IEEE P802.11
Wireless LANs

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| 11ax D3.0 Comment Resolution miscellaneous |
| Date: 2018-08-28 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D3.0 with the following CIDs:

* 15079, 16504, 16868, 16949, 16950, 15090, 15952, 15333, 16012, 16663, 17153, 16250, 16163, 16168, 16214, 16221, 16282, 16351, 15606, 15934.

Revisions:

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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** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 15079 | 280 | 47 | Device class applies to a non-AP STA | Change to "If a non-AP HE STA indicates ..." | **Accepted****CID 16592 resolution already makes the change requested by 15079. No further change is needed.** |
| 16504 | 280 | 27 | " A non-AP HE STA with dot11ULMUMIMOOptionImplemented equal to true is referred to as an UL MUcapable STA."... UL OFDMA is UL capable as well? There may be confusion on this. Change to UL MU-MIMO capable if only talking about MU-MIMO or add parameter for OFDMA. | change naming to UL MU-MIMO capable as UL OFDMA is UL MU but does not need a parameter since it is mandatory. | Revised. Discussion: the term 'UL MU capable STA' is not used anywhere in the spec. So deleting the sentence is fine.TGax editor:Delete the following paragraph from the draft “A non-AP HE STA with dot11ULMUMIMOOptionImplemented equal to true is referred to as an UL MUcapable STA” . |
| 16868 | 281 | 1 | This part describes a mandatory behavior of the AP. This part should not be a note but rather a normative text. | Turn the note text into a normative text. Replace the text : "NOTE--an AP does not send..." by "An AP shall not send..." | **Rejected.****Discussion: the normative behavior is described in 27.8.3. The notes is intended to provide the reader a reference where the normative behaviour is defined.** |
| 16949 | 280 | 14 | The condition "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RU that spans the entire PPDU bandwidth" is not correct, since receiving such a trigger frame is always supported, the real requirement is to support the transmission of HE TB PPDU in response to such a trigger frame. | change the phrase "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RUthat spans the entire PPDU bandwidth" to "if it supports transmitting an HE TB PPDU that uses UL MU-MIMO within an RU that spans the entire PPDU bandwidth in response to a soliciting Trigger frame" | **Revised****TGax editor to c**hange the phrase "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RUthat spans the entire PPDU bandwidth" to "if it supports transmitting an HE TB PPDU that uses UL MU-MIMO within an RU that spans the entire PPDU bandwidth" |
| 16950 | 280 | 22 | The condition "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RU that does not span the entire PPDU bandwidth" is not correct, since receiving such a trigger frame is always supported, the real requirement is to support the transmission of HE TB PPDU in response to such a trigger frame. | change the phrase "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RUthat does not span the entire PPDU bandwidth" to "if it supports transmitting an HE TB PPDU that uses UL MU-MIMO within an RU that does not span the entire PPDU bandwidth in response to a soliciting Trigger frame" | **Revised** **TGax editor to change** the phrase "if it supports receiving a Trigger frame soliciting an HE TB PPDU that uses UL MU-MIMO within an RUthat does not span the entire PPDU bandwidth" to "if it supports transmitting an HE TB PPDU that uses UL MU-MIMO within an RU that does not span the entire PPDU bandwidth" |

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 15090 | 294 | 55 | Note 2 can be consolidated with Note 1 | Add the following sentences at the end of Note 1: "When set to to 255, indicates unknown or unspecified BSR. When set to a value less than 255, indicates BSR for a TID, AC or all AC" and delete Note 2. | **Revised –****Agree in principle. Proposed resolution accounts for the suggested change while providing some editorial improvements for clarity.****TGax editor: Remove Note 2 and change Note 1 to:** Similar to unsolicited BSR, a STA can include both the QoS Control field and the BSR Control subfield in the same QoS Null frame in response to the BSRP Trigger frame. ~~In this case, the STA can set the Queue Size subfield of either subfield to a value of 255 or have both subfields carry the same value in the Queue Size subfield.~~ **The STA can set the Queue Sizes in either the QoS Control field or the BSR Control****subfield or both to 255 or other value to indicate unknown/unspecified BSR or to some other value for a TID, AC or all AC”.**-If both a QoS Control field and a BSR Control field are present in a frame, the Queue Size subfield in each might be different, even if neither contains the value 255. |
| 15952 | 294 | 47 | "The HE STA shall not solicit an immediate response for the frames carried in the HE TB PPDU (e.g., by setting the Ack Policy subfield of the frame to Normal Ack or Implicit Block Ack Request)." is very confusing as to whether the parens are what you should do or what you should not do | Change the cited text to "The HE STA shall not solicit an immediate response for the frames carried in the HE TB PPDU (e.g.,the Ack Policy subfield of a QoS Data frame shall not be set to Normal Ack or Implicit Block Ack Request)." | **Accepted** |

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 15333 | 282 | 43 | Does the "should" mean "might", "may", "shall" or something else? | As in comment. | **Rejected –****The comment fails to identify a technical issue and is asking a question. “Should” is meant to be a recommendation and is widely used in the standard for this particular purpose.** |
| 16012 | 282 | 23 | "the duration of the PPDU that follows BSYM" unclear as it suggests that there are two PPDUs involved | Change the cited text at the referenced location to "the PPDU duration after BSYM" | **Revised****See the changes in 11-18/1906r0. No further changes are needed.** |
| 16663 | 282 | 22 | The padding requirement for the Trigger frame should be indepenent of the packet extension. The packet extension is added to accommodate PHY receive processing on \*all\* frames -- the extra time needed in the PHY to deliver the last byte of the last frame to the MAC with the 4x symbol. The Trigger frame padding accommodates the extra processing required on Trigger frames. Defining the Trigger frame padding to include the packet extension is problematic: effectively, a Trigger frame sent in an HE PPDU with PE will have \*less\* MAC procesing time than a Trigger frame sent in a non-HT PPDU because the time between B\_SYM and the end of the PPDU includes the PE. An implementation is forced to overspecify the trigger frame padding requriement as a result. | Define as "shall ensure that the duration of the PPDU that follows B\_SYM, excluding the PE field (if present), is greater than or equal to MinTrigProcTime...". Delete ", or the PE field at the end of HE PPDU" from P282L56. | **Revised****Agree in principle. See the changes in 11-18/1906r0. No further changes are needed.** |
| 17153 | 282 | 42 | "An AP transmitting a Trigger frame that contains at least one User Info field with AID12 subfield set to2045 (i.e., an RA-RU for unassociated STAs) should ensure that the duration of the PPDU that followsUnassocUoraBSYM is at least 16 ╬╝s. UnassocUoraBSYM is the OFDM symbol of the PPDU that containseither the last bit of SCH when BCC is used to encode the PSDU or the last coded bit of the LDPC codewordthat encodes the last bit of SCH when LDPC is used to encode the PSDU, where SCH is the last User Infofield with AID12 subfield equal to 2045." The padding of trigger frame is to allow STA to have sufficient time to prepare TB PPDU with high HE rate. However, unassociated STA only use base rate to transmit management frame. 16us is too much overhead that compromise the efficiency. Remove this paragraph or clarify. | as in the comment | **Rejected****Disussion: the AP doesn’t know the capability of unassociated STA’s MAC padding capability for a received Trigger frame. As such the AP needs to use 16us MAC padding length for unassociated STAs to correctly prepare the HE TB PPDU transmission.** |

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 16250 | 216 | 37 | "A STA indicates in the Maxi-mum A-MPDU Length Exponent field in its HT Capabilities, VHT Capabilities and HE Capabilities elementsthe maximum length of the A-MPDU pre-EOF padding that it can receive in an HE PPDU." is not true if the Maximum A-MPDU Length Exponent Extension field is not 0 | Change Subclause 10.13.2 to add caveats on the A-MPDU length rules for STAs whose Maximum A-MPDU Length Exponent Extension is non-zero | **Revised****Generally agree with the commenter. What the commenter asks is defined in 27.10.1****TGax editor to make changes in 11-18/2040r2 under CID 16250** |

**10.13.2 A-MPDU length limit rules**

TGax editor: please change the first paragraph in 10.13.2 as follows:

A STA indicates in the Maximum A‑MPDU Length Exponent field in its HT Capabilities element the maximum A‑MPDU length that it can receive in an HT PPDU. A STA indicates in the Maximum A-MPDU Length Exponent field in its VHT Capabilities element the maximum length of the A-MPDU pre-EOF padding that it can receive in a VHT PPDU. A DMG STA indicates in the Maximum A-MPDU Length Exponent field in its DMG Capabilities element the maximum A-MPDU length that it can receive. A STA indicates in the Maximum A-MPDU Length Exponent field in its HT Capabilities, VHT Capabilities and HE Capabilities elements and the Maximum A-MPDU Length Exponent Extension field in its HE Capabilities element the maximum length of the A-MPDU pre-EOF padding that it can receive in an HE PPDU.(#16250) The encoding of these fields is defined in Table 9-163 (Subfields of the A-MPDU Parameters field) for an HT PPDU and HE PPDU, in Table 9-249 (Subfields of the VHT Capabilities Information field) for a VHT PPDU and HE PPDU, ~~and~~ in Table 9-229 (Subfields of the A-MPDU Parameters subfield) for a DMG STA, and in 9.4.2.241 (HE Capabilities element) for an HE PPDU.

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 16163 |  |  | There are multiple instances of "ack-enabled A-MPDU" | Change each of them to "ack-enabled multi-TID A-MPDU" | **Rejected.****The sepc defines ack-enabled A-MPDU and ack-enabled multi-TID A-MPDU. They are different.** |
| 16168 | 290 | 5 | "(A-)MPDU" is wrong because an A-MPDU and an MPDU are quite different things (one contains the other) | Delete the "(A-)" at the referenced location | **Revised****Generally agree with the commenter.****TGax editor to change the note to “**The STA additionally follows the rules defined in 27.3.2 (Dynamic fragmentation) when fragments are present in the soliciting S-MPDU or A-MPDU" |
| 16214 |  |  | The definitions and rules for multi-TID A-MPDUs are not clear | Adopt the proposals in 17/0949 | **Revised.****11-18/1858 and 11-18/1859 update multi-TID A-MPDU rules.** |
| 16221 |  |  | It is not clear whether "ack-enabled A-MPDU"s and "ack-enabled multi-TID A-MPDUs" are the same thing or not | Change "ack-enabled A-MPDU" to "ack-enabled multi-TID A-MPDU" throughout. Change "Ack-Enabled Aggregation Support" to "Ack-Enabled Multi-TID A-MPDU Support" throughout | **Revised****11-18/1858 defines ack-enabled A-MPDU and ack-enabled multi-TID A-MPDU in different tables. No further changes are needed.** |
| 16282 |  |  | It seems from the resolution to CID 12927 that the intent is that an ack-enabled multi-TID A-MPDU is not an ack-enabled A-MPDU. Some parts of the spec (e.g. T9-422, T9-425, T9-428, 27.3.3.2/3, 27.10.4.1 in part) support this interpretation, but others suggest an aeAM can be an aeMTAM | Add to the definition in 3.2 of ack-enabled A-MPDU that the TIDs of all the QoS Data frames are the same. Extend "A-MSDU InA-MPDU Support" in T9-262zz and 10.12 to also apply to aeMTAMs. Extend 27.5.3.4, 27.10.2 (2x) to refer to aeMTAMs too where they refer to aeAMs. Add a NOTE in 27.10.4.1 after the definition of aeMTAMs: "NOTE--An ack-enabled multi-TID A-MPDU is not an ack-enabled A-MPDU." | **Rejected****11-18/1858 uses two tables to defines ack-enabled A-MPDU and ack-enabled multi-TID A-MPDU. They are two different A-MPDUs.** |
| 16351 |  |  | Shouldn't be allowed to have an S-MPDU TID (EOF=1) and a BA TID (EOF=0 for same TID) in the same (ack-enabled) multi-TID A-MPDU | As it says in the comment | **Revised.****Discussion: In Table 9-532d of 11ax D3.3 EOF MPDU and non-EOF MPDU for the same TID are not allowed in an ack-enabled multi-TID A-MPDU. No further change is needed.** |

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 16283 | 154 | 17 | "A-MSDU In A-MPDU Support" is a bad name since this is actually about ack-enabled A-MPDUs | Change the field name to "A-MSDU In Acknowledgment Context In A-MPDU Support" | **Revised****The field name is changed to A-MSDU in ack-enabled A-MPDU Support per 11axD3.3. No further change is needed.** |
| 16293 | 154 | 19 | "an A-MSDU is carried ina QoS Data frame for which noblock ack agreement exists." -- an A-MSDU is always carried in a QoS Data frame | Change the cited text to "an A-MSDU is transmitted that is not under a block ack agreement." | **Revised –****Agree in principle. Proposed resolution is inline with intent of the proposed change but editorially improved.****TGax editor: Please replace the cited text with “an A-MSDU is sent not under a block ack agreement”.** |

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 15606 | 37 | 20 | ambiguous definition | clarify if all A-MPDU subframes solicit neither Ack nor BlockAck or if only the ones with 0 in the EOF field solicit neither Ack nor BlockAck. | **Revised****Generally agree with the commenter.****TGax editor to make changes under CID 15606.** |
| 15934 | 37 | 17 | This definition is getting into normative details of \_how\_, beyond just the \_what\_. | Stop the defintion of "ack-enabled A-MPDU" before (without) describing how individual bits are set within one. | **Revised****Generally agree with the commenter.****TGax editor to make changes under CID 15606.** |

**3.2 Definitions specific to IEEE 802.11**

***TGax editor: make the following change in subclause 3.2:***

**……**

**(#**15606, 15934**)ack-enabled aggregate medium access control (MAC) protocol data unit (ack-enabled A-MPDU):** An A-MPDU that contains at least two A-MPDU subframes containing MPDUs and only one of the A-MPDU subframes includes an EOF-MPDU that solicits an immediate acknowledgment.

non-ack-enabled multi-TID **aggregate medium access control (MAC) protocol data unit (**non-ack-enabled multi-TID A-MPDU): An A-MPDU that contains at least two A-MPDU subframes where no A-MPDU subframe includes EoF MPDU and the EoF MPDUs are from at least two different TIDs.

ack-enabled multi-TID **aggregate medium access control (MAC) protocol data unit (**ack-enabled multi-TID A-MPDU): An A-MPDU that contains at least two A-MPDU subframes where at elast one A-MPDU subframe includes the EoF frame and one of the following is true:at least two EoF frames soliciting Ack acknowledgement be aggregated are not from same TID, single EoF frame and other non-EoF frames soliciting block ack are not from same TID.

**…**