### **IEEE P802.11 Wireless LANs**

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| CC36 CR for Trigger Frame and MCS Set | | | | |
| Date: 2022-03-21 | | | | |
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**Abstract**

This submission proposes resolutions for the following CIDs for TGbe CC36:

6937,4658,6077,5312,5313,4963,7330,4005,8067,6694

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: editorial updates of the Resolution column on pages 2 and 3
* Rev 2: updated the resolution for CID 5312 based on offline inputs; Added a related CID 6077; Added discussions on how resolve the editorial comments from CIDs 8067 and 6694

***TGbe editor: Please note Baseline is REVmd D5.0, 11ax D8.0, and 11be D1.4***

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| CID | Commenter | Clause | Page | Comment | Proposed Change | Resolution |
| 6937 | Saju Palayur | 9.3.1.22.9 | 0.00 | Does NFRP frame is supported by EHT ? | Equation (9-0b) in 11ax calculating the number of users in NFRP frame should be updated for 320MHz | Rejected  The comment fails to identify a technical issue and is asking a question. NFRP is supported as part of the 11ax amendment wherein the generation of the TB feedback NDP uses the format define in HE. Currently there is no EHT TB feedback NDP defined and hence no changes to the equation are needed. |
| 4658 | Brian Hart | 9.3.1.22.5 | 104.21 | For 11beD1, if amended by 21/991r1 or similar, MU-RTS is a class 1 frame used for fundamental channel access. Architecturally it should have absolutely minimal dependency on state such as knowledge of the recipients' capabilities, or knowledge that the recipients have learnt state of the transmitter (such has static puncturing preamble). This direction would create technical debt that we will need to pay for of the next 20 years via unnecessary constraints, workarounds and inefficiencies (again and again). | Make the inputs to transmitting a response to a MU-RTS frame contained within the MU-RTS to the greatest extent possible: e.g., as well as bandwidth, include puncturing pattern etc etc. | Rejected  MU RTS Trigger frame is already expected to be mandatory supported by post 11ax devices, and the BW provided within the frame itself covers the wider BWs (320 MHz of 11be) and also RU allocations that span this BW. On the other hand the group has discussed the puncturing signaling at length and has agreed that in the current draft we only cover the static puncturing (i.e., puncture information provided in the EHT Operation element). |
| 6077 | Liwen Chu | 10.3.2 | 166.19 | The spec should allow MU-RTS to provide different channel puncture from the BSS operating channel which is static BW negotiation. | Address the issue raised by the comment. | Rejected  The group has discussed the puncturing signaling at length and has agreed that in the current draft we only cover the static puncturing (i.e., puncture information provided in the EHT Operation element). |
| 5312 | Jarkko Kneckt | 9.3.1.22.5 | 104.21 | The AP should be able to solicit CTS from SST STAs MU-RTS frame to SST STAs. This ensures:1. Good CCA detection by SST-STAs 2. Good TXOP protection. Please see 20/ 1583r1 for more details. | Please add new clause to 35.3. to describe how MU-RTS frame solicits CTS from SST STAs. | Rejected  20/1583r1 had been discussed in the group but the group was unable to come to a consensus. |
| 5313 | Jarkko Kneckt | 9.3.1.22.5 | 104.21 | The MU-RTS frame can signal BW allocations and more information than RTS. This additional signaling information is useful for non-AP STA initiated transmissions. | Please allow non-AP MLDs/STAs to transmit MU-RTS frame | Rejected  MU RTS Trigger frame provides the same information as the RTS frame in terms of BW signaling. The MU RTS Trigger frame has the flexibility of indicating multiple RU allocations for multiple STAs, however these are not functionalities that are envisioned for a STA that is associated to a single AP. Hence there is no benefit from a STA perspective to implement the generation of a MU RTS Trigger frame that has larger overhead compared to RTS without compelling technical benefits. |
| 4963 | Eunsung Park | 9.3.1.22.1.1 | 84.30 | In Figure 9-64b1, the Reserved subfield using bits from B56 to B62 as well as the HE/EHT P160 and Special User Info Field Present subfields are used as UL HE-SIG-A2 Reserved subfield when soliciting HE TB PPDU. Since the EHT variant Trigger frame can solicit HE TB PPDU as well as EHT TB PPDU it needs to be specified. | Specify these subfields are used for UL HE-SIG-A2 Reserved subfield when the EHT variant Trigger frame solicits HE TB PPDU. | Rejected  If an EHT STA determines that it has to transmit an HE TB PPDU in response to a Trigger frame, then the EHT STA will follow the existing HE rules for the UL HE-SIG-A2 Reserved subfield. So no extra EHT rule is necessary. |
| 7330 | stephane baron | 9.3.1.22.1.1 | 85.39 | UL LENGTH field definition is incomplete. in the case of a MU-RTS TXS, UL Length subfield indicates the time allocated to non-AP STA for transmition. | insert the sentence "in an MU RTS Trigger frame with TXOP sharing mode different from 0, the UL Length subfield indicates the time allocated to non-AP STA for transmition (as defined in 35.2.1.3 Triggered TXOP sharing procedure)." | Rejected  The definition of the UL Length field is already clear for all trigger variants, including MU RTS Trigger frame:  The UL Length field of a Trigger frame indicate the value of the L-SIG Length field of the solicited HE TB PPDU (P988L57 of REVme D1.0) and is actually reserved for an MU RTS Trigger frame variant (P997L1-5). |
| 4005 | Abhishek Patil | 9.4.1.9 | 110.48 | Update entry for Status code 18 to include EHT Basic MCS and NSS Set field not supported. | As in comment | Revised  Agree with the commenter in principle  Tgbe editor please implement changes as shown in doc 11-22/0452r2 tagged as #4005 |
| 8067 | yujin noh | 9.3.1.22.1 | 82.34 | Comparing to Trigger frame in 11ax, the length of the subclaues is lengthy. As of now, it shows only 9.3.1.22.1 General so it is difficult to search common info field, User Info List field, etc respectively.  Make 9.3.1.22.1.1 to 9.3.1.22.1.4 to be shown in bookmarks for conveinent search. | as in comment | Rejected  Agree in principle with the commenter that it would be nicer to make the subclauses shown in the bookmarks. However, there is also a need to limit the depth of subclauses to 5 levels based on the IEEE style guide, which essentially requires us to avoid any subclauses with 6 levels. This does not appear to be straightforward to have overall structure update for 9.3.1.22.1 while technical update is also ongoing. It looks safer to have the structure update in the next round.  Hence, proposal is to not change the numbering of this subclause and dependent subclauses. |
| 6694 | Rojan Chitrakar | 9.3.1.22.1.2 | 90.07 | I believe as per 802.11 Style Guide, if a clause contains sub-clauses, the base clause should not contain any text; so the text of lines 7 - 56 should be moved under the child subclause 9.3.1.22.1.2.1. | Move the text of lines 7 - 56 under the first child subclause 9.3.1.22.1.2.1. | Rejected –  Agree in principle with the commenter that the base clause should not have text in it. However, there is also a need to limit the depth of subclauses to 5 levels based on the IEEE style guide, which essentially requires us to avoid any subclauses with 6 levels. This does not appear to be straightforward to have overall structure update for 9.3.1.22.1 while technical update is also ongoing. It looks safer to have the structure update in the next round.  Hence, proposal is to not create a new subclause for the text. |

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 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.***

**9.4.1.9 Status Code field**

***TGbe editor: Please update the following row in Table 9-78—Status codes (P149L48 of D1.4)***

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| **Table 9-78--Status codes** | | |
| **Status code** | **Name** | **Meaning** |
| 18 | REFUSED\_BASIC\_RATES\_MISMATCH | Association denied due to requesting STA not supporting all of the data rates in the BSSBasicRateSet parameter, the Basic HT-MCS Set field of the HT Operation parameter, ~~or~~ the Basic VHT-MCS and NSS Set field in the VHT Operation parameter, the Basic HE-MCS And NSS Set field in the HE Operation parameter, or the Basic EHT-MCS And NSS Set field in the EHT Operation parameter. (#4005) |

**35.15.1 Basic EHT BSS operation**

***TGbe editor: Please append the following 3 paragraphs to 35.15.1 (P447L48 of D1.4)***

(#4005)A STA that is operating in an EHT BSS shall be able to receive and transmit at each of the <EHT-MCS, NSS> tuple values indicated by the Basic EHT-MCS And NSS Set field of the EHT Operation parameter of the MLME-START.request primitive and shall be able to receive at each of the <EHT-MCS, NSS> tuple values indicated by the Supported EHT-MCS and NSS Set field in the EHT Capabilities parameter of the MLME-START.request primitive.

(#4005)The basic EHT-MCS and NSS set is the set of <EHT-MCS, NSS> tuples that are supported by all EHT STAs that are members of an EHT BSS. It is established by the STA that starts the EHT BSS, indicated by the Basic EHT-MCS And NSS Set field of the EHT Operation parameter in the MLME-START.request primitive. Other EHT STAs determine the basic EHT-MCS and NSS set from the Basic EHT-MCS And NSS Set field of the EHT Operation element in the BSS Description derived through the scan mechanism (see 11.1.4.1 (General)).

(#4005)An EHT STA shall not attempt to join (MLME-JOIN.request primitive) a BSS unless it supports (i.e., is able to both transmit and receive using) all of the <EHT-MCS, NSS> tuples in the basic EHT-MCS and NSS set.

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| CID | Commenter | Clause | Page | Comment | Proposed Change | Resolution |
| 8067 | yujin noh | 9.3.1.22.1 | 82.34 | Comparing to Trigger frame in 11ax, the length of the subclaues is lengthy. As of now, it shows only 9.3.1.22.1 General so it is difficult to search common info field, User Info List field, etc respectively.  Make 9.3.1.22.1.1 to 9.3.1.22.1.4 to be shown in bookmarks for conveinent search. | as in comment | TBD based SP below |
| 6694 | Rojan Chitrakar | 9.3.1.22.1.2 | 90.07 | I believe as per 802.11 Style Guide, if a clause contains sub-clauses, the base clause should not contain any text; so the text of lines 7 - 56 should be moved under the child subclause 9.3.1.22.1.2.1. | Move the text of lines 7 - 56 under the first child subclause 9.3.1.22.1.2.1. | TBD based SP below |

**Discussion on editorial updates for 9.3.1.22 (Trigger frame format) to resolve CIDs 8067 and 6694:**

**Background**: D1.4 has the following structure for 9.3.1.22:

9.3.1.22 Trigger frame format

9.3.1.22.1 General

9.3.1.22.1.1 Common Info field

9.3.1.22.1.2 User Info List field

9.3.1.22.1.2.1 HE variant User Info field

9.3.1.22.1.2.2 EHT variant User Info field

9.3.1.22.1.2.3 Special User Info field

9.3.1.22.1.3 Padding field

9.3.1.22.2 Basic Trigger frame format

9.3.1.22.3 BFRP Trigger frame format

… … … …

**Candidate solutions:** the IEEE style guideline limits the depth of subclauses to 5 levels and a subclause deeper than that does not show up in the bookmarks. So we have two candidate options to satisfy both CIDs:

**Option1: flatten** **9.3.1.22.1 (General) so that it does not contain subclauses in it**

* Expected changes
  + Delete subclauses headings
  + Update references to those subclauses (~20 changes)
* Pros: meet the IEEE style guide
* Cons: 9.3.1.22.1 (General) will be very long and there won’t be a bookmark for Common Info or User Info

**Option2:** **move the subclauses out of 9.3.1.22.1 (General) so that they become level-5 subclauses; add only references to those subclauses in 9.3.1.22.1 (General)**

* Expected changes
  + See example changes below
* Pros: meet the IEEE style guide; enable bookmarks for easier access to Common Info or User Info fields
* Cons: global update of 9.3.1.22 (Trigger frame format), include HE spec text

Example changes for option2:

9.3.1.22 Trigger frame format

9.3.1.22.1 General (this subclause will provide complete text for the MAC header such as Duration TA, RA; user Info List field, Padding field. On the other hand, this subclause provides only an overview and references of the Common Info field, User Info fields below)

9.3.1.22.2 Common Info field of the Trigger frame

9.3.1.22.3 HE variant User Info field of the Trigger frame

9.3.1.22.4 EHT variant User Info field the Trigger frame

9.3.1.22.5 Special User Info field

9.3.1.22.6 Basic Trigger frame format

9.3.1.22.7 BFRP Trigger frame format

… … … …

**SP: which option do you support on the structure change to 9.3.1.22.1 (General)?**

Option1: flatten 9.3.1.22.1 (General) so that it does not contain subclauses in it

Option2: move the subclauses out of 9.3.1.22.1 (General) so that they become level-5 subclauses; add only references to those subclauses in 9.3.1.22.1 (General)

Option3: abstain