IEEE P802.11  
Wireless LANs

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| CIDs related to TF | | | | |
| Date: September 5, 2017 | | | | |
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Abstract

This submission proposes resolutions for following CID received for TGax LB225 (41):

3011, 6079, 7482, 8534, 5914, 6290, 7742, 8344, 8652, 7743, 7744, 9629, 9823, 7483, 9776, 7671, 8656, 7524, 6083, 5825, 6061, 9259, 8339, 9632, 7747, 8023, 9634, 9758, 7746, 9347, 9830, 9474, 5380, 3017 7954, 9639, 7265, 8379, 9506, 7751, 5707

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Updated based on offline feedback
  + Minor revision to resolution text for CID 9259 after discussion with Tomo and Yongho
  + Revised reason for reject for CID 6061 based on discussion with Jeongki and Alfred
* Rev 2:
  + Included resolution for CID 8534
  + Added changes to the 4th paragraph in 27.5.2.2.3 to be in line with the CR documents 11-17/1264 and 11-17/1285
  + Clarified that 11 LSBs of the AID12 subfield are set to 2047 to indicate start of Padding field based on discussion with Po-Kai

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 TGax Draft. This introduction is not part of the adopted material.

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

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

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 3011 | Abhishek Patil | 41.46 | 9.3.1.23 | There is no reason to have a bracket around RA as RA is always present in the trigger frame | Remove brackets around RA. | Revised  Agree with the comment. D1.4 does not show RA with brackets around it.  **TGax editor: No further changes are needed.** |
| 6079 | Jian Yu | 41.47 | 9.3.1.23 | Delete the bracket of RA | As in comment | Revised  Agree with the comment. D1.4 does not show RA with brackets around it.  **TGax editor: No further changes are needed.** |
| 7482 | Lei Huang | 41.47 | 9.3.1.23 | "(RA)" should be changed to "RA". | As per comment | Revised  Agree with the comment. D1.4 does not show RA with brackets around it.  **TGax editor: No further changes are needed.** |
| 8534 | Robert Stacey | 157.36 | 27.4.1 | Missing TA field setting rules of Multi-STA BlockACK frame in MultiBSSID is supported, as defined in Trigger frame (see section 27.5.2.2.2) | Need to add the TA field setting rules for the Multi-STA BlockACK frame in case of dot11MultiBSSIDActivated is false / true, similar to the rules of trigger frame (section 27.5.2.2.2) | Revised  TA setting rules for a Multi-STA BA when dot11MultiBSSIDActivated is true/false are covered on pg 217 line 40 in D1.4. The corresponding text was approved during IEEE March 2017 meeting (motion #174, doc: 11-17/230r1)  **TGax editor: No further changes are needed.** |
| 5914 | James Yee | 41.60 | 9.3.1.23 | How are multiple User Info fields carried in the Trigger Frame when sent via broadcast? Is there a limit to the number of AID12 values can be present? What if the same AID12 value appears more than once? It's also not clear how multiple User Info fields are parsed by the recipient since the number of User Info fields present is not indicated. | Please clarify. For simplicity limit the number of User Info fields. | Revised  Some of the concerns raised by the comment are already addressed in the present draft.  The User Info fields are carried one after the other. Please refer to Figure 9-52c and there is no limit (from the frame format perspective) in the number of AID12 values that can be present. The only limit is the length of the Trigger frame which in turn is limited by PHY related parameters of the PPDU carrying the MPDU. The length of each User Info field is fixed for a TF type and the STA uses this information to parse the subsequent user info fields.  Also, no more than one AID of value between 1 and 2007 can be found in the Trigger frame (see 27.5.2.2.2 (D1.4 P227L21)) and there is an order in which RUs appear in the TF (i.e., directed RUs before RA RUs) and only certain RU assignments can repeat (e.g., AID12=0 or >2007). Moved text from section 9.3.1.23 (descriptive) to section 27.5.2.2.3 to provide normative behavior.  Further, non-AP STAs may ignore the remainder of the User Info fields if they are the intended receiver of a User Info field in a TF. Correspond text in 27.5.4.2 (D1.3 P237L52) is now moved to 27.5.2.3. since it applies to all TFs not just the ones that carry RA-RUs  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 6290 | John Coffey | 41.65 | 9.3.1.23 | Inconsistent usage: here we have "The TA field value is". In many (most?) other places in the draft we have "The TA field is". What distinction is intended between these two forms? If no distinction is intended, the same form should be used. | Delete "value". | Revised  The text in this paragraph was updated in previous revisions of the draft and the inconsistent usage pointed by the comment is not present in D1.4.  **TGax editor: No further changes are needed.** |
| 7742 | Mark Hamilton | 42.26 | 9.3.1.23 | "can" is not appropriate for a normative permission. Use declarative verbs in clause 9. | Change "can include an optional ... and optional ..." to "optionally includes a ... and ..." | Revised  Agree with the comment.  The sentence was removed from this location. A new sentence was added at the end of Common Info field and User Info field to indicate that depending on the TF type, the TF may include a Trigger Dependent Common Info subfield (in the Common Info field) and/or a Trigger Dependent User Info subfield (in the User Info field).  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 8344 | Peter Loc | 42.26 | 9.3.1.23 | The Trigger Dependent User Info field is not explicitly defined | Change "The Trigger frame can include an optional Trigger Dependent Common Info field and optional Trigger Dependent User Info field" to "The Trigger frame can optionally include a Trigger Dependent Common Info field and a Trigger Dependent User Info field. The Trigger Dependent Common Info field is a component of the Common Info Field. The Trigger dependent user info field is a component of the User info field." | Revised  Agree with the comment.  Please resolution for CID 7742.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 8652 | Sigurd Schelstraete | 42.26 | 9.3.1.23 | The sentence "The Trigger frame can include an optional Trigger Dependent Common Info field and optional Trigger Dependent User Info field." looks out of place. This paragraph is about Trigger Type subfield. | Move sentence to more appropriate location | Revised  Agree with the comment.  Please resolution for CID 7742.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 7743 | Mark Hamilton | 43.02 | 9.3.1.23 | Use 'shall' for normative requirements. | Change "are required to" to "shall" | Rejected  The text in section 9 is expected to be descriptive and not normative |
| 7744 | Mark Hamilton | 43.05 | 9.3.1.23 | Use normative verbs to state requirements (or non-requirements) | Change "are not required to consider" to "may ignore" | Rejected  The text in section 9 is expected to be descriptive and not normative |
| 9629 | Yongho Seok | 43.51 | 9.3.1.23 | "The AP shall set the MU-MIMO LTF Mode subfield to..." Remove "shall" from clause 9 according 802.11 Editorial Style Guide. | As per comment. | Revised  The sentence was revised in an earlier version of the draft and the normative text is no longer present in the current version of the draft.  **TGax editor: No further changes are needed** |
| 9823 | Young Hoon Kwon | 43.52 | 9.3.1.23 | Normative behavior such as "The AP shall set .." is not appropriate in clause 9. Move this part to sub-clause related with AP behavior for UL MU transmission. | As in the comment. | Revised  The sentence was revised in an earlier version of the draft and the normative text is no longer present in the current version of the draft.  **TGax editor: No further changes are needed** |
| 7483 | Lei Huang | 44.23 | 9.3.1.23 | "Table 22-13" should be changed to "Table 21-13". | As per comment | Revised  The incorrect table reference pointed by the comment is not present in D1.4.  **TGax editor: No further changes are needed.** |
| 9776 | Youhan Kim | 44.56 | 9.3.1.23 | Description for the Packet Extension field is not clear. What is the first two bits? B34-35? What is the definition of the pre-FEC padding factor? Is it the same as Table 28-39? | Clarify the definition of the Packet Extension field. | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft includes a table and further details that address the issues pointed by the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 6083 | Jian Yu | 44.56 | 9.3.1.23 | Pre-FEC Padding Factor (2bits) and PE disambiguity (1bit) as in HE-SIG-A field should refer to the HE-SIG-A as a reference | As in comment | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft includes a table and further details that address the issues pointed by the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 8656 | Sigurd Schelstraete | 44.56 | 9.3.1.23 | Split the "packet extension subfield" into two fields, similar to what was done for HE-SIG-A: one field for "pre-FEC padding factor" and one field for "PE Disambiguity". | See comment | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft has split the description into two fields as suggested in the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 7524 | Lei Huang | 44.56 | 9.3.1.23 | Regarding packet extension, HE-SIG-A includes 2-bit pre-FEC padding factor subfield and 1-bit PE disambiguity subfield. However, the Trigger frame includes 3-bit packet extension subfield. For keeping consistency, it is better to split 3-bit packet extension subfield in the Trigger frame into a 2-bit pre-FEC padding factor subfield and 1-bit PE disambiguity subfield. | as per comment | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft has split the description into two fields as suggested in the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 7671 | Lochan Verma | 44.57 | 9.3.1.23 | The sentence "first two bits indicate the pre-FEC padding factor and third bit indicates the PE-Disambiguity" is confusing since endianess is not stated. | The bits B34-B35 indicate the pre-FEC padding factor and the bit B36 indicates the PE-disambiguity | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft includes a table and further details that address the issues pointed by the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 5825 | Huizhao Wang | 44.58 | 9.3.1.23 | Need to add the encoding table of Packet Extension subfield | Please add the encoding table of Packet Extension subfield | Revised  The description related to Packet Extension field was update during recent revisions of the draft. The latest draft includes a table and further details that address the issues pointed by the comment. No further changes are required.  **TGax editor: No further changes are needed** |
| 6061 | Jeongki Kim | 45.26 | 9.3.1.23 | In legacy WLAN, AID range is 1~2007 and the size of STAID in HE-SIG B is 11. If there is no special reason of 12 bits AID (i.e., AID 12 ), then change AID 12(B0~B11) to AID 11 (B0~B10) and 1 reserved bit (B11) | As in comment | Rejected The recommendation in the comment is already in place. AID12 in User Info field is consistent with NDP Announcement AID12 STA Info field. This allows extending the AID range in the future (if needed). From section 9.4.1.8 (AID field): "A non-DMG STA assigns the value of the AID in the range 1–2007; the 5 MSBs of the AID field are reserved." – i.e., bit 12 is reserved. |
| 9259 | Tomoko Adachi | 45.35 | 9.3.1.23 | It should be clarified that, even though the RA field of the Trigger frame is an unicast address, the AID12 subfield of the Trigger frame is set to a valid AID. | Add the following sentence after the first sentence starting from page 45 line 35: "The AID12 subfield is set to a valid AID value not equal to 0 regardless of the RA field being set to a unicast address." | Revised  Added clarification text to section 27.5.2.2 to clarify that an AP is required to set the AID12 subfield to the AID of the non-AP STA that is addressed by the unicast TF (containing a single User Info field).  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 8339 | Peter Khoury | 46.62 | 9.3.1.23 | The trigger frame specifies the MCS for all users on the subsequent UL MU OFDMA frame. This seems overly restrictive especially when the non-AP STA has just received the trigger frame from which is has immediate knowledge of the channel. Its even more restrictive for the random access RUs in which case a client may be forced to use an MCS much lower than necessary and waste bandwidth or may be precluded from using an RU that was specified for an MCS that was too high for the current link budget. | Include an option for an Uplink OFDMA format similar to the downlink MU PPDU format that includes MCS but not RU. This new frame type would be specified in section 28.3.4 and would be a frame similar to the HE MU PPDU with another OFDMA signalling symbol in which uplink RU MCS could be specified by the transmitting stations. | Reject  The AP is expected to have good knowledge of it BSS (i.e., how far STAs are located and their current power headroom etc). Based on this knowledge, the AP’s TF includes information such as MCS and Target RSSI for the specified MCS so that the AP can receive and decode simultaneous TB response from multiple STA.  As for random access, it is up to the AP to include one or more RUs for RA. There is spec text that requires STAs to use the RA RU only if they can meet the requirements specified in the User Info field corresponding to that RU.  Therefore, the current scheme does not require any changes. Further, the proposed resolution to add new frame format is not required and would add unnecessary complexity. |
| 9632 | Yongho Seok | 47.03 | 9.3.1.23 | "A value of 1 indicates that the HE trigger-based PPDU response shall use DCM as defined in 28.3.11.15 (Dual carrier modulation)." Remove "shall" from clause 9 according 802.11 Editorial Style Guide. | As per comment. | Revised  The sentence was revised in an earlier version of the draft and the normative text is no longer present in the current version of the draft.  **TGax editor: No further changes are needed** |
| 7746 | Mark Hamilton | 47.44 | 9.3.1.23 | The Padding field appears to always be "present", just potentially zero length, per Equation 9-ax1. But this text assumes it is non-zero length, but not always present. | Align the text and the Equation. Suggest to remove the "0" case from the Equation, as that allows the text to talk about the special AID without a lot of wording to special-case the zero length padding case. | Revised  Agree in principle.  The text was revised to indicate that Padding field may not be present. When present, AID12=2047 indicates the start of Padding field. Also, please see resolution to CID 9830.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 9347 | Tomoko Adachi | 47.44 | 9.3.1.23 | "The Padding field extends the frame length to give the recipient STAs more time to prepare a response." More time than SIFS. | Add "than SIFS" after "more time". | Revised  Agree with the comment  Added text to clarify that padding may be required to provide enough time for a STA to prepare a response in SIFS interval after the TF is received.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 7747 | Mark Hamilton | 47.46 | 9.3.1.23 | "STAID" here is probably referring to the AID12 subfield of the User Info field. That should be more clear. Also, the Padding field doesn't have any such subfields, so it needs to be explained that this parsed is as if there were a User Info field starting here, so the parser knows it has hit the Padding. Also, per Equation 9-ax1 and 9-ax2, the Padding field is always 2 or 4 octets. | Change "STAID[11:0]" to "AID12". Reword this and the preceeding sentences as, "The Padding field of the Trigger frame, if present, is 2 or 4 octets. The Padding field starts with 0xFFF in the first 12 bits, thus corresponding to a User Info field with the special value of 0xFFF in the AID12 field, and the rest of the bits of the Padding field are all set to one." | Revised  Several sentences in this paragraph were revised in the earlier versions of the draft and the issues pointed by the comment are no longer present in the latest draft.  **TGax editor: No further changes are needed** |
| 8023 | Massinissa Lalam | 47.46 | 9.1.3.23 | So the special STAID[11:0] is in fact AID12 with the value 0xFFF? I think that it should be more clearly stated that the padding is in fact a special User Info Field with AID12 subfiled being equal to 0xFFF, the rest being filed with ones. At least, one could replace "starts with special STAID[11:0] as" with "starts with special AID12 subfield as". | As in comment. | Revised  Several sentences in this paragraph were revised in the earlier versions of the draft and the issues pointed by the comment are no longer present in the latest draft.  **TGax editor: No further changes are needed** |
| 9634 | Yongho Seok | 47.47 | 9.3.1.23 | "Padding field starts with special STAID[11:0] as 0xFFF and the rest bits of the Padding field are all set to one. 0xFFF is reserved as the special value to indicate the start of the MAC padding." Because the Padding field are all set to one, special STAID[11:0] as 0xFFF does not have any meaning. Remove an unnecessary wording and just say the following:"The Padding field are all set to one." | As per comment. | Revised  Several sentences in this paragraph were revised in the earlier versions of the draft and the issues pointed by the comment are no longer present in the latest draft.  **TGax editor: No further changes are needed** |
| 9758 | Yoshio Urabe | 47.47 | 9.3.1.23 | STAID[11:0] is not defined in the Trigger frame format. | Change "Padding field starts with special STAID[11:0] as 0xFFF .." to "Padding field starts with an AID12 subfield having a special value 0xFFF ..." | Revised  The sentence was revised in an earlier versions of the draft and the incorrect reference is no longer present in the current version of the draft in the latest draft.  **TGax editor: No further changes are needed** |
| 5380 | Geonjung Ko | 47.48 | 9.3.1.23 | Equation 9-ax1 and 9-ax2 define the length of the Padding field in the Trigger frame and the length is the maximum length among the length for receiving STAs required to respond to the Trigger frame. Therefore when the Trigger frame includes User Info fields with the AID12 field set to 0, the random access of some STAs can be restricted by the Padding length. | The Padding length longer than the value defined by the equation should be allowed. When the Trigger frame includes User Info fields with the AID12 field set to 0, the length defined by the equation 9-ax1 and 9-ax2 can be the minimum length. | Revised  Agree with the comment. The equations in section 9.3.1.23 should be treated as an example. Section 27.5.2.2 covers the case of random access (for associated (AID12=0) and unassociated (AID12=2045) cases). Also, please see resolution to CID 9830.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 9830 | Young Hoon Kwon | 47.56 | 9.3.1.23 | In case a Trigger frame is carried within an A-MPDU, it is possibe that padding can be done by EOF padding instead of Padding subfield in the Trigger frame. Therefore, the required duration for Padding subfield does not need to follow the equation here as long as total padding (Padding subfield in the trigger frame, EOF paddings, packet extension, etc) satisfies the processint time requirements. In this sense, equations 9-ax1 and 9-1x2 is not needed. | Delete Eq. 9-ax1, 9-ax2. | Revised  Agree with the comment in general. Added text to clarify that the equations in 9.3.1.23 should be treated as examples and that there could be other ways to compute the Padding field length or mechanisms to meet the duration requirement (as noted in section 27.5.2.2). Moved (existing) description related to duration requirement in section 27.5.2.2 to its own new subsection (27.5.2.2.2). This section explains that there are other alternatives to meet the duration requirement (as pointed out by the comment). Change the note in the sub-section to be normative text.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 9474 | xun yang | 48.05 | 9.3.1.23 | In HE PPDU, Padding field of trigger frame is not necessary if there is PE at the end of HE PPDU or EOF paddings in AMPDU. | Please clarify that padding field is not necessary or how to pad is an implementation issue in HE PPDU. | Revised  Agree with the comment. Please see resolution to CID 9830.  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 3017 | Abhishek Patil | 48.17 | 9.3.1.23 | CCK and DSSS rates should also be disabled for Trigger frame transmission. Same observation for Short GI. | The Trigger frame shall not be transmitted using CCK or DSSS rates. The Trigger frame shall not be transmitted with Short GI. | Revised  Agree with the comment. The suggested change is covered in D1.4 as a resolution to CID 9773. Further, removed the sentence on STBC case from this section and added a new normative sentence to section 27.5.2.2.1  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 7954 | Mark RISON | 48.17 | 9.3.1.23 | "STBC is disallowed for Trigger Frame transmission." is behaviour, not format | Move to 27.15.2 (and lowercase "frame") | Revised  Agree with the comment. Removed the sentence from this section and added a new normative sentence to section 27.5.2.2.1  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 9639 | Yongho Seok | 48.17 | 9.3.1.23 | "STBC is disallowed for Trigger Frame transmission." This normative sentence should be moved to clause 27.5.2.2. | As per comment. | Revised  Agree with the comment. Removed the sentence from this section and added a new normative sentence to section 27.5.2.2.1  **TGax editor: Please make changes as indicated in doc 11-17/1275r2** |
| 7265 | Kwok Shum Au | 48.41 | 9.3.1.23.1 | There is no Table 8-159. | Replace Table 8-159 with Table 9-163 (Subfields of the A-MPDU Parameters field). | Revised  The incorrect reference pointed in the comment was fixed in previous revisions of the draft and no longer appears in D1.4.  **TGax editor: No further changes are needed** |
| 8379 | Po-Kai Huang | 48.41 | 9.3.1.23.1 | There is no Table 8-159 in REVmc\_D8.0 | Correct the reference to minimum MPDU start spacing. | Revised  The incorrect reference pointed in the comment was fixed in previous revisions of the draft and no longer appears in D1.4.  **TGax editor: No further changes are needed** |
| 9506 | Yasuhiko Inoue | 48.41 | 9.3.1.23.1 | "The MPDU MU Spacing Factor subfield indicates the value by which the minimum MPDU start spacing defined in Table 8-159 is multiplied."  Table 8-159 missing. | Refer to the correct table. (Maybe Table 9-25h?) | Revised  The incorrect reference pointed in the comment was fixed in previous revisions of the draft and no longer appears in D1.4.  **TGax editor: No further changes are needed** |
| 7751 | Mark Hamilton | 48.64 | 9.3.1.23.1 | This is a normative statement, and shouldn't be a NOTE. | Change text to normal (normative) text instead of a NOTE. | Revised  The note pointed by the comment is no longer present in D1.4. Normative behavior related to this field is described in section 27.  **TGax editor: No further changes are needed** |
| 5707 | Guoqing Li | 196.02 | 27.11.1 | 2047 is used as start of MAC padding on page 165 line 35 and here it's used to indicate STAs in all BSS when multiBSS is acviated. How does a STA identify if it's for start of the MAC padding or for STAs in all BSS? | Clarify | Reject  The comment is mixing two different fields. Pg 165 line 35 pointed by the comment refers to the presence of Padding field in a TF (indicate via a value of 2047 in the location of AID12 of User Info field that would have been present). While a value of 2047 in the STA\_ID field (present in the SIG-B field) indicates if it is a broadcast RU across multiple BSSID in a multi-BSS set. |

* Trigger frame format

TGax Editor: Please make the following changes to the paragraph after Figure 9-52d (D1.4 P78L34):

The Trigger Type subfield indicates the type of the Trigger frame. [7742, 8344, 8652] The Trigger Type subfield encoding is defined in Table 9-25a (Trigger Type subfield encoding).

TGax Editor: Please add a new paragraph before Figure 9-52f (D1.4 P81L65) as shown below:

The HE-SIG-A Reserved subfield of the Common Info field indicates the values of the reserved bits in the HE-SIG-A2 subfield of the HE TB PPDU that is the response to the Trigger frame. Bits B54 to B62 in the Trigger frame are set to 1 and correspond to the bits B7 to B15 in the HE-SIG-A2 subfield of the HE TB PPDU with B54 in the Trigger frame corresponding to B7 in the HE-SIG-A2 subfield of the HE TB PPDU and so on.

The Trigger Dependent Common Info subfield in the Common Info field is optionally present based on the value of the Trigger Type field.[7742, 8344, 8652]

The User Info field is defined in Figure 9-52f (User Info field).

TGax Editor: Please make the following changes to the paragraph after Figure 9-52f (D1.4 P82L15):

The AID12 subfield of the User Info field carries the 12 LSBs of the AID of the STA for which the User Info field is intended. An AID12 subfield that is 0 or 2045 indicates that the User Info field allocates an RU for random access (see 27.5.4 (UL OFDMA-based random access (UORA))). An AID12 subfield that is 2046 indicates an unassigned RU (see 27.5.2.2.3 (Allowed settings of the Trigger frame fields and UMRS Control field)). An AID12 subfield that has the 11 LSBs set to 2047 is reserved to indicate start of Padding field (see 27.5.2.2.2 (Padding for Trigger frame or frame containing UMRS Control field)). [5914]

TGax Editor: Please make the following changes to the text after Table 9-25h (D1.4 P84L21):

The Trigger Dependent User Info subfield in the User Info field is optionally present based on the value of the Trigger Type field.[7742, 8344, 8652]

The Padding field is optionally present in a Trigger frame to[7746] extend the frame length to give the recipient STA(s) enough time to prepare a response SIFS after the frame is received[9347]. The Padding field of the Trigger frame, if present, is at least two octets in length and is set to all 1s. The start of the Padding field is identified by the value 2047 in the 11 LSBs of the AID12 subfield of a User Info field that would otherwise be present. An AP can use any type of padding to satisfy the duration requirement (see section 27.5.2.2.2 (Padding for Trigger frame or frame containing UMRS Control field)). The following formulas provide an example of how to compute the length (LPAD, MAC) of the Padding field (if present) to meet the duration requirement.[9830, 9474, 5380]

TGax Editor: Please delete the last sentence in section 9.3.1.23 (before section 9.3.1.23.1) (D1.4 P84L65):

[3017, 7954, 9639]

TGax Editor: Please move the following paragraphs from 27.5.2.2.1 to its own (new) sub-subsection as shown below. Please update the section numbers of subsequent subsections in 27.5.2.2

* Padding for Trigger frame or frame containing UMRS Control field[9830, 9474]

An AP transmitting a PPDU that contains a Trigger frame or frame containing a UMRS Control field shall ensure that the duration of the PPDU that follows *BSYM* is greater than or equal to the time indicated by the non-AP STA in the Trigger Frame MAC Padding Duration subfield in the HE MAC Capabilities Information field of the HE Capabilities element that it transmits. *BSYM* is the OFDM symbol of the PPDU that contains either the last bit of *SCH* when BCC is used to encode the PSDU or the last coded bit of the LDPC codeword that encodes the last bit of *SCH* when LDPC is used to encode the PSDU, where *SCH* is either:

* The User Info field addressed to the STA of the last (or only) Trigger frame, or
* The UMRS Control subfield of the last (or only) frame.

An AP transmitting a Trigger frame that contains a User Info field for random access shall ensure that a *MinTrigProcTime* corresponding to at least the largest value amongst all associated STAs passes from the last User Info field with AID12 subfield equal to 0. An AP transmitting a Trigger frame that contains a User Info field for random access should ensure that a *MinTrigProcTime* of at least 16 us passes from the last User Info field with AID12 subfield equal to 2045.

TGax Editor: Please remove the note (D1.4 P226L4) in this paragraph and replace it with a sentence describing normative behavior as shown below:

An HE AP may use any type of MAC padding to ensure that the *MinTrigProcTime* passes, such as using the Padding field in a Trigger frame, post-EOF A-MPDU padding or aggregating other MPDUs in the A-MPDU. An AP that intends to use Padding field in a Trigger frame shall indicate the start of Padding field by assigning a value of 2047 to the 11 LSBs of the AID12 subfield of a User Info field that would otherwise be present and shall set the subsequent bits of the Padding field to all 1s.[9830, 9474]

* Allowed settings of the Trigger frame fields and UMRS Control field

TGax Editor: Please make the following changes to the 8th paragraph in this section (P227L16 D1.4):

If an AP transmits one or more Trigger frames or frames carrying a UMRS Control field, then the frames shall collectively elicit HE TB PPDU responses such that at least one scheduled RU is allocated for each 20 MHz channel occupied by the eliciting PPDU. An AP shall not allocate an RU in any 20 MHz channel that is not occupied by the immediately preceding DL PPDU. An AP may indicate an unassigned RU by using value 2046 in the AID12 subfield. [#Ed]A Trigger frame shall not contain more than one User Info field with the same value in the AID12 subfield except when the value of the AID12 subfield is 0, or greater than 2007. When a Trigger frame contains User Info fields with the same value in the AID12 subfield, they shall appear in a contiguous block. When a Trigger frame contains User Info field(s) with AID12 subfield equal to 0 or greater than 2007, they shall appear after User Info field(s) with values of AID12 subfield greater than 0 or less than 2008 (if any present).[5914] When a unicast Trigger frame contains one User Info field, the AID12 subfield of the User Info field shall be set to the 12 LSBs of the AID of the non-AP STA whose MAC address is set in the RA field of the frame.[9259]

TGax Editor: Please make the following changes to the 4th paragraph in this section (P226L44 D1.4):

An AP shall set all the subfields, except the Trigger Type subfield, of the Common Info field of a Trigger frame to the same value of the corresponding subfield of the Common Info field of any other Trigger frame that is carried in the same PPDU. An AP shall set the HE TB PPDU Length and DL Tx Power subfields of an UMRS Control field to the same value of the corresponding subfield of any UMRS Control field that is carried in the same PPDU. An AP shall set the following subfields of the Common Info field of a Trigger frame accordingly if an UMRS Control field is carried in an MPDU within the same PPDU:

* MU-MIMO LTF Mode and STBC are set to 0
* Number of HE-LTF Symbols is set to 0
* Spatial Reuse is set to SRP\_AND\_NONSRG\_OBSS-PD\_PROHIBITED
* GI and LTF Type is set to 2 if the carrying PPDU TXVECTOR parameter HE\_LTF\_TYPE is 4x LTF for 3.2 µs or 2x LTF for 1.6 µs; otherwise is set to 1
* CS Required subfield is set to 0

TGax Editor: Please make the following changes to the 12th paragraph in this section (P227L50 D1.4):

An HE AP shall not use short guard interval for transmission of a Trigger frame if the Trigger frame is transmitted using HT or VHT PPDU format. An HE AP shall not use DSSS or HR/DSSS PPDU format for transmission of a Trigger frame. An HE AP shall not use STBC encoding for PPDUs that contain Trigger frame.[3017, 7954, 9639]

* STA behavior for UL MU operation

TGax Editor: Please add a new paragraph after the 6th paragraph in this section (P229L2 D1.4):

A STA shall commence the transmission of an HE TB PPDU at the SIFS time boundary after the end of a received PPDU, when the following conditions are met:

* The received PPDU contains either a Trigger frame (that is not an MU-RTS variant) with a User Info field addressed to the STA, or an MPDU addressed to the STA that contains an UMRS Control field. The User Info field in the Trigger frame is addressed to a STA if one of the following conditions are met:
* The AID12 subfield is equal to the 12 LSBs of the AID of the STA and the STA is associated with the AP
* The AID12 subfield is 0, the STA supports the UL OFDMA-based random access procedure (see 27.5.4 (UL OFDMA-based random access (UORA))) and the STA is associated with the AP
* The AID12 subfield is 2045, the STA supports the UL OFDMA-based random access procedure (see 27.5.4 (UL OFDMA-based random access (UORA))), and the STA is not associated with the AP.
* The CS Required subfield in the Trigger frame is 1 and the UL MU CS condition described in 27.5.2.4 (UL MU CS mechanism) indicates the medium is idle, or the CS Required subfield in a Trigger frame is 0.

If the either condition is not met, then the STA shall not send an HE TB PPDU.

[5914]

* UORA procedure

TGax Editor: Please make the following changes to the 5th paragraph in this section (P237L52 D1.4):

[5914]A STA that is the intended receiver of a User Info field in a Trigger frame (i.e., AID12 subfield equal to the 12 LSBs of the AID of the STA) shall not contend for a random access RU that is indicated by a Trigger frame contained in the same PPDU and will not decrement its OBO counter.