may file a divisional application based on the non-elected claims.

Accordingly, claims 28-38 have been considered in this office action.

Status of the Claims

4. This office action considers claims 25-41 are pending according to Applicant filing on 01/06/2023 in response to Election/Restriction Requirement mailed 11/30/2022.

Claims 28-38 have been elected for further prosecution.

Claims 25-27 and 39-41 are non-elected.

Claims 1-24 and 42-47 are cancelled.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

6. Claim 28 is rejected under 35 U.S.C. 103 as being unpatentable over Beg Christopher (WO 2021174337 A1, hereinafter 'BEG') in view of Yu et al. (US 20180295221 A1, of IDS, hereinafter 'YU').

Regarding **claim 28**, **YU teaches a first receiving device of a Wireless Local Area Network system** (Fig. 10a, Wireless Devices 220, [0094] FIG. 10A is a diagram

showing example downlink and uplink transmissions in the example wireless communication network system 200. [0095] The wireless devices 220A, 220B, 220C, 220D and the AP 230 can communicate with one another via RF signals, for example, according to the IEEE 802.11ax standard.)**, the first receiving device comprising:**

a transceiver (Fig. 10A, wireless devices 220A, 220B, 220C, 220D, [0047] The wireless devices 220A, 220B, 220C, 220D may include, or may be, a mobile device (e.g., a smartphone, a smart watch, a tablet, a laptop computer, etc.)) **configured to receive a protocol data unit including a preamble and a payload from a transmitting device and to decode the payload based on the preamble** (Fig. 10a, Fig. 11C, [00100] the wireless communication network system 200 shown in FIG. 10A operates according to the IEEE 802.1 lax standard, the AP 230 may perform a downlink transmission 1002 that sends a first downlink (DL) HE-PHY frame 1106 to the wireless devices 220A, 220B, 220C, 220D. The first DL HE-PHY frame 1106 elicits a UL-OFDMA transmission 1108 from the wireless devices 220A, 220B, 220C, 220D to the AP 230.

[00101] The first HE-PHY frame 1106 can include a preamble and a trigger frame (construed as a payload), and can be addressed to the wireless devices 220A, 220B, 220C, 220D.);

a processor configured to control the transceiver (Fig. 10A, wireless devices 220A, 220B, 220C, 220D, [0047] The wireless devices 220A, 220B, 220C, 220D may include, or may be, a mobile device (e.g., a smartphone, a smart watch, a tablet, a laptop computer, etc.))**, wherein a data field of the payload comprises a trigger frame** ([00101] The first HE-PHY frame 1106 can include a preamble and a trigger

frame (construed as a payload), and can be addressed to the wireless devices 220A, 220B, 220C, 220D) **in a Single-Medium Access Control (MAC) Protocol Data Unit (S-MPDU) form** (Fig. 11C, Fig. 12A, [00105] ...the first DL HE-PHY frame 1106 ...can include a MAC layer frame encoded within (e.g., encapsulated within) the data payload of an HE-PHY frame, analogous to the example shown in FIG.9. At the PHY layer, data can be referred to as a physical layer (PHY) protocol data unit (PPDU).... The PPDU can include a preamble followed by a payload.

[00106] ....HE-PHY frames can have ....a High-Efficiency Single-User PPDU (HE SU PPDU) format.

[00107] FIG. 12A shows an example HE-PHY frame 1200 having the HE SU PPDU format In some instances, the HE-PHY frame 1200 can be used to carry a single MAC data payload (on an uplink transmission or a downlink transmission). The first DL HE-PHY frame 1106 discussed above in relation to FIG. 11C can be a HE-PHY frame having the HE SU PPDU format..... the trigger frame can be a MAC layer frame encoded within the data payload 1202 of the HE-PHY frame 1200.

[00120] ...the trigger frame can be a MAC layer frame encoded within the data payload 1202 of the HE-PHY frame 1200 having the HE SU PPDU format At the MAC layer, data can be referred to as a media access control (MAC) protocol data unit (MPDU) (Construed DL HE-PHY frame 1106 is having HE SU PPDU format with encoded MAC layer trigger frame in S-MPDU form in data payload 1202)),

wherein the trigger frame comprises a MAC header and a frame body ([00107] the trigger frame can be a MAC layer frame the trigger frame can be a MAC layer frame encoded within the data payload 1202.

[00120] ….the trigger frame can be a MAC layer frame encoded within the data payload 1202 of the HE-PHY frame 1200 having the HE SU PPDU format At the MAC layer, data can be referred to as a media access control (MAC) protocol data unit (MPDU).

Fig. 15, [00121] FIG. 15 shows an example format of a trigger frame 1500. The trigger frame 1500 includes a frame control field 1502 (part of MAC header as shown in Fig. 15), a common information field 1504, and a user information list field 1506 (part of remaining portion construed as frame body of Trigger frame)),

wherein the frame body comprises a common information field and a plurality of user information fields (Fig. 15, [00121] FIG. 18 shows an example expansion of the user information list field 1506 of the trigger frame 1500.

[00124] As seen in FIG. 18, the user information list field 1506 includes a resource unit (RU) allocation field 1800. The RU allocation field 1800 along with the UL BW field 1700 can identify the size and location of the RUs allocated to the respective wireless devices 220A, 220B, 220C, 220D).

BEG is silent about BEG is silent about wherein the common information field comprises common control information applied to a second receiving device supporting a standard different from a standard supported by the first receiving device, wherein a first user information field among the plurality of user information fields comprises user specific control information applied to the second receiving device, and

wherein second and third user information fields among the plurality of user information fields are used as a common information field and a user information field applied to the first receiving device, respectively.

In an analogous art, **YU teaches wherein the common information field comprises common control information applied to a second receiving device supporting a standard different from a standard supported by the first receiving device** (Fig. 1c, [0026] the AP may be a device that supports an 802.11ax standard. Further …supports a plurality of WLAN standards, such as 802.11ac, 802.1In, 802.11g, 802.11b, and 802.11a.

[0027] A non-access point station may be a mobile telephone …, a tablet computer that supports a WiFi communication function…. the station STA may support the 802.11ax standard. Further, optionally, the station supports a plurality of WLAN standards, such as 802.11ac, 802.11n, 802.11g, 802.11b, and 802.11a (it is obvious that one station may support 802.11x, the first receiving device, and another station may support 802.11x and 802.11ac for example, the second receiving device supporting a standard different from a standard supported by the first receiving device).

[0028] FIG. 1c is a schematic diagram of a system of a typical WLAN deployment scenario, including one AP and three STAs. The AP separately communicates with an STA 1, an STA 2, and an STA 3.

Fig. 2, [0034, 0035] …applied to Fig. 1c…

S200. An access point generates a trigger frame carrying a target media access control MAC function, where the trigger frame includes indication information, the indication information is used to instruct a first station to send a MAC frame corresponding to the target MAC function, and the indication information is used to instruct a second station not to perform the target MAC function.

[0042] AP sends, for the first time, the trigger frame TF for CSI carrying a single MAC function to three STAs.

[0048] …..As shown in FIG. 3, the indication information may be located in the common field located of the trigger frame. (Construed as common information field is applied to both first receiving device and second receiving device)),

wherein a first user information field among the plurality of user information fields comprises user specific control information applied to the second receiving device ([0052] L STAs (that is, each station in the first station) in N STAs include both the trigger information and the MAC function information, and other N-L STAs (that is, each station in the second station) include only the trigger information….. L is indicated in the common area. (See Fig. 3, Per STA Trigger Info L+1 …. Per STA Trigger Info N, do not include Per STA MAC)

[0053] trigger information of each STA is encapsulated in a trigger information field of the trigger frame (It is obvious that in Fig. 3 Per STA Trigger Info L+1 …. Per STA Trigger Info N are respective the first user information field comprising control information for second receiving device)).

wherein second and third user information fields among the plurality of user information fields are used as a common information field and a user information field applied to the first receiving device, respectively ([0039] The trigger frame includes first information of the first station and second information of the second station. The first information may include first trigger information corresponding to the first station and MAC function information corresponding to the first station. ….. The first trigger information is used to indicate an uplink transmission resource of the

first station, and the second trigger information is used to indicate an uplink transmission resource of the second station. .... The MAC function field includes a MAC function common information field and a MAC function field in the per station field.

[0052] L STAs (that is, each station in the first station) in N STAs include both the trigger information and the MAC function information..... L is indicated in the common area. (See Fig. 3) (that is in Fig. 3 Per STA MAC fields are construed as the second information field used as a common information field for respective L first station receiving device)

[0053] trigger information of each STA is encapsulated in a trigger information field of the trigger frame (It is obvious that in Fig. 3 Per STA Trigger Info 1 .... Per STA Trigger Info L are respective the first user information field comprising control information for first receiving device)).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of YU to the system of BEG in order to take the advantage of method for reducing overhead (**YU: [0096]**).

7. Claim 29-30 are rejected under 35 U.S.C. 103 as being unpatentable over Beg Christopher (WO 2021174337 A1, hereinafter 'BEG') in view of Yu et al. (US 20180295221 A1, of IDS, hereinafter 'YU') and with further in view of Verma et al. (US 20190124556 A1, of IDS, hereinafter 'VERMA').

Regarding **claim 29**, **BEG in view of YU teaches the first receiving device of claim 28.**

BEG and YU does not explicitly disclose wherein an index of an identifier subfield in the second user information field comprises an index corresponding to any one of indexes indicating reserved in the identifier subfield in the first user information field, and

indicates that the second user information field comprises a common information field applied to the first receiving device.

In an analogous art, **VERMA teaches wherein an index of an identifier subfield in the second user information field comprises an index corresponding to any one of indexes indicating reserved in the identifier subfield in the first user information field** (Fig. 5, [0053] FIG. 5 shows an example of a trigger frame format **500** that supports multiplexing clients of different generations in trigger-based transmissions. In some implementations, trigger frame format **500** may include a trigger frame **501….** implemented by one or more APs **105** or STAs **115 ….** described with respect to FIGS. 1-3.

[0054] …. the trigger frame **501** may solicit uplink transmissions from HE STAs and from EHT STAs.

[0055] The trigger frame **501** may further include common info field **525**…, and one or more user info fields **530**.

[0057] In another illustrative example, the common info field **525** may indicate a 320 MHz BW. In such examples, an HE RU allocation table in RU allocation field **550** of user info field **530**-*a* (second information field) may sufficient to indicate RUs to EHT

STA where one reserved bit in the user info field **530**-*a* is used to indicate whether this STA is allocated resources in a primary 160 MHz segment or a secondary 160 MHz segment (construed as any one of indexes indicating reserved in the reserved identifier subfield which is reserved for HE STA in corresponding user info field 530 or first information field, however for EHT STA indicates HE transmission using primary 160 MHz segment or EHT/320 MHz transmission using secondary 160 MHz segment. See [0058] cited below).

[0058] The AP may schedule HE STAs on the primary 160 MHz in a 320 MHz bandwidth (such as, 160 MHz plus 160 MHz) for an uplink EHT transmission with HE transmissions….. the legacy 1-bit indication (such as, B) may be sufficient to schedule transmissions in the primary 160 MHz of the uplink transmission. For EHT STAs, the RU allocation table may indicate assigned RUs for uplink transmission across up to 320 MHz, as opposed to the 160 MHz for legacy devices, as described below.), **and**

indicates that the second user information field comprises a common information field applied to the first receiving device ([0057] …. the common info field **525** may indicate a 320 MHz BW. In such examples, an HE RU allocation table in RU allocation field **550** of user info field **530**-*a* may sufficient to indicate RUs to EHT STA where one reserved bit in the user info field **530**-*a* is used to indicate whether this STA is allocated resources in a primary 160 MHz segment or a secondary 160 MHz segment. (It is obvious that the indication for EHT/320 MHz transmission via reserve bit in user info field **530**-a or the second information field is common for all EHT STA)).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame

format of VERMA to the system of BEG and YU in order to take the advantage of method for multiplexing clients of different generations in trigger-based transmissions using a single trigger frame (**VERMA: [0002, 0053]**).

Regarding **claim 30**, BEG and YU does not explicitly disclose the first receiving device of claim 29, wherein the second user information field is composed of 40 bits, wherein 12 bits of the second user information field constitute an identifier subfield, wherein the remaining 28 bits of the second user information field constitute or partially constitute a common information field applied to the first receiving device (although BEG Fig. 18 User Info List field 1506 discloses 40 bits + Trigger Dependent variable field).

VERMA teaches the first receiving device of claim 29, wherein the second user information field is composed of 40 bits, wherein 12 bits of the second user information field constitute an identifier subfield, wherein the remaining 28 bits of the second user information field constitute or partially constitute a common information field applied to the first receiving device (Fig. 5, [0055] … the trigger frame **501** may include….. one or more user info fields **530**, including 5 or more octets (indicating 5 octets or 40 bits).

[0056] the user info field **530** may include a 12-bit association identifier (AID) field **545**, an 8-bit RU allocation field **550**, a 1 bit coding type field **555**, and a 4-bit modulation and coding scheme (MCS) field **560**. In some cases, the user info field **530** may further include a 1-bit dual carrier modulation (DCM) field **565**, a 6-bit

subscriber station (SS) Allocation Random Access RU Info field **570**, a 7-bit Target received signal strength indicator (RSSI) field **575**, a 1-bit reserved field **580.**

[0057] …. the common info field **525** may indicate a 320 MHz BW. In such examples, an HE RU allocation table in RU allocation field **550** of user info field **530**-*a* may sufficient to indicate RUs to EHT STA where one reserved bit in the user info field **530**-*a* is used to indicate whether this STA is allocated resources in a primary 160 MHz segment or a secondary 160 MHz segment.).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of VERMA to the system of BEG and YU in order to take the advantage of method for multiplexing clients of different generations in trigger-based transmissions using a single trigger frame (**VERMA: [0002, 0053]**).

8. Claims 31- 32 are rejected under 35 U.S.C. 103 as being unpatentable over Beg Christopher (WO 2021174337 A1, hereinafter 'BEG') in view of Yu et al. (US 20180295221 A1, of IDS, hereinafter 'YU') in view of Verma et al. (US 20190124556 A1, of IDS, hereinafter 'VERMA') and with further in view of Kim et al. (US 20220353847 A1, with priority of KR 10-2019-0129439, hereinafter 'KIM').

Regarding **claim 31**, BEG in view of YU and VERMA teaches the first receiving device of claim 30.

BEG, YU and VERMA do not disclose wherein, when the remaining 28 bits of the second user information field are less than a number of bits required to include a

common information field applied to the first receiving device, a fourth user information field among the plurality of user information fields is used as a common information field applied to the first receiving device in addition to the second user information field.

In an analogous art, **KIM teaches wherein, when the remaining 28 bits of the second user information field are less than a number of bits required to include a common information field applied to the first receiving device, a fourth user information field among the plurality of user information fields is used as a common information field applied to the first receiving device in addition to the second user information field** (Fig. 27, [0276] Method 1: When the AP allocates multiple RUs to one UE (that is, STA), a User Info field may be configured for each allocated RU, and User Info fields including information related to multiple RUs allocated to the corresponding UE may be contiguously transmitted.

[0278] Referring to FIG. 27, when the AP allocates 2 RUs to STA A and 3 RUs to STA B, as above, for STA A, it contiguously transmits RU 1 and RU 3, and for STA B, it transmits contiguously RU 2, RU4, and RU 6.

[0279] For example, since the AID of the User Info field including information on RU1 (construed as second user information field) is the same as its own AID, STA A may know that RU1 has been allocated to it. Since the AID of the User Info field including information about RU3 (construed as fourth user information field allocated since second user information field's remaining 28 bit was not adequate for additional RU3 allocation) is the same as its own AID, STA A may know that RU3 has been allocated to it.

See also user info field format in Fig. 30, [0294] The User Info field for the Multi RU Allocation (MURA) Trigger frame may be configured as shown in FIG. 30.)

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of KIM to the system of BEG, YU and VERMA in order to take the advantage of method for allocating multiple RUs in a wireless local area network (WLAN) system providing increased data transmission efficiency (**KIM: [0001, 0268]**).

Regarding **claim 32**, BEG, YU and VERMA do not disclose the first receiving device of claim 31, wherein the second and fourth user information fields each are composed of 40 bits, wherein 12 bits of each of the second and fourth user information fields individually constitute an identifier subfield having the same index, wherein the remaining 28 bits of each of the second and fourth user information fields partially constitute a common information field applied to the first receiving device.

KIM teaches the first receiving device of claim 31, wherein the second and fourth user information fields each are composed of 40 bits, wherein 12 bits of each of the second and fourth user information fields individually constitute an identifier subfield having the same index, wherein the remaining 28 bits of each of the second and fourth user information fields partially constitute a common information field applied to the first receiving device ([0279] For example, since the AID of the User Info field including information on RU1 is the same as its own AID, STA A may know that RU1 has been allocated to it. Since the AID of the User Info field including information about RU3 is the same as its own AID (construed as identifier

subfield having the same index), STA A may know that RU3 has been allocated to it (construed as remaining 28 bits of each of the second and fourth user information fields partially constitute a common information field applied to the first receiving device).

See also user info field format in Fig. 30, [0294] The User Info field for the Multi RU Allocation (MURA) Trigger frame may be configured as shown in FIG. 30.)

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of KIM to the system of BEG, YU and VERMA in order to take the advantage of method for allocating multiple RUs in a wireless local area network (WLAN) system providing increased data transmission efficiency (**KIM: [0001, 0268]**).

9. Claim 33-35 are rejected under 35 U.S.C. 103 as being unpatentable over Beg Christopher (WO 2021174337 A1, hereinafter 'BEG') in view of Yu et al. (US 20180295221 A1, of IDS, hereinafter 'YU') and with further in view of Yu et al. (US 20200328925 A1, hereinafter 'YU_925').

Regarding **claim 33**, BEG in view of YU and VERMA teaches the first receiving device of claim 28.

BEG and YU do not explicitly disclose wherein an index of an identifier subfield in the third user information field comprises an index corresponding to any one of indexes indicating reserved in the identifier subfield in the first user information field, and

indicates that the third user information field comprises a user information field applied to the first receiving device.

In an analogous art, **YU_925 teaches wherein an index of an identifier subfield in the third user information field comprises an index corresponding to any one of indexes indicating reserved in the identifier subfield in the first user information field and indicates that the third user information field comprises a user information field applied to the first receiving device** (Fig. 1, [0057] FIG. 1 shows …. communications system **100** includes an access point AP **103**, one or more first STAs **101**, and one or more second STAs **102**. ….The one or more first stations STAs **101** that have the first capability set may comply with a first standard, the one or more second station STA **102** having the second capability set may comply with a second standard.

Fig. 13, 1303, [0200] A possible frame structure of the third trigger frame is shown in FIG. 13…..

[0202] The user information field **1303** of the first STA may include information that has a function similar to that of the 802.11ax user information field, for example, an association identifier AID **1305.1**, resource indication information **1305.2**, and a modulation and coding scheme MCS **1305.3** that are of the first STA, and may further include other information such as an indication in which a quantity of streams is higher than a quantity of streams in 802.11ax, semi-orthogonal multiple access SOMA indication information, and time reuse (Time reuse) indication information. [01%] Indication information that prevents the 802.11ax station from misreading is added to the second user information field **1306** in the two user information fields included in the user information field **1303** of the first STA. In an optional manner, a most significant bit of the association identifier AID in the second user information field **1306** may be set to

1. When the 802.11ax station reads the AID, a value of the AID is greater than 2047. Therefore, the 802.11ax station cannot misread the information field as an information field of the 802.11ax station.).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of YU_925 to the system of BEG, YU and VERMA in order to take the advantage of method for flexibly improving channel utilization and transmission efficiency in a network with mobile stations operating with different wireless standards (**YU_925: [0005, 0057, 0058]**).

Regarding **claim 34**, BEG and YU do not explicitly disclose the first receiving device of claim 33, wherein the third user information field is composed of 40 bits, wherein the first 12 bits of the third user information field constitute a first identifier subfield, wherein the next 12 bits of the third user information field constitute a second identifier subfield, wherein the remaining 16 bits of the third user information field constitute or partially constitute a user information field applied to the first receiving device.

YU_925 teaches wherein the third user information field is composed of 40 bits, wherein the first 12 bits of the third user information field constitute a first identifier subfield, wherein the next 12 bits of the third user information field constitute a second identifier subfield, wherein the remaining 16 bits of the third user information field constitute or partially constitute a user information field applied to the first receiving device (Fig. 13, [0201] Optionally, the user information

field **1303** of each first STA may include user information fields **1305** and **1306** of two 802.11ax stations, and a length of the user information field **1303** may be twice a length of the user information field of the 802.11ax station.

[0202] In an optional manner, a most significant bit of the association identifier AID in the second user information field **1306** may be set to 1. When the 802.11ax station reads the AID, a value of the AID is greater than 2047. Therefore, the 802.11ax station cannot misread the information field as an information field of the 802.11ax station. In another optional manner, a resource unit allocation field RU Allocation in the second user information field may be set to a reserved value or the modulation and coding scheme MCS may be set to a reserved value. When reading the reserved value, the 802.11ax station cannot understand a meaning of the reserved value. Therefore, the 802.11ax station cannot misread the information field as an information field of the 802.11ax station.).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of YU_925 to the system of BEG, YU and VERMA in order to take the advantage of method for flexibly improving channel utilization and transmission efficiency in a network with mobile stations operating with different wireless standards (**YU_925: [0005, 0057, 0058]**).

Regarding **claim 35**, BEG and YU do not explicitly disclose the first receiving device of claim 34, wherein the first identifier subfield is an identifier subfield for indicating that the third user information field includes a user information field applied to

the first receiving device, wherein the second identifier subfield is an identifier subfield for indicating an identifier of the first receiving device.

YU_925 teaches the first receiving device of claim 34, wherein the first identifier subfield is an identifier subfield for indicating that the third user information field includes a user information field applied to the first receiving device, wherein the second identifier subfield is an identifier subfield for indicating an identifier of the first receiving device ([0201] Optionally, the user information field **1303** of each first STA may include user information fields **1305** and **1306** of two 802.11ax stations, and a length of the user information field **1303** may be twice a length of the user information field of the 802.11ax station.

[0202] In an optional manner, a most significant bit of the association identifier AID in the second user information field **1306** may be set to 1. When the 802.11ax station reads the AID, a value of the AID is greater than 2047. Therefore, the 802.11ax station cannot misread the information field as an information field of the 802.11ax station. In another optional manner, a resource unit allocation field RU Allocation in the second user information field may be set to a reserved value or the modulation and coding scheme MCS may be set to a reserved value. When reading the reserved value, the 802.11ax station cannot understand a meaning of the reserved value. Therefore, the 802.11ax station cannot misread the information field as an information field of the 802.11ax station.).

Therefore, it would have been obvious to one of ordinary skill in the art, before the effective filing date of the claimed invention, to take the technique of trigger frame format of YU_925 to the system of BEG, YU and VERMA in order to take the advantage

of method for flexibly improving channel utilization and transmission efficiency in a network with mobile stations operating with different wireless standards (**YU_925: [0005, 0057, 0058]**).

Allowable Subject Matter

10. Claims 36-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and in intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 36**, BEG, YU, VERMA, KIM and YU_925 or any prior arts of record identified ***either alone or in combination fails to teach*** the first receiving device of claim 34, wherein, when the remaining 16 bits of the third user information field are less than a number of bits required to include the user information field applied to the first receiving device, a fifth user information field among the plurality of user information fields is used as the user information field applied to the first receiving device in addition to the third user information field.

Claim 37 is dependent on claim 36 and interpreted same as claim 36.

Claim 38 is dependent on claim 37 and interpreted same as claim 36.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Park et al. (US 20230017257 A1), describing METHOD AND APPARATUS FOR RECEIVING PPDU THROUGH MULTIPLE RUS IN WIRELESS LAN SYSTEM

b. Nezou et al. (US 20220369311 A1), describing RESOURCE UNITS FOR UNASSOCIATED STATIONS AND GROUPED MULTI-USER TRANSMISSIONS IN 802.11AX NETWORKS

c. Yukawa et al. (US 20220124770 A1), describing COMMUNICATION APPARATUS, WIRELESS COMMUNICATION SYSTEM, AND METHOD FOR CONTROLLING ACCESS POINT

d. Kneckt et al. (US 20210392571 A1), describing Multi-Link Beaconing And Discovery

e. Iwai et al. (US 20200146052 A1), describing COMMUNICATION APPARATUS AND COMMUNICATION METHOD

f. Yu et al. (US 20180295221 A1), describing METHOD AND APPARATUS FOR TRANSMITTING TRIGGER FRAME IN WIRELESS LOCAL AREA NETWORK

g. Noh et al. (US 20170094685 A1), describing APPARATUS AND METHODS FOR TXOP DURATION FIELD IN PHY HEADER

h. Chu et al. (US 20160366701 A1), describing CHANNEL ACCESS FOR SIMULTANEOUS UPLINK TRANSMISSIONS BY MULTIPLE COMMUNICATION DEVICES

i. Li et al. (US 20160330742 A1), describing MANAGING ORTHOGONAL FREQUENCY DIVISION MULTIPLE ACCESS UPLINK OPERATIONS

j. Kim et al. (US 20210329721 A1), describing METHOD AND DEVICE FOR TRANSMITTING INFORMATION FOR OPERATING STATION IN WIRELESS LOCAL AREA NETWORK SYSTEM SUPPORTING MULTIPLE BANDS

k. Ko et al. (US 11129163 B2), describing Wireless Communication Method And Wireless Communication Terminal In Basic Service Set Overlapping With Another Basic Service Set

l. Chu et al. (US 20210266890 A1), describing METHOD AND APPARATUS FOR OPERATING A BASIC SERVICE SET (BSS)

m. Chu et al. (US 20210227529 A1), describing MANAGING ORTHOGONAL FREQUENCY DIVISION MULTIPLE ACCESS UPLINK OPERATIONS

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHAH M RAHMAN whose telephone number is (571)272-8951. The examiner can normally be reached 9:30AM-5:30PM PST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, UN C CHO can be reached on 571-272-7919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/SHAH M RAHMAN/
Primary Examiner, Art Unit 2413

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	Examiner SHAH M RAHMAN	Art Unit 2413	Page 1 of 2

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*	C	US-20220353847-A1	11-2022	KIM; Jeongki	H04W72/20	1/1
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*	F	US-20200328925-A1	10-2020	YU; Jian	H04L27/2666	1/1
*	G	US-20200146052-A1	05-2020	IWAI; TAKASHI	H04W74/02	1/1
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*	B	US-20210227529-A1	07-2021	CHU; Liwen	H04W72/23	1/1
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
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	Examiner	Art Unit
	SHAH M RAHMAN	2413

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H04L2212/00, H04L69/08, H04L69/18, H04L69/324, H04W74/002, H04W84/12, H04W4/20	04/08/2023	SMR

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2ESEARCH including Keywords, Classification, Inventors and Assignee (see search notes)	04/08/2023	SMR
IP.com, google.com searches	04/08/2023	SMR

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	See attached PE2ESEARCH notes	04/08/2023	SMR

/SHAH M RAHMAN/ Primary Examiner, Art Unit 2413	