IEEE P802.11
Wireless LANs

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| Comment Resolution on A-MPDU format |
| Date: 2016-07-23 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yongho Seok | NEWRACOM |  |  |  |

Abstract

This submission proposes resolutions of comments received from TGax comment collection (TGax Draft 0.1).

* CIDs: 2484, 2483, 2482, 2481, 2430, 2429, 2489 (7 CID)

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 TGah 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.***

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 2484 | 35.21 | 9.7.1 | 802.11 base specification is saying the following:"Length of the MPDU in octets. Set to 0 if no MPDU is present. An A-MPDU subframe with 0 in the MPDU Length field is used as defined in 10.13.3 (Minimum MPDU Start Spacing field) to meet the minimum MPDU start spacing requirement and also to pad the A-MPDU to fill the available octets in a VHT PPDU as defined in 10.13.6 (A-MPDU padding for VHT PPDU)."The HE PPDU also can have the EOF Padding. Change the corresponding sentence as the following:"Length of the MPDU in octets. Set to 0 if no MPDU is present. An A-MPDU subframe with 0 in the MPDU Length field is used as defined in 10.13.3 (Minimum MPDU Start Spacing field) to meet the minimum MPDU start spacing requirement and also to pad the A-MPDU to fill the available octets in a VHT and HE PPDU as defined in 10.13.6 (A-MPDU padding for VHT PPDU)." | As per comment | Revised- Agree in principal. The EOF padding is also used for HE PPDU. TGax editor makes changes as shown in the as specified in 11-16/0860r0.  |
| 2483 | 35.21 | 9.7.1 | 802.11 base specification is saying the following:"End of frame indication. Set to 1 in an A-MPDU subframe that has 0 in the MPDU Length field and that is used to pad the A-MPDU in a VHT PPDU as described in 10.13.6 (A-MPDU padding for VHT PPDU)."The HE PPDU also can have the EOF Padding. Change the corresponding sentence as the following:"End of frame indication. Set to 1 in an A-MPDU subframe that has 0 in the MPDU Length field and that is used to pad the A-MPDU in a VHT and HE PPDU as described in 10.13.6 (A-MPDU padding for VHT PPDU)." | As per comment | Revised- Agree in principal. The EOF padding is also used for HE PPDU.TGax editor makes changes as shown in the as specified in 11-16/0860r0. |
| 2482 | 35.21 | 9.7.1 | 802.11 base specification is saying the following:"In a VHT PPDU, the following padding is present, as determined by the rules in 10.13.6 (A-MPDU padding for VHT PPDU):"The HE PPDU also can have the EOF Padding. Change the corresponding sentence as the following:"In a VHT and HE PPDU, the following padding is present, as determined by the rules in 10.13.6 (A-MPDU padding for VHT PPDU):" | As per comment | Revised- Agree in principal. The EOF padding is also used for HE PPDU.TGax editor makes changes as shown in the as specified in 11-16/0860r0. |
| 2481 | 35.21 | 9.7.1 | 802.11 base specification is saying the following:"The EOF Padding field is shown in Figure 9-736 (EOF Padding field format). This is present only in a VHT PPDU."The HE PPDU also can have the EOF Padding. Change the corresponding sentence as the following:"The EOF Padding field is shown in Figure 9-736 (EOF Padding field format). This is present only in a VHT and HE PPDU." | As per comment | Revised- Agree in principal. The EOF padding is also used for HE PPDU.TGax editor makes changes as shown in the as specified in 11-16/0860r0. |
| 2430 | 35.43 | 9.7.3 | The 802.11mc base spec is saying the following:"A VHT MU PPDU does not carry more than one A-MPDU that contains one or more MPDUs soliciting an immediate response."But, 802.11ax rule is different because it supports the UL MU control response. Also, 802.11ax Spec Framework is saying the following:"In a HE MU PPDU, at most one A-MPDU is allowed to contain one or more MPDUs that solicit an immediate response, except when an immediate response is carried in HE TB UL PPDU. In such case, one or more A-MPDUs are allowed to contain one or more MPDUs that solicit an immediate response carried in an HE TB UL PPDU."Add the below 802.11ax Spec Framework sentence after 8th paragraph of 9.7.3:"In a HE MU PPDU, at most one A-MPDU is allowed to contain one or more MPDUs that solicit an immediate response, except when an immediate response is carried in the HE trigger-based PPDU. In such case, one or more A-MPDUs are allowed to contain one or more MPDUs that solicit an immediate response carried in an HE trigger-based PPDU." | As per comment | Revised- Agree in principal. TGax editor makes changes as shown in the as specified in 11-16/0860r0. |
| 2429 | 35.43 | 9.7.3 | The 802.11mc base spec is saying the following:"The Duration/ID fields in the MAC headers of all MPDUs in an A-MPDU carry the same value. The Duration/ID fields in the MAC headers of MPDUs in A-MPDUs carried in the same VHT MU PPDU all carry the same value."Similar to the VHT MU PPDU, the HE MU PPDU needs a constraint for the duration/ID fields as well.Append the following into 5th paragraph of 9.7.3:"The Duration/ID fields in the MAC headers of MPDUs in A-MPDUs carried in the same HE DL MU PPDU or in the all HE trigger-based PPDUs transmitted from HE STAs carry the same value." | As per comment | Revised- Agree in principal. TGax editor makes changes as shown in the as specified in 11-16/0860r0. |
| 2489 | 35.43 | 9.7.3 | 802.11 base specification is saying the following:"A VHT MU PPDU does not carry more than one A-MPDU that contains one or more MPDUs soliciting an immediate response."When the HE AP transmits the VHT MU PPDU that is destined to VHT STAs and HE STAs, the VHT MU PPDU can also solicit one or more immediate responses from the target HE STAs with Ack Policy '01'.Change the corresponding sentence as the following:"A VHT MU PPDU does not carry more than one A-MPDU that contains one or more MPDUs soliciting an immediate response carried in SU PPDU." | As per comment | Rejected- Discussion: Allowing MU acknowledgement to VHT MU PPDU makes the VHT implementation complicate. It is betther that HE amendment doesn’t create any change to 11ac spec. |

* Aggregate MPDU (A-MPDU)

***TGax editor: modify the sub-clause 9.7.1 as the following:***

* A-MPDU format

***TGax editor: change 4th paragraph in the sub-clause 9.7.1 as the following:***

 (#3478)The EOF Padding field is shown in Figure 9-737 (EOF Padding field format(#3478)). This is present only in a VHT or HE (#2481) PPDU.

***TGax editor: change 6th paragraph in the sub-clause 9.7.1 as the following:***

(#3478)In a VHT and HE (#2482) PPDU, the following padding is present, as determined by the rules in 10.13.6 (A-MPDU padding for VHT PPDU(11ac)):

* 0–3 octets in the Padding subfield of the final A-MPDU subframe (see Figure 9-738 (A-MPDU subframe format)) before any EOF padding subframes. The content of these octets is unspecified.
* Zero or more EOF padding subframes in the EOF Padding Subframes subfield.
* 0–3 octets in the EOF Padding Octets subfield. The content of these octets is unspecified.

 (11ac)

  ***TGax editor: change Table 9-422 as the following:***

|  |
| --- |
| * MPDU delimiter fields (non-DMG)(11ad)
 |
| Field | Size (bits) | Description |
| EOF(11ac) | 1 | End of frame indication. Set to 1 in an A-MPDU subframe that has 0 in the MPDU Length field and that is used to pad the A-MPDU in a VHT and HE (#2483) PPDU as described in 10.13.6 (A-MPDU padding for VHT PPDU(11ac)). Set to 1 in the MPDU delimiter of a VHT single MPDU as described in 10.13.7 (Setting the EOF field of the MPDU delimiter(11ac)). Set to 0 otherwise. |
| Reserved | 1(11ac) |  |
| MPDU Length(#6384) | 14(11ac) | Length of the MPDU in octets. Set to 0 if no MPDU is present. An A-MPDU subframe with 0 in the MPDU Length field is used as defined in 10.13.3 (Minimum MPDU Start Spacing field) to meet the minimum MPDU start spacing requirement and also to pad the A-MPDU to fill the available octets in a VHT and HE (#2484) PPDU as defined in 10.13.6 (A-MPDU padding for VHT PPDU(11ac)).(11ac) |
| CRC | 8 | 8-bit CRC of the preceding 16 bits(#6672). |
| Delimiter Signature | 8 | Pattern that can(#7045) be used to detect an MPDU delimiter when scanning for an MPDU(11ac) delimiter.The unique pattern is (#3405)0x4E (see NOTE below)(11ac). |
| NOTE—The ASCII value of the character ‘N’(#7651) was chosen as the unique pattern for the value in the Delimiter Signature field. |

***TGax editor: change 12th paragraph in the sub-clause 9.7.1 as the following:***

The format of the MPDU Length field when transmitted by a non-DMG STA(#6384) is shown in Figure 9-741 (MPDU Length field (non-DMG)(#6384)(11ac)(#3016)). The MPDU Length Low subfield contains the 12 low order bits of the MPDU length. In a VHT and HE PPDU, the MPDU Length High subfield contains the two high order bits of the MPDU length. In an HT PPDU, the MPDU Length High subfield is reserved.

***TGax editor: change 13th paragraph in the sub-clause 9.7.1 as the following:***

 (11ac)The MPDU length value is derived from the MPDU Length field subfields as follows:

*L*

*M*

*P*

*D*

*U*

*L*

*l*

*o*

*w*

*L*

*h*

*i*

*g*

*h*

4096



+

VHT and HE PPDU



*L*

*l*

*o*

*w*

HT PPDU



*L*

DMG PPDU













=

where(#6384)

*Llow* is the value of the MPDU Length Low subfield

*Lhigh* is the value of the MPDU Length High subfield

*L* is the value of the MPDU Length field(#6384)

NOTE—The format of the MPDU Length field maintains a common encoding structure for ~~both~~ all VHT, HE and HT PPDUs. For HT PPDUs, only the MPDU Length Low subfield is used, while for VHT and HE PPDUs, both subfields are used.

 (11ac)

* A-MPDU contents

***TGax editor: change 1st paragraph in the sub-clause 9.7.3 as the following:***

In a non-DMG PPDU, an A-MPDU is a sequence of A-MPDU subframes carried in a single PPDU with one of the following combinations of RXVECTOR or TXVECTOR parameter values:(11ac)

* The FORMAT parameter set to VHT
* The FORMAT parameter set to HT\_MF or HT\_GF and the AGGREGATION parameter set to 1
* The FORMAT parameter set to S1G, S1G\_DUP\_1M, or S1G\_DUP\_2M and the AGGREGATION parameter set to 1
* The FORMAT parameter set to HE

***TGax editor: change 5th paragraph in the sub-clause 9.7.3 as the following:***

The Duration/ID fields in the MAC headers of all MPDUs in an A‑MPDU carry the same value. All ~~T~~the Duration/ID fields in the MAC headers of MPDUs in A-MPDUs carried in the same VHT MU PPDU, the same HE MU PPDU or all HE trigger-based PPDUs addressed to the same AP (#2429) ~~all~~ carry the same value. (11ac)

(#126)NOTE 1—The reference point for the Duration/ID field is the end of the PPDU carrying the MPDU. Setting the Duration/ID field to the same value in the case of A-MPDU aggregation means that each MPDU consistently specifies the same NAV setting.

***TGax editor: change 8th paragraph in the sub-clause 9.7.3 as the following:***

A VHT MU PPDU does do not carry more than one A-MPDU that contains one or more MPDUs soliciting an immediate response. A HE MU PPDU does not carry more than one A-MPDU that contains one or more MPDUs soliciting an immediate response carried in an SU PPDU (#2430).

NOTE 2—The TIDs present in a data enabled A-MPDU context are also constrained by the channel access rules (for a TXOP holder; see 10.22.2 (HCF (#2203)contention based channel access (EDCA)) and 10.22.3 (HCF controlled channel access (HCCA)(#3417))) and the RD response rules (for an RD responder, see 10.28.4 (Rules for RD responder)). This is not shown in these tables.

NOTE 3—If a STA supports A‑MSDUs of 7935 octets (indicated by the Maximum A‑MSDU Length field in the HT Capabilities element), A‑MSDUs transmitted by that STA within an A-MPDU carried in a PPDU with FORMAT HT\_MF or HT\_GF(11ac) are constrained so that the length of the QoS (#100)Data (Ed)frame carrying the A‑MSDU is no more than 4095 octets. The 4095-octet MPDU length limit does not apply to A-MPDUs carried in VHT or DMG PPDUs.(11ac) The use of A‑MSDU within A-MPDU might be further constrained as described in 9.4.1.14 (Block Ack Parameter Set field) through the operation of the A‑MSDU Supported field.

NOTE 4—If an immediate response of a HE MU PPDU is carried in the HE trigger-based PPDU, one or more A-MPDUs carried in the HE MU PPDU can contain one or more MPDUs that solicit an immediate response. (#2430)