### IEEE P802.11Wireless LANs

|  |
| --- |
| 11be D1.0 CR for CID 6630 |
| Date: 2021-09-20 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel Corporation | 2200 Mission College Blvd, Santa Clara, CA 950542200  |  | po-kai.huang@intel.com |
| Rojan Chitrakar | Panasonic |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for the following CIDs:

6630

Revisions:

* Rev 0: Initial version of the document.

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 D1.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D1.0 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.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 6630 | Po-Kai Huang | 35.3.14.8 | 281.3 | Retransmission in other links should be a desirable behavior but there are limitation like different maximum MPDU length in different link that may prevent this behavior and limit the MLD benefits. We should have STAs of an MLD to have common maximum MPDU length in different link. | Add the following. Each STA in a MLD has common capabilities for the maximum MPDU length, and the capability for the maximum MPDU length of HE and EHT PPDU across links includes the following values: 3895, 7991, 11454. | Revised – Agree in principle with the commenter. We add the capability to indicate 11454 for HE and EHT PPDU across the bands so that an MLD may choose to have the same capability across bands and ease the operation of peer associated MLD. We also clarify the EHT PPDU Maximum data unit sizes (in octets) and durations.TGbe editor to make the changes shown in 11-21/1561r0 under all headings that include CID 6630. |

**Discussion:**

Indicating 3895 or 7991 or 11 454 MPDU size limit is already there for 6 GHz band (in HE 6 GHz Band Capabilities element) and 5 GHz band (in VHT Capabilities element). Indicating 11 454 MPDU size limit is not possible in 2.4 GHz band. We add additional capability field in EHT MAC capabilities for 2.4 GHz band. We also clarify the EHT PPDU Maximum data unit sizes (in octets) and durations. Finally, texts similar to the addition in 11ax is provided for EHT PPDU.

*A STA shall not transmit an HE PPDU to a recipient STA that carries a frame that is not an HE Compressed
Beamforming/CQI frame (see 26.7.3) and that exceeds the maximum MPDU length capability indicated in
the VHT Capabilities element last received from the recipient STA in the 2.4 GHz or 5 GHz band or, if a
VHT Capabilities element has not been received from the recipient STA, that exceeds the maximum AMSDU length indicated in the HT Capabilities element last received from the recipient STA in the 2.4 GHz
or 5 GHz band.*

*A STA shall not transmit an HE PPDU to a recipient STA that carries a frame that is not an HE Compressed
Beamforming/CQI frame (see 26.7.3) and that exceeds the maximum MPDU length capability indicated in
the HE 6 GHz Band Capabilities element last received from the recipient STA in the 6 GHz band.*

*A STA 6G shall not transmit in an HE PPDU a frame that is not an HE Compressed Beamforming/CQI
frame (see 26.7.3) and that exceeds the maximum MPDU length capability indicated in the HE 6 GHz Band
Capabilities element received from the recipient STA.*

**Propose:**

***TGbe editor: Modify Table 9-34 Maximum data unit sizes (in octets) and durations (in microseconds) as follows: (track change on)(#6630)***

|  |  |
| --- | --- |
|  | * **Maximum data unit sizes (in octets) and durations (in microseconds)**
 |
|  | **Non-HT non-VHT non-HE(11ax) non-S1G non-DMG PPDU and non-HT duplicate PPDU** | **HT PPDU** | **VHT PPDU** | **HE PPDU(11ax)** | **EHT PPDU** | **S1G PPDU** | **DMG PPDU** | **EDMG PPDU(11ay)** |
| MMPDU size | 2304 | 2304 | See NOTE 1 | See NOTE 1 | See NOTE 1 | See NOTE 1 | 2304 | 2304 |
| MSDU size | 2304 | 2304 | 2304 | 2304 | 2304 | 2304 | (11ay)Without SAR agreement: for the basic A-MSDU format, it is equal to the value of A-MSDU size minus 14, or minus 2 for the short A-MSDU format, if the MPDU Limit subfield of the Extended MPDU Capability field of the DMG Capabilities element is valid; otherwise, it is equal to 7920. With SAR agreement: see NOTE 8. | Without SAR agreement: for the basic A-MSDU format, it is equal to the value of A-MSDU size minus 14, or minus 2 for the short A-MSDU format, if the MPDU Limit subfield of the Extended MPDU Capability field of the DMG Capabilities element is valid; otherwise, it is equal to 7920. With SAR agreement: see NOTE 8. |
| A‑MSDU size | 3839 or4065 (see NOTE 2) (HT STA, see also Table 9-221 (Subfields of the HT Capability Information field)), or N/A (non-HT STA, see also 10.11 (A‑MSDU operation)) | 3839 or 7935 (see also Table 9-221 (Subfields of the HT Capability Information field)) | See NOTE 3 | 2.4 GHz band of a non-EHT STA: 3839 or 7935 (see also Table 9-221 (Subfields of the HT Capability Information field)) Otherwise: see NOTE 3 | See NOTE 3 | See NOTE 3 | (11ay)Without SAR agreement: indirectly limited by the value of the MPDU Limit subfield in the Extended MPDU Capability field of the DMG Capabilities element, if the subfield is valid; otherwise, it is equal to 7935.With SAR agreement: see NOTE 8. | Without SAR agreement: indirectly limited by the value of the MPDU Limit subfield in the Extended MPDU Capability field of the DMG Capabilities element, if the subfield is valid; otherwise, it is equal to 7935.With SAR agreement: see NOTE 8 |
| MPDU size | See NOTE 4 | See NOTE 5 | 3895 or 7991 or 11 454 (see also Table 9-310 (Subfields of the VHT Capabilities Information field)) | 2.4 GHz band of a non-EHT STA: see NOTE 5Otherwise: 3895 or 7991 or 11 454 (see also Table 9-310 (Subfields of the VHT Capabilities Information field), 9.4.2.263 (HE 6 GHz Band Capabilities element), and Table 9-322aq—Subfields of the EHT MAC Capabilities Information field)See NOTE 7 | 3895 or 7991 or 11 454 (see also Table 9-310 (Subfields of the VHT Capabilities Information field), 9.4.2.263 (HE 6 GHz Band Capabilities element), and Table 9-322aq—Subfields of the EHT MAC Capabilities Information field)See NOTE 9 | 3895 or 7991 (see also Table 9-342 (Subfields of the S1G Capabilities Information field)) | (11ay)The value indicated in the MPDU Limit subfield of the Extended MPDU Capability field of the DMG Capabilities element if the subfield is valid; otherwise, as in NOTE 5. | The value indicated in the MPDU Limit subfield of the Extended MPDU Capability field of the DMG Capabilities element if the subfield is valid; otherwise, as in NOTE 5. |
| PSDU size | 212–1 (see Table 15-5 (DSSS PHY characteristics), Table 16-4 (HR/DSSS PHY characteristics), Table 17-21 (OFDM PHY characteristics), Table 18-5 (ERP characteristics)) | 216–1 (see Table 19-25 (HT PHY characteristics)) | 4 692 480 (~222.16) (see Table 21-28 (VHT PHY characteristics)) | 6 500 631 (~222.63)(see Table 27-54 (HE PHY characteristics(11ax))) | 15 523 200(~223.89)(see Table 36-69 (EHT PHY characteristics))) | 797 160 (~219.60) (see Table 23-40 (S1G PHY characteristics)) | 218–1 (see Table 20-30 (DMG PHY characteristics)) | 222–1(see Table 28-12 (EDMG-Header-A field structure and definition for an SU PPDU(11ay)) and Table 28-19 (EDMG-Header-B field structure and definition(11ay))) |
| PPDU duration | See NOTE 6 | 5484 (HT\_MF; see 10.27.4 (L\_LENGTH and L\_DATARATE parameter values for HT-mixed format PPDUs)) or 10 000 (HT\_GF; see Table 19-25 (HT PHY characteristics)) | 5484 (see Table 21-28 (VHT PHY characteristics)) | 5484 (see Table 27-54 (HE PHY characteristics(11ax))) | 5484 (see Table 36-69 (EHT PHY characteristics))) | 27 840 (see Table 23-40 (S1G PHY characteristics)) | 2000 (see Table 20-30 (DMG PHY characteristics)) | 2000 (see Table 20-30 (DMG PHY characteristics)) |
| NOTE 1—No direct constraint on the maximum MMPDU size; indirectly constrained by the maximum MPDU size (see 9.3.3.1 (Format of (PV0) Management frames)).NOTE 2—Indirect constraint from the maximum PSDU size: 212–1 octets minus the minimum QoS Data frame overhead (26 octets for the MAC header and 4 octets for the FCS).NOTE 3—No direct constraint on the maximum A‑MSDU size; indirectly constrained by the maximum MPDU size.NOTE 4—No direct constraint on the maximum MPDU size; indirectly constrained by the maximum MSDU/MMPDU or (for HT STAs only) A‑MSDU size.NOTE 5—No direct constraint on the maximum MPDU size; indirectly constrained by the maximum A‑MSDU size.NOTE 6—No direct constraint on the maximum duration, but an L\_LENGTH value above 2332 might not be supported by some receivers (see NOTE 2 in 10.27.4 (L\_LENGTH and L\_DATARATE parameter values for HT-mixed format PPDUs)).NOTE 7—The maximum MPDU size might be greater than the size declared as supported by the recipient if the MPDU is an HE Compressed Beamforming/CQI frame.(11ax)NOTE 8—No direct constraint on the maximum MSDU or A-MSDU size; indirectly constrained by the maximum PSDU size. Each MPDU in an A-MPDU of the PSDU that contains the MSDU or A-MSDU generates an overhead of MPDU Header (26 bytes), FCS (4 bytes), GCMP Header (8 bytes), MIC (16 bytes), and MPDU delimiter (4 bytes).(11ay)NOTE 9—The maximum MPDU size might be greater than the size declared as supported by the recipient if the MPDU is an EHT Compressed Beamforming/CQI frame. |

***TGbe editor: Modify 9.4.2.295c.2 EHT MAC Capabilities Information field as follows: (track change on) (#6630)***

**9.4.2.295c.2 EHT MAC Capabilities Information field(#1126)**

The format of the EHT MAC Capabilities Information field is defined in [Figure 9-788eu (EHT MAC Capa-](#bookmark122) [bilities Information field format(#2920)(#1977))](#bookmark122).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| B0 B1 B2 B3 B4 B5 B6 B7B15NSEP Priority Access Supported | EHT OMControl Support | Triggered TXOP Sharing Support | Restricted TWT Support | SCS Traffic Description Support | Maximum MPDU Length | Reserved |

Bits: 1 1 1 1 1 2 9

**Figure 9-788eu—EHT MAC Capabilities Information field format(#2920)(#1977)**

The subfields of the EHT MAC Capabilities Information field are defined in [Table 9-322aq (Subfields of the](#bookmark123) [EHT MAC Capabilities Information field)](#bookmark123).

**Table 9-322aq—Subfields of the EHT MAC Capabilities Information field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| NSEP Priority Access Supported | Indicates support for NSEP priority access. | Set to 1 if dot11EHTNSEPPriorityAc- cessActivated is true (see 35.14 (NSEP priority access)).Set to 0 otherwise. |
| EHT OM Control Support | Indicates support for receiving a frame with an EHT OM Control sub- field. | If the +HTC-HE Support subfield is 1 in a STA:Set to 1 if the STA supports recep- tion of the EHT OM Control sub- field.Set to 0 otherwise.Reserved if the +HTC-HE Support subfield is 0 in a STA. |

**Table 9-322aq—Subfields of the EHT MAC Capabilities Information field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Triggered TXOP Sharing Support | Indicates support for transmitting or responding to a TXOP sharing trigger frame that does not solicit TB PPDU. | For an EHT AP:Set to 1 to indicate that the AP is capable of transmitting a modified MU-RTS frame that allocates time to a STA to transmit non-TB PPDUs (see 35.2.1.3 (Triggered TXOP sharing procedure)).Set to 0 otherwise.For an non-AP EHT STA:Set to 1 to indicate that the non- AP STA is capable of responding to a modified MU-RTS frame that allocates time to a STA to trans- mit non-TB PPDUs (see 35.2.1.3 (Triggered TXOP sharing proce- dure)).Set to 0 otherwise. |
| (#2920)Restricted TWT Support | Indicates support for the restricted TWT operation. | Set to 1 if dot11RestrictedTWTOp- tionImplemented is true and the STA supports the restricted TWT operation (see 35.7 (Restricted TWT)).Set to 0 otherwise. |
| (#1977)SCS Traffic Description Support | Indicates support for transmission and reception of SCS Descriptor elements containing a TSPEC subelement. | Set to 1 by an EHT AP that supports transmission of SCS Response frames containing SCS Descriptor element with a TSPEC subelement and dot11SCSActivated is true.Set to 1 by a non-AP EHT STA that supports transmission of SCS Request frames containing SCS Descriptor ele- ment with a TSPEC subelement and dot11SCSActivated is true.Set to 0 otherwise. |
| AAR Support | For an AP, indicates support for receiving a frame with an AAR Con- trol subfield. For a non-AP STA, indi- cates support for generating a frame with an AAR Control subfield. | If the +HTC-HE Support subfield is 1: Set to 1 if the STA supports the AAR Control subfield functionality.Set to 0 otherwise.Reserved if the +HTC-HE Support subfield is 0. |
| Maximum MPDU Length | Indicates the maximum MPDUlength that the STA is capableof receiving (see 10.11(A-MSDU operation)). | Reserved when transmitted in 5 GHz or 6 GHz band.Otherwise,Set to 0 for 3895 octets.Set to 1 for 7991 octets.Set to 2 for 11 454 octets.The value 3 is reserved. |

***TGbe editor: Modify the sentence “The length of an A-MSDU transmitted in a VHT PPDU…” in 10.11 A-MSDU operation  as follows: (track change on)(#6630)***

The length of an A-MSDU transmitted in a VHT PPDU or HE PPDU(11ax) or EHT PPDU is limited by the maximum MPDU size supported by the recipient STA (see 10.12.5 (Transport of A-MPDU by the PHY data service)).

***TGbe editor: Modify 35.13 EHT BSS operation as follows: (track change on)(#6630)***

**35.13 EHT BSS operation**

**35.13.1 Basic EHT BSS operation**

The Beacon frames generated within an EHT BSS contain an EHT Operation element.

An EHT STA has dot11EHTOptionImplemented equal to true.

In the 5 GHz band, an EHT STA shall not transmit an EHT PPDU to a recipient EHT STA that carries a frame that is not an EHT Compressed Beamforming/CQI frame (see 35.5.3 (Rules for EHT sounding protocol sequences)) and that exceeds the maximum MPDU length capability indicated in the VHT Capabilities element last received from the recipient STA .

In the 2.4 GHz band, an EHT STA shall not transmit an EHT PPDU to a recipient EHT STA that carries a frame that is not an EHT Compressed Beamforming/CQI frame (see 35.5.3 (Rules for EHT sounding protocol sequences)) and that exceeds the maximum MPDU length capability indicated in the EHT Capabilities element last received from the recipient EHT STA.

In the 2.4 GHz band, the maximum MPDU length of a frame that is not an HE Compressed Beamforming/CQI frame and is carried in an HE PPDU transmitted from an EHT STA to another EHT STA is indicated in the EHT Capabilities element.

In the 2.4 GHz band, the maximum A-MSDU length of a frame that is carried in an HE PPDU transmitted from an EHT STA to another EHT STA has no direct constraint and is indirectly constrained by the maximum MPDU size.

In the 2.4 GHz band, an EHT STA shall not transmit an HE PPDU to a recipient EHT STA that carries a frame that is not an HE Compressed Beamforming/CQI frame (see see 26.7.3 (Rules for HE sounding protocol sequences)) and that exceeds the maximum MPDU length capability indicated in the EHT Capabilities element last received from the recipient EHT STA.

***TGbe editor: Modify 35.13.1 EHT BSS 6 GHz operation as follows: (track change on)(#6630)***

**35.13.2 EHT BSS 6 GHz operation**

(#2852)In the 6 GHz band, a 6 GHz EHT AP may announce to 6 GHz non-EHT STAs a BSS operating channel width that is different from the BSS operating channel width that it announces to 6 GHz non-AP EHT STAs if the EHT BSS operating channel width includes at least one disallowed 20 MHz channel and/or if the announced EHT BSS operating channel width is not supported by an HE BSS.

A 6 GHz EHT AP shall announce the BSS operating channel width in the HE Operation element with the following restriction:
— The announced BSS operating channel width in the HE Operation element is the widest width without covering the disallowed 20 MHz channels.

The announced BSS operating channel width in HE Operation element is no more than the BSS operating
channel width in the EHT Operation element.

In the 6 GHz band, an EHT STA shall not transmit an EHT PPDU to a recipient EHT STA that carries a frame that is not an EHT Compressed Beamforming/CQI frame (see 35.5.3 (Rules for EHT sounding protocol sequences)) and that exceeds the maximum MPDU length capability indicated in the HE 6 GHz Band Capabilities element last received from the recipient EHT STA.