### IEEE P802.11Wireless LANs

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| Proposed Draft Specification for Trigger frame for EHT |
| Date: 2021-03-17 |
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Abstract

We propose draft text for Draft 0.5

Revisions:

* Rev 0: Initial version of the document. Revise the highlighted text in 11/21-0259r4 to address 11/21-0366r3

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the subsequent TGbe Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

**Discussion:**

In R1, an 1-bit HE/EHT indication in the common part of the Trigger frame is used to indicate to the EHT STA whether to transmit an HE or EHT TB PPDU within the primary 160 MHz.

* Use B54 (the first bit) of UL HE-SIG-A2 Reserved field to carry this HE/EHT indication.

NOTE – The EHT STA shall not transmit an HE TB PPDU on the secondary 160 MHz.

[Motion 150, #SP384, [92] and [316]]*[#M19]*

In a Trigger frame that solicits an EHT TB PPDU, a Special User Info field is placed immediately after the Common Info field and the Special User Info field carries the following non-derived subfields of the U-SIG in the TB PPDU:

• PHY Version ID (3 bits)

• PPDU Bandwidth Extension field (2 bits)

• Spatial Reuse 1 (4 bits)

• Spatial Reuse 2 (4 bits)

• U-SIG Reserved bits (12 bits)

The length of the Special User Info field is the same as that of the other User Info fields in the Trigger frame.

[Motion 150, #SP368, [92] and [322]]*[#M20]*

If the Special User Info field is not present in the Trigger frame, then the User Info field is the HE format and the EHT STA transmits an HE TB PPDU.

In R1, if the Special User Info field is present in the Trigger frame, the User Info field is the EHT Format and the EHT STA transmits an EHT TB PPDU.

[Motion 150, #SP369, [92] and [322]]*[#M21]*

Straw poll #393

Do you support using B55 of the Common Info Field to indicate the presence of the Special User Info Field in the Trigger Frame?

• B55 is set to 1 to indicate that there is no Special User Info field in the Trigger frame.

• B55 is set to 0 to indicate that the Special User Info field is present in the Trigger frame. [#SP393] (#SP1)

Straw poll #401

Do you agree with the following?

• An EHT non-AP STA will use the HE/EHT P160 subfield (B54) of the Common Info Field and the B39 of the User Info Field to determine whether to transmit an HE or an EHT TB PPDU.

o If the HE/EHT P160 subfield (B54) of the Common Info Field is set to 1 and B39 of the User Info Field is set to 0, then the EHT non-AP STA will transmit an HE TB PPDU, otherwise it will transmit an EHT TB PPDU.

o Note: B39 is reserved and set to 0 for an HE variant User Info Field, and is PS160 for an EHT variant User Info Field

o Note: an EHT STA shall not transmit EHT TB PPDU if Special User Info Field Present is set to 1 (indicating not present) [#SP401] (#SP2)

**Propose:**

### Trigger frame format

### 9.3.1.22.1 General

### 9.3.1.22.1.2 User Info List field*(#Ed)*

***Discussion: B54 and B39 determine whether to send a HE or EHT TB PPDU (#SP2). To avoid ambiguity, the following table summarizes valid bit patterns and corresponding behaviors at AP and non-AP STAs #M19, #M21, #SP1, #SP2***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Common Info Field B54** | **User Info Field B39** | **Common Info Field B55** | **Summary of Bit meanings****SUIF stands for Special User Info field** | **TB PPDU Type** | **Support on AP STA** | **Support on non-AP STA** |
| 1 | 0 | 1 | (P160=HE) & (P160) & (No SUIF) | HE | HE behavior | HE behavior |
| 0 | 0 | 0 | (P160=EHT) & (P160) & (SUIF) | EHT | R1 | R1 |
| 0 | 1 | 0 | (P160=EHT) & (S160) & (SUIF) | EHT | R1 | R1 |
| 1 | 1 | 0 | (P160=HE) & (S160) & (SUIF) | EHT | R2 (for A-PPDU) | R1 and R2 |
| 1 | 0 | 0 | (P160=HE) & (P160) & (SUIF) | HE | R2 (for A-PPDU) | R1 and R2 |
| 0 | 0 | 1 | (P160=EHT) & (P160) & (No SUIF) | Reserved |
| 0 | 1 | 1 | (P160=EHT) & (S160) & (No SUIF) |
| 1 | 1 | 1 | (P160=HE) & (S160) & (No SUIF) |

***TGbe editor: Please update the 1st paragraph as follows:***

A User Info field that is addressed to a non-AP STA is either an HE variant or EHT variant. The User Info field is an HE variant addressed to an EHT non-AP STA if the B39 of the User Info field is set to 0 and the B54 of the Common Info field is set to 1 in the Trigger frame; otherwise, it is an EHT variant. The B39 is reserved and set to 0 for an HE variant User Info field, and is PS160 subfield for an EHT variant User Info field. Table 9-64d0 (Valid combinations of B54 and B55 in the Common Info field, B39 in the User Info field and solicited TB PPDU format) defines valid combinations of the B54 and B55 in the Common Info field, the B39 in the User Info field, the presence of the Special User Info, the variant of a User Info field and the corresponding TB PPDU type.

 *(#M19, #M21, #SP1, #SP2*)

**Table 9-64d0- Valid combinations of B54 and B55 in the Common Info field, B39 in the User Info field and solicited TB PPDU format**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Common Info field B54** | **Common Info field B55** | **User Info field B39** | **Presence of Special User Info field** | **User Info field variant** | **TB PPDU type** |
| 1 | 1 | 0 | No | HE variant | HE |
| 0 | 0 | 0 | Yes | EHT variant | EHT |
| 0 | 0 | 1 | Yes | EHT variant | EHT |
| 1 | 0 | 1 | Yes | EHT variant | EHT |
| 1 | 0 | 0 | Yes | HE variant | HE |

*(#M19, #M21, #SP1, #SP2*)

***Discussion: The last two rows in Table 9-64d0 depend on A-PPDU, which is an R2 feature.***

* ***An EHT AP in R1 shall not use the combinations in the last two rows. This rule is added based on dot11EHTBaseLineFeaturesImplementedOnly, a variable used by PHY PDT (e.g. 11-21/325) to indicate R1 STAs.***
* ***A non-AP EHT STA in R1 supports the last two rows so that it may be allowed to participate in an A-PPDU transmission scheduled by a future R2 AP***

***TGbe editor: Please add two new paragraphs after Table 9-64d0 as follows:***

An EHT STA shall not transmit an EHT TB PPDU if the B55 of the Common Info field is set to 1 (#SP2).

An EHT AP with dot11EHTBaseLineFeaturesImplementedOnly equal to true shall not transmit a Trigger frame which has B54 in the Common Info field equal to 1 and B55 in the Common Info field equal to 0.

If an EHT non-AP STA is solicited to send a TB PPDU by a Trigger frame and the combination of the B54, B55 in the Common Info field, the B39 in the User Info field addressed to it and the presence of the Special User Info field in the Trigger frame does not match any of the combinations of the values specified in the rows in Table 9-64d0 (Valid combinations of B54 and B55 in the Common Info field, B39 in the User Info field and solicited TB PPDU format), then the STA shall not respond with a TB PPDU to the Trigger frame.

### 9.3.1.22.1.3 Special User Info field

***Discussion: Update the following text based on Table 9-64d0 that is derived from #M19, #M21, #SP1, #SP2***

***TGbe editor: Please update the 6th and 7th paragraph as follows:***

The presence of the Special User Info Field in the Trigger frame is indicated by the B55 of the Common Info field in the Trigger frame. B55 is set to 1 to indicate that there is no Special User Info field in the Trigger frame, and set to 0 to indicate that the Special User Info field is present in the Trigger frame immediately after the Common Info field. *(#SP1)*

If solicited by an EHT variant User Info field in a Trigger frame then the addressed EHT STA responds to the Trigger frame with an EHT TB PPDU as defined in 35.4.1 (UL MU operation), except for an MU-RTS in which case the EHT STA responds to the Trigger frame with a non-HT duplicate PPDU. *(#M19, #M21, #SP1, #SP2)*

If solicited by an HE variant User Info field in a Trigger frame then the addressed EHT STA responds to the Trigger frame with an HE TB PPDU as defined in 26.5.2 (UL MU operation), except for an MU-RTS in which case the EHT STA responds to the Trigger frame with a non-HT duplicate PPDU.  *(#M19, #M21, #SP1, #SP2)*

### 35.4 MU operation

### 35.4.1 DL MU operation

### 35.4.2 UL MU operation

### 35.4.2.2 Rules for soliciting UL MU frames

### 35.4.2.2.1 Allowed settings of the Trigger frame fields and TRS Control subfield

***Discussion: Changes below addresses #M19, #M20, #M21, #SP1, #SP2, which collectively determine the format of a Trigger frame as defined in Table 9-64d0***

***TGbe editor: Please update the 2nd and 3rd paragraph as follows:***

If the dot11EHTBaseLineFeaturesImplementedOnly is equal to true then an EHT AP shall not transmit a Trigger frame that solicits both an HE TB PPDU and an EHT TB PPDU.

The AID12 subfield of the Special User Info field shall be set to 2007. An EHT AP that includes the Special User Info field in a Trigger frame shall set Special User Info Field present to 0 and the special User Info field shall be placed immediately after the Common Info field. *(#M20, #SP1)* An EHT AP shall set the value of B54 in the Common Info field of a Trigger frame to 1 if there exists any HE variant User Info field in the Trigger frame. Otherwise, the EHT AP shall set the value of B54 in the Common Info field of the Trigger frame to 0.

***Discussion: Changes below addresses #M19, #M20, #M21, #SP1, #SP2, which collectively determine the format of a Trigger frame as defined in Table 9-64d0***

***TGbe editor: Please update the 6th paragraph as follows:***

An EHT non-AP STA that transmits a TB PPDU shall satisfy the conditions defined in 26.5.2.3 (Non-AP STA behavior for UL MU operation). A User Info field that is addressed to a non-AP STA is either an HE variant or EHT variant. The User Info field is an HE variant addressed to a non-AP STA if the B39 of the User Info field is set to 0 and the B54 of the Common Info field is set to 1 in the Trigger frame; otherwise, it is an EHT variant. *(#SP2)*

If an EHT non-AP STA receives an EHT variant User Info field in the Trigger frame in which the AID12 subfield matches its AID, then it responds with an EHT TB PPDU. If an EHT non-AP STA receives an HE variant User Info field in the Trigger frame in which the AID12 subfield matches its AID, then it responds with an HE TB PPDU.

**Straw Poll: Do you support to incorporate the proposed draft text in this document 11-21/0490r0 to the TGbe Draft 0.5?**

**Result: Yes/No/Abstain**