IEEE P802.11  
Wireless LANs

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| **TGbn D0.1 Comment Resolution for A-MPDU operation in a UHR STA** |
| **Date:** 2025-04-17 |

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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| SunHee Baek | LG Electronics | 19, Yangjae-daero 11gil, Seocho-gu, Seoul 137-130, Korea |  | sunhee.baek@lge.com |
| Insun Jang |  | insun.jang@lge.com |
| Hongwon Lee |  | hongwon.lee@lge.com |
| Geonhwan Kim |  | geonhwan.kim@lge.com |
| Yelin Yoon |  | yl.yoon@lge.com |
| DongJu Cha |  | dongju.cha@lge.com |
| Jinsoo Choi |  | js.choi@lge.com |
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Abstract

This submission proposes resolutions for the following 1 CID received for TGbn CC50 Comment Resolution:

* 1406

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

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

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

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| **CID** | **Commenter** | **Clause**  **(page.line)** | **Comment** | **Proposed Change** | **Resolution** |
| 1406 | SunHee Baek | 37  (67.05) | Please define A-MPDU operation in a UHR PPDU like A-MPDU operation in an EHT PPDU(35.6). | as in the comment. | **Revised**  Agree in principle with the commenter.  The rules defined in 10.12 of REVme\_D7.0 and 35.6 of 11be\_D7.0 can be applied to UHR PPDU for A-MPDU operation.  TGbn editor, please make the changes tagged by CID #1406 in the document. |

**Propose:**

***TGbn editor: Please add a new section under 37.(Ultra high reliability (UHR) MAC specification) as follows and note that the baseline of this subclause 37.x (A-MPDU Operation in a UHR PPDU) in 11bn D0.2:***

**37.X A-MPDU operation in a UHR PPDU**

(#1406)A-MPDU operation for a UHR PPDU shall follow the procedure defined in 10.12 (A-MPDU operation).

(#1406)A UHR STA shall follow the same rules defined in 35.6 (A-MPDU operation in an EHT PPDU) with the following changes:

* Replacing EHT STA by UHR STA.
* Replacing EHT PPDU by UHR PPDU.

***TGbn editor: Please note that the baseline is 11be D7.0.***

**10.12 A-MPDU operation**

**10.12.2 A-MPDU length limit rules**

***TGbn editor: Change the below paragragh 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 STA indicates in the Maximum A-MPDU Length Exponent field in its S1G Capabilities element the maximum length of the A-MPDU pre-EOF padding that it can receive in an S1G PPDU. A STA indicates in the Maximum A-MPDU Length Exponent field in its DMG Capabilities element the maximum A-MPDU length that it can receive in a DMG PPDU. A STA indicates the maximum length of the A-MPDU pre-EOF padding that it can receive in an HE PPDU in the Maximum A-MPDU Length Exponent field in its HT Capabilities, VHT Capabilities, and HE 6 GHz Band Capabilities elements (if present) and in the Maximum A-MPDU Length Exponent Extension field in its HE Capabilities element. A STA indicates in the Maximum A-MPDU Length Exponent field in its EDMG Capabilities element the maximum length of the A-MPDU that it can receive in an EDMG PPDU. A STA indicates the maximum length of the A-MPDU pre-EOF padding that it can receive in an EHT PPDU(#1406) or a UHR PPDU in the Maximum A-MPDU Length Exponent field in its HT Capabilities, VHT Capabilities, and (if present) HE 6 GHz Band Capabilities elements, and in the Maximum A-MPDU Length Exponent Extension field in HE Capabilities and EHT Capabilities elements. Fields used for calculating the maximum A-MPDU size of various PPDU Types in 2.4 GHz, 5 GHz, and 6 GHz bands are specified in Table 10-12a (Fields used for calculating the maximum A-MPDU size of various PPDU types in 2.4 GHz, 5 GHz, and 6 GHz bands). Fields used for calculating the maximum A-MPDU size of various PPDU Types in 60 GHz bands are specified in Table 10-12b (Fields used for calculating the maximum A-MPDU size of various PPDU types in 60 GHz band).

***TGbn editor: Change the Table 10-12a (Fields used for calculating the maximum A-MPDU size of various PPDU types in 2.4GHz, 5GHz, and 6GHz bands) as follows:***

**Table 10-12a – Fields used for calculating the maximum A-MPDU size of various PPDU types in 2.4 GHz, 5 GHz, and 6 GHz bands**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Maximum A-MPDU per PPDU type and band** | **Maximum A-MPDU Length Exponent field in HT Capabilities element** | **Maximum A-MPDU Length Exponent field in VHT Capabilities element** | **Maximum A-MPDU Length Exponent Extension field in HE Capabilities element** | **Maximum A-MPDU Length Exponent field in HE 6G Capabilities element** | **Maximum A-MPDU Length Exponent Extension field in EHT Capabilities element** |
| Maximum A-MPDU in HT PPDU of 2.4 GHz band | Y | N | N | N | N |
| Maximum A-MPDU in HE PPDU of 2.4 GHz band | Y | N | Y | N | N |
| Maximum A-MPDU in EHT(#1406) or UHR PPDU of 2.4 GHz band | Y | N | Y | N | Y |
| Maximum A-MPDU in HT PPDU of 5 GHz band | Y | N | N | N | N |
| Maximum A-MPDU in VHT PPDU of 5 GHz band | N | Y | N | N | N |
| Maximum A-MPDU in HE PPDU of 5 GHz band | N | Y | Y | N | N |
| Maximum A-MPDU in EHT(#1406) or UHR PPDU of 5 GHz band | N | Y | Y | N | Y |
| Maximum A-MPDU in HE PPDU of 6 GHz band | N | N | Y | Y | N |
| Maximum A-MPDU in EHT(#1406) or UHR PPDU of 6 GHz band | N | N | Y | Y | Y |

***TGbn editor: Change the below paragragh as follows:***

A STA shall not transmit an A-MPDU in an EHT PPDU(#1406) or a UHR PPDU where the A-MPDU pre-EOF padding length is greater than the value indicated by the Maximum A-MPDU Length Exponent field in the HT Capabilities and VHT Capabilities elements and the Maximum A-MPDU Length Exponent Extension field in its HE Capabilities and EHT Capabilities elements received from the intended receiver in the 2.4 GHz or 5 GHz bands. A STA shall not transmit an A-MPDU in EHT PPDU(#1406) or a UHR PPDU where the A-MPDU pre-EOF padding length is greater than the value indicated by the Maximum A-MPDU Length Exponent field in the HE 6 GHz Band Capabilities element and the Maximum A-MPDU Length Exponent Extension field in the HE Capabilities and EHT Capabilities elements received from the intended receiver in the 6 GHz band.

**10.12.3 Minimum MPDU start spacing rules**

***TGbn editor: Change the below equation (10-12) as follows:***

(10-12)

|  |  |
| --- | --- |
|  | is the time (in microseconds) defined in the Encoding column of Table 9-222 (Subfields of the A-MPDU Parameters field) for an HT STA, of Table 9-342 (Subfields of the S1G Capabilities Information field) for an S1G STA for the value of the Minimum MPDU Start Spacing field, and of Table 9-288 (Subfields of the A-MPDU Parameters subfield) for a DMG STA for the value of the Minimum MPDU Start Spacing field |
| *MMSF* | is the value of the MPDU MU Spacing Factor subfield of the User Info field addressed to the HE(#1406), EHT, or UHR STA in the Trigger frame soliciting the HE, EHT, or UHR TB PPDU(see 9.3.1.22 (Trigger frame format)) |
|  | is the value of the PHY Data Rate (in megabits per second) defined in 19.5 (Parameters for HT-MCSs) for HT PPDUs, in 21.5 (Parameters for VHT-MCSs) for VHT PPDUs, in 23.5 (Paramters for S1G-MCSs) for S1G PPDUs, and in Clause 20 (Directional multi-gigabit (DMG) PHY specification) for a DMG STA |

**10.12.4 A-MPDU aggregation of group addressed Data frames**

***TGbn editor: Change the below paragragh as follows:***

NOTE 2—As VHT STAs, HE STAs, (#1406)EHT STAs, and UHR STAs are HT STAs, NOTE 1 also applies to VHT APs, VHT mesh STAs, HE APs, HE mesh STAs, EHT APs, (#1406)EHT mesh STAs, UHR APs, and UHR mesh STAs..

***TGbn editor: Change the below paragragh as follows:***

When a STA transmits a PPDU containing at least one A-MPDU that contains MPDUs with an RA that is a group address, the following shall apply:

* If the PPDU is an HT PPDU, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the A-MPDU Parameters field of the HT Capabilities elements across all HT STAs associated with the transmitting AP or across all peer HT mesh STAs.
* If the PPDU is a VHT PPDU, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the VHT Capabilities elements across all VHT STAs associated with the transmitting AP or across all peer VHT mesh STAs.
* If the PPDU is an HE PPDU sent in the 2.4 GHz or 5 GHz band, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the VHT Capabilities elements across all HE STAs associated with the transmitting AP or across all peer HE mesh STAs.
* If the PPDU is an HE PPDU sent in the 6 GHz band, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the HE 6 GHz Band Capabilities elements across all HE STAs associated with the transmitting AP or across all peer HE mesh STAs.
* If the PPDU is an EHT PPDU (#1406)or a UHR PPDU sent in the 2.4 GHz or 5 GHz band, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the VHT Capabilities elements across all EHT STAs or UHR STAs associated with the transmitting AP or across all peer EHT mesh STAs or all peer UHR mesh STAs.
* If the PPDU is an EHT PPDU (#1406)or a UHR PPDU sent in the 6 GHz band, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the HE 6 GHz Band Capabilities elements across all EHT STAs or UHR STAs associated with the transmitting AP or across all peer EHT mesh STAs or peer UHR mesh STAs.
* If the PPDU is a VHT PPDU, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the HT Capabilities elements across all VHT STAs associated with the transmitting AP or across all peer VHT mesh STAs.
* If the PPDU is an HT PPDU transmitted by an AP, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the HT Capabilities elements across all HT STAs associated with the transmitting AP or across all peer HT mesh STAs.
* If the PPDU is an HE PPDU sent in the 2.4 GHz or 5 GHz band, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the HT Capabilities elements across all HE STAs associated with the transmitting AP or across all peer HE mesh STAs.
* If the PPDU is an HE PPDU sent in the 6 GHz band, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the HE 6 GHz Band Capabilities elements across all HE STAs associated with the transmitting AP or across all peer HE mesh STAs.
* If the PPDU is an EHT PPDU (#1406)or a UHR PPDU sent in the 2.4 GHz or 5 GHz band, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the HT Capabilities elements across all EHT STAs or UHR STAs associated with the transmitting AP or across all peer EHT mesh STAs or peer UHR mesh STAs.
* If the PPDU is an EHT PPDU (#1406)or a UHR PPDU sent in the 6 GHz band, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the HE 6 GHz Band Capabilities elements across all EHT STAs or UHR STAs associated with the transmitting AP or across all peer EHT mesh STAs or peer UHR mesh STAs.
* If the PPDU is a DMG PPDU, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfield of the A-MPDU Parameters field of the DMG Capabilities element of all DMG STAs associated with the AP or PCP.
* If the PPDU is a DMG PPDU, the minimum MPDU start spacing value is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the DMG Capabilities element of all DMG STAs associated with the AP or PCP.
* If the PPDU is an S1G PPDU, the maximum A-MPDU length exponent value is the minimum value in the Maximum A-MPDU Length Exponent subfields of the S1G Capabilities Information field of the S1G Capabilities elements across all S1G STAs associated with the transmitting AP.
* If the PPDU is an S1G PPDU, the minimum MPDU start spacing value (11ax)is the maximum value in the Minimum MPDU Start Spacing subfields of the S1G Capabilities Information field of the S1G Capabilities elements across all S1G STAs associated with the transmitting AP.
* If the PPDU is an EDMG PPDU, the maximum A-MPDU length exponent value that applies is the minimum value in the Maximum A-MPDU Length Exponent subfield of the A-MPDU Parameters field of the EDMG Capabilities element of all EDMG STAs associated with the AP or PCP.
* If the PPDU is an EDMG PPDU, the minimum MPDU start spacing value that applies is the maximum value in the Minimum MPDU Start Spacing subfield of the A-MPDU Parameters field of the EDMG Capabilities element of all EDMG STAs associated with the AP or PCP.

**10.12.7 Setting the EOF/Tag field of the MPDU delimiter**

***TGbn editor: Change the below paragragh as follows:***

The EOF/Tag field may be set to 1 in an A-MPDU subframe carried in a VHT PPDU, HE PPDU, EHT PPDU(#1406), UHR PPDU or S1G PPDU if the subframe’s MPDU Length field is nonzero and the subframe is the only sub-frame that has a nonzero MPDU Length field. The EOF/Tag field of each A-MPDU subframe with an MPDU Length field with a nonzero value that is not the only A-MPDU subframe with MPDU Length field with a nonzero value in the A-MPDU carried in a VHT PPDU or S1G PPDU shall be set to 0. The EOF/Tag field shall be set to 0 in all A-MPDU subframes that are carried in an HT PPDU.