IEEE P802.11
Wireless LANs

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| CR for 35.4.2 UL MU operation |
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 Abstract

This submission proposes resolutions for following CID received for TGbe CC34:

1088

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

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

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| **CID** | **Commenter** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1088 | Alfred Asterjadhi | 146.42 | 35.4 | Several subclauses for UL MU operation are missing. Several things need to be expanded in this case, such as support for EHT TB PPDU, 320 MHz, up to 16 SS, and other new PHY functionalities that are added to the PHY subclauses. Add necessary capability bits and MIB variables. | As in comment | Revised-Agree with the comment. Inherit the rules defined in 26.5.2 (HE UL MU operation) that can also be applied to EHT UL MU operation. Define some new rules to support EHT UL MU operation.TGbe editor:Please implement changes as shown in this document. |

***TGbe editor: Please note baselines are REVmd D5.0, 11ax D8.0 and 11be D0.4***

**35.4.2 EHT UL MU operation**

***TGbe editor: Please update the subclause as shown below***

**35.4.2.1 General**

EHT UL MU operation allows an AP to solicit simultaneous immediate response frames from one or more non-AP EHT STAs. EHT UL MU operation expands the UL MU functionalities inherited from HE with the additional capability of responding with EHT TB PPDUs, with bandwidths up to 320 MHz.

An EHT STA follows the rules defined in 26.5.2 (UL MU operation) and additionally the rules defined below.

If a non-AP EHT STA supports transmitting an EHT TB PPDU that uses UL MU-MIMO within an RU that does not span the entire PPDU bandwidth, then the STA shall set dot11EHTPartialBWULMUMIMOImplemented to true and the Partial Bandwidth UL MU-MIMO subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits to 1. Otherwise, the non-AP EHT STA shall set dot11EHTPartialBWULMUMIMOImplemented to false and the Partial Bandwidth UL MU-MIMO subfield to 0.

An AP shall not transmit a triggering frame in the 6 GHz band which allocates a 4×996-tone RU to a non-AP EHT STA, unless the AP has received from the non-AP EHT STA an EHT Capabilities element with the Support For 320 MHz In 6 GHz subfield in the EHT PHY Capabilities Information field equal to 1.

An AP transmitting an EHT PPDU that contains a triggering frame shall follow the same rules for transmitting an HE PPDU that contains a triggering frame, as defined in 26.5.2.2 (Rules for soliciting UL MU frames), unless specified otherwise.

**35.4.2.2 Rules for soliciting UL MU frames**

**35.4.2.2.1 Allowed settings of the Trigger frame fields and TRS Control subfield**

An EHT AP may transmit a Trigger frame or a frame carrying a TRS Control subfield that solicits an HE TB PPDU from an HE STA and/or an EHT STA subject to the rules defined in 26.5.2.2 (Rules for soliciting UL MU frames).

An EHT AP may transmit a Trigger frame that solicits an EHT TB PPDU from an EHT STA subject to the rules defined in 26.5.2.2 (Rules for soliciting UL MU frames) and the additional rules defined below.

An AP may include a frame carrying a TRS Control subfield in an EHT MU PPDU subject to the rules defined in 26.5.2.2 (Rules for soliciting UL MU frames) and the additional rules defined below.

An AP shall not transmit a Trigger frame soliciting an EHT TB PPDU that uses UL MU-MIMO within an RU that does not span the entire PPDU bandwidth to a non-AP STA from which it has not received an EHT Capabilities element with the Partial Bandwidth UL MU-MIMO subfield of the EHT PHY Capabilities Information field equal to 1.

An AP shall not transmit a frame in the 6 GHz band that carries a TRS Control subfield that allocates a 4×996-tone RU to a non-AP EHT STA or a Trigger frame with a User Info field that allocates a 4×996-tone RU to a non-AP EHT STA unless the AP has received from the non-AP EHT STA an EHT Capabilities element with the Support For 320 MHz In 6 GHz subfield in the EHT PHY Capabilities Information field equal to 1.

If the dot11EHTBaseLineFeaturesImplementedOnly is equal to true then an EHT AP shall not transmit a Trigger frame that solicits both an HE TB PPDU and an EHT TB PPDU.

The AID12 subfield of the Special User Info field shall be set to 2007. An EHT AP that includes the Special User Info field in a Trigger frame shall set Special User Info Field Present subfield to 0 and the special User Info field shall be placed immediately after the Common Info field. (#M20, #SP1) An EHT AP shall set the value of B54 in the Common Info field of a Trigger frame to 1 if there exists any HE variant User Info field in the Trigger frame. Otherwise, the EHT AP shall set the value of B54 in the Common Info field of the Trigger frame to 0.

An EHT AP shall not assign an AID value of 2007 to any STA.

An EHT AP shall set the UL Length subfield of a transmitted Trigger frame that solicits an EHT TB PPDU to the value given by Equation (27-11) with m = 2.

NOTE—This is the same rule as that of an AP that transmits a Trigger frame that solicits an HE TB PPDU (see 26.5.2.2.4 (Allowed settings of the Trigger frame fields and TRS Control field)).

An AP shall follow the RU restriction rules defined in 36.3.2.5 (RU and MRU restrictions for 20 MHz operation) when assigning an RU or MRU to a 20 MHz operating non-AP STA for a 40 MHz, 80 MHz, 160 MHz, or 320 MHz EHT TB PPDU.

**35.4.2.3 Non-AP STA behavior for UL MU operation**

**35.4.2.3.1 General**

An EHT non-AP STA transmitting an EHT TB PPDU shall follow the same rules for transmitting HE TB PPDU, as defined in 26.5.2.3 (Non-AP STA behavior for UL MU operation), unless specified otherwise.

An EHT non-AP STA that transmits a TB PPDU shall satisfy the conditions defined in 26.5.2.3 (Non-AP STA behavior for UL MU operation). A User Info field that is addressed to a non-AP STA is either an HE variant or EHT variant. The User Info field is an HE variant addressed to a non-AP STA if the B39 of the User Info field is set to 0 and the B54 of the Common Info field is set to 1 in the Trigger frame; otherwise, it is an EHT variant. (#SP2)

If an EHT non-AP STA receives an EHT variant User Info field in the Trigger frame in which the AID12 subfield matches its AID, then it responds with an EHT TB PPDU. If an EHT non-AP STA receives an HE variant User Info field in the Trigger frame in which the AID12 subfield matches its AID, then it responds with an HE TB PPDU.

An EHT non-AP STA shall not send an EHT TB PPDU unless it is explicitly triggered by an AP in one of the operation modes described in 26.5.2.3 (Non-AP STA behavior for UL MU operation) and the operation modes described in 35.4.2.3.1 (TXVECTOR parameters for EHT TB PPDU response to TRS Control subfield).

An EHT non-AP STA shall not send an HE TB PPDU on the secondary 160 MHz.

* EHT PLME
* PLME\_SAP sublayer management primitives

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| * EHT PHY MIB attributes
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| Managed object | Default value/range | Operational semantics |
| **dot11PHYEHTTable** |
| dot11EHTCurrentChannelWidthSet | Implementation dependent | Dynamic |
| dot11EHTPartialBWULMUMIMOImplemented | false/Boolean | Static |

* MIB Detail

Editor’s Note: The following is a list of new MIB objects introduced in the main text:

* dot11EHTEMLSROptionImplemented
* dot11EHTEMLMROptionImplemented
* dot11SupportedEMLMRRxNSS
* dot11SupportedEMLMRTxNSS
* dot11EHTNSEPPriorityAccessActivated
* dot11EHTCurrentChannelWidthSet
* dot11MultiLinkActivated
* dot11MLDAssociationSAQueryMaximumTimeout
* dot11NonAPStationAuthNSEPPriorityAccesstype
* dot11RestrictedTWTOptionImplemented
* dot11TXOPSharingTFOptionImplemented
* dot11EHTOMIOptionImplemented

dot11EHTPartialBWULMUMIMOImplemented

dot11PhyEHTEntry::= SEQUENCE

 {

 dot11EHTPartialBWULMUMIMOImplemented, TruthValue

 }

dot11EHTPartialBWULMUMIMOImplemented OBJECT-TYPE

 SYNTAX TruthValue

 MAX-ACCESS read-only

 STATUS current

 DESCRIPTION

 "This is a capability variable.

 Its value is determined by device capabilities.

 This attribute, when true, indicates that an AP is capable of receiving an RU in an EHT TB PPDU where MU-MIMO is employed in the RU, the RU size is greater than or equal to 242-tones, and the RU does not span the entire PPDU bandwidth; and a non-AP STA is capable of transmitting an RU in an EHT TB PPDU where MU-MIMO is employed in the RU, the RU size is greater than or equal to 242-tones, and the RU does not span the entire PPDU bandwidth. This capability is disabled otherwise."

::= { dot11PhyEHTEntry<ANA> }

**Straw Poll: Do you support to incorporate the proposed draft text in this document 11-21/0662r0 to the next revision of TGbe Draft 0.4?**

**Result: Yes/No/Abstain**