IEEE P802.11
Wireless LANs

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| 25.10.2 A-MPDU comment resolution |
| Date: 2016-09-12 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Liwen Chu |  |  |  |  |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs:

* 2258, 2446, 1588, and 1645

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** |
| 2258 | 64 | 14 | A-MPDU padding for HE SU/EXT SU PPDU is not mentioned in this section. Also the same procedure as for VHT STA? | define the A-MPDU padding for HE SU/EXT SU PPDU, or change the the sentence such as"The A-MPDU padding per each HE STA in an HE MU/SU/EXT\_SU PPDU follows the same procedure as for VHT STA 11ac procedure as defined in Section 10.13.6 (A-MPDU padding for VHT PPDU)." | **Revised****Agree with the commenter.**TGax editor makes changes as specified in 11-16/1184r0. |
| 2446 | 64 | 15 | As mention in the first paragraph in sub-clause 25.10.2,"The A-MPDU padding per each HE STA in an HE MU PPDU follows the same procedure as for VHT STA11ac procedure as defined in Section 10.13.6 (A-MPDU padding for VHT PPDU)."And, based on sub-clause 10.13.6, an A-MPDU content in an HE MU PPDU has the following constraint:i) if the TXOP sharing is not used, A-MPDU subframes in an HE MU PPDU are constructed from the MPDUs available for transmission that have a TID value that maps to the primary AC.ii) if the TXOP sharing is used, A-MPDU subframes in an HE MU PPDU are constructed from the MPDUs available for transmission that have any TID value regardless of the primary AC.But, a TID value constraint of an A-MPDU content in an HE Trigger-based MPDU is unclear. Probably, both constraints shall be supported as like an HE MU PPDU.So, please clarify the TID value constraint of an A-MPDU content in an HE Trigger-based PPDU. | As per comment | **Revised.****Discussion: the TID rules of A-MPDUs in HE trigger-based PPDU is defined D0.4 25.10.4 A-MPDU with multiple TIDs and 25.5.2 UL MU operation.**TGax editor makes changes as specified in 11-16/1184r0. |
| 1588 | 64 | 12 | Why are the 11ac rules not good enough? | Either just use the 11ac rules or use the 11ac rules with just the changes indicated | Rejected.Discussion: there are some new requirements for A-MPDUs in HE trigger-based PPDU: TID rules, minimum MPDU starting spaceing. It is better to define the separate HE trigger-based PPDU rules. |
| 1645 | 64 | 1 | There is already a subclause named A-MPDU Operation in the baseline. | Either this subclause needs to be merged with the existing A-MPDU subclause, or this one needs to change its name. | Rejected.Discussion: Subclause 25 includes several subclauses with same names as subclauses in clause 10. |

Dissussion: in 11ax SFD, the following motion proveides restriction to HE padding which is missed from 11ax draft:

A HE STA can announce its maximum A-MPDU length limits to 221 or 222.

[MAC Motion 67, March 2016, see 16/359]

The text related to the motion is added in this document accordingly.

**9.7 Aggregate MPDU (A-MPDU)**

**9.7.1 A-MPDU format**

***TGax Editor: Change the 9th paragraph (about A-MPDU maximal length) in subclause 9.7.1 as following:***

The maximum length of an A-MPDU in an HT PPDU is 65 535 octets. The maximum length of an AMPDU

in a DMG PPDU is 262 143 octets. The maximum length of an A-MPDU pre-EOF padding in a

VHT PPDU is 1 048 575 octets. The maximum length of an A-MPDU pre-EOF padding in a

HE PPDU is 4 194 303 octets. The length of an A-MPDU addressed to a particular STA can be further

constrained as described in 10.13.2 (A-MPDU length limit rules).

**9.4.2.213 HE Capabilities element**

***TGax Editor: Add two-bit Maximum A-MPDU Length Exponent subfield in HE Capabilities Information field.***

***TGax Editor: Add the following paragraphs in 9.4.2.213:***

If VHT is supported by the HE STA, the Maximum A-MPDU Length Exponent subfield in HE Capabilities element combined with the Maximum A-MPDU Length Exponent subfield in VHT Capabilities element indicate the maximum length of A-MPDU that the STA can Receive where EOF padding is not included in this limit. When Maximum A-MPDU Length Exponent subfield in HE Capabilities element is 0, the value in Maximum A-MPDU Length Exponent subfield in VHT Capabilities element indicates the the maximum length of A-MPDU that the STA can Receive which follows the definition in subcaluse **9.4.2.158.2 VHT Capabilities Info field.** When Maximum A-MPDU Length Exponent subfield in HE Capabilities element is 1 or 2, the value in Maximum A-MPDU Length Exponent subfield in VHT Capabilities element is 7 and the length defined by the field is 2(20+ Maximum A-MPDU Length Exponent subfield in HE Capabilities element)-1. The value 3 in Maximum A-MPDU Length Exponent subfield in HE Capabilities element is not allowed.

If VHT is not supported by the HE STA, the Maximum A-MPDU Length Exponent subfield in HE Capabilities element combined with the Maximum A-MPDU Length Exponent subfield in HT Capabilities element indicate the maximum length of A-MPDU that the STA can Receive where EOF padding is not included in this limit. When Maximum A-MPDU Length Exponent subfield in HE Capabilities element is 0, the value in Maximum A-MPDU Length Exponent subfield in HT Capabilities element indicates the the maximum length of A-MPDU that the STA can Receive which follows the definition in subcaluse **9.4.2.56.3 HT Capabilities Info field.** When Maximum A-MPDU Length Exponent subfield in HE Capabilities element is 1 or 2, the value in Maximum A-MPDU Length Exponent subfield in HT Capabilities element is 7 and the length defined by the field is 2(16+ Maximum A-MPDU Length Exponent subfield in HE Capabilities element)-1. The value 3 in Maximum A-MPDU Length Exponent subfield in HE Capabilities element is not allowed.

**10.13.2 A-MPDU length limit rules**

***TGax Editor: change subclause 10.13.2 as following:***

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 HE Capabilities element the maximum length of the A-MPDU pre-EOF padding that it can receive in a HE PPDU.The encoding of these fields is defined in Table 9-163 (Subfields of the A-MPDU Parameters field) for an HT PPDU, in Table 9-249 (Subfields of the VHT Capabilities Information field) for a VHT PPDU, in Table 9-229 (Subfields of the A-MPDU Parameters subfield) for a DMG STA, and in subclause **9.4.2.213 (HE Capabilities element)**.

A VHT STA that sets the Maximum A-MPDU Length Exponent field in its VHT Capabilities element to a value in the range 0 to 3 shall set the Maximum A-MPDU Length Exponent in its HT Capabilities to the same value. A VHT STA that sets the Maximum A-MPDU Length Exponent field in the VHT Capabilities element to a value larger than 3 shall set the Maximum A-MPDU Length Exponent in its HT Capabilities element to 3.

Using the Maximum A-MPDU Length Exponent fields in the HT Capabilities, VHT Capabilities elements and HE Capabilities elements, the STA establishes at association the maximum length of an A-MPDU pre-EOF padding that can be sent to it. An HT STA shall be capable of receiving A-MPDUs of length up to the value indicated by the Maximum AMPDU Length Exponent field in its HT Capabilities element. A VHT STA shall be capable of receiving AMPDUs where the A-MPDU pre-EOF padding length is up to the value indicated by the Maximum A-MPDU Length Exponent field in its VHT Capabilities element. A HE STA shall be capable of receiving AMPDUs where the A-MPDU pre-EOF padding length is up to the value indicated by the Maximum A-MPDU Length Exponent field in its HE Capabilities element.

A STA shall not transmit an A-MPDU in an HT PPDU that is longer than the value indicated by the Maximum

A-MPDU Length Exponent field in the HT Capabilities element received from the intended receiver. MPDUs

in an A-MPDU carried in an HT PPDU shall be limited to a maximum length of 4095 octets. A STA shall not

transmit an A-MPDU in a VHT PPDU where the A-MPDU pre-EOF padding length is longer than the value indicated by the Maximum A-MPDU Length Exponent field in the VHT Capabilities element received from the intended receiver. A DMG STA shall not transmit an A-MPDU that is longer than the value indicated by the Maximum A-MPDU Length Exponent field in the DMG Capabilities element received from the intended receiver. A STA shall not transmit an A-MPDU in a HE PPDU where the A-MPDU pre-EOF padding length is longer than the value indicated by the Maximum A-MPDU Length Exponent field in the HE Capabilities element received from the intended receiver.

***TGax Editor: Change subclause 25.10.2 as following (2258):***

**25.10.2 A-MPDU padding for an HE SU/EXT\_SU/MU PPDU**

An HE STA that transmits an HE DL MU PPDU that contains one or more PSDUs, each of which carries an A-MPDU, shall construct the A-MPDU(s) as described in 10.13.6 (A-MPDU padding for VHT PPDU).(#1585) An HE STA that transmits an HE SU, EXT\_SU, UL MU PPDU that contains one A-MPDU, shall construct the A-MPDU(s) as described in 10.13.6 (A-MPDU padding for VHT PPDU).

**25.10.3 A-MPDU padding for an HE trigger-based PPDU(#1585)**

***TGax Editor: Change the third paragraph 25.10.3 as following (2446):***

The STA may add A-MPDU subframes to the A-MPDU contained in the PSDU provided that the following constraints are fulfilled:

— The A-MPDU content constraints (see 10.13.1 (A-MPDU contents) and 25.10.4 A-MPDU with Multiple TIDs) for the intended recipient

— The Length limit constraints (see 9.7.1 (A-MPDU format) and 10.13.2 (A-MPDU length limit rules)) for the intended recipient

— The MPDU start spacing constraints (see 10.13.3 (Minimum MPDU Start Spacing field)) for the intended recipient

***TGax Editor: Add the following paragraph as the forth paragraph in 25.10.3 (2446):***

An A-MPDU pre-EOF padding is constructed for each user from any of the following:

— A-MPDU subframes constructed from the MPDUs available for transmission from any AC that is selected by the STA

— A-MPDU subframes with 0 in the MPDU Length field and 0 in the EOF field