IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | CR of DL MU procedure (D2.0) | | | | | | Date: 2018-1-1 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | Email | | Zhou Lan | Broadcom Ltd. | 250 Innovation Drive San Jose CA 95134 | (+1) 408 543 3450 | [zhou.lan@broadcom.com](mailto:zhou.lan@broadcom.com) | | Chunyu Hu | Broadcom Ltd. | 250 Innovation Drive San Jose CA 95134 |  | [chunyu.hu@broadcom.com](mailto:chunyu.hu@broadcom.com) | | Matthew Fischer | Broadcom Ltd. | 250 Innovation Drive San Jose CA 95134 |  | [matthew.fischer@broadcom.com](mailto:matthew.fischer@broadcom.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

Comment resolution with proposed changes to TGax D2.0 for CIDs from the WG LB for TGax related to DL MU procedure.

The CID list is:

12286, 13091, 13707, 11301, 11302, 13092.

The proposed changes on this document are based on TGax Draft 2.0.

**REVISION NOTES:**

R0: Initial draft with comments from group.

**END OF REVISION NOTES**

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.***

**CIDs**

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| 12286 | Kazuyuki Sakoda | 242.15 | 27.5.1 | HE DL MU operation should be useful for MBSS as well. | Please consider to allow similar operation to HE DL MU to mesh STAs. It is possible to accommodate HE DL MU operation to mesh STAs, if mesh STA performs both AP and STA role for this purpose. | Rejected-  Mesh operation is out of scope of 11ax PAR.  TGax makes no changes to the draft on CID 12286. |
| 13091 | Patrice Nezou | 242.31 | 27.5.1.1 | "A STA shall not transmit an HE MU PPDU of DL MU-MIMO with OFDMA allocated in an RU that is addressed to a STA unless the AP has received from the STA an HE Capabilities element with the Partial Bandwidth DL MU-MIMO subfield in the HE PHY Capabilities Information field equal to 1."  A non-AP STA cannot send a HE MU PPDU. SO its better to replace "A STA shall not transmit ..." with " An AP shall not transmit ..." | A non-AP STA cannot send a HE MU PPDU. SO its better to replace "A STA shall not transmit ..." with " An AP shall not transmit ..." | Revised-  A non-AP STA may still be able to transmit a HE MU PPDU (refer to section 28.1.1 for details). So the comment is incorrect. However, section 27.5.1.1 only discusses about the DL MU transmission procedure. So the proposed change to the draft text is valid.  TGax editor makes changes as shown in 11-18/054r0 that are marked with CID 13091 |
| 13707 | Tomoko Adachi | 242.31 | 27.5.1.1 | "A STA shall not transmit an HE MU PPDU of DL MU-MIMO with OFDMA allocated in an RU that is addressed to ..." The subject "A STA" here is an AP, as transmitting DL MU-MIMO is discussed. | Change it to read "An AP shall not transmit an HE MU PPDU of DL MU-MIMO with OFDMA allocated in an RU that is addressed to ...". | Accepted-  TGax editor makes changes as shown in 11-18/054r0 that are marked with CID 13707 |
| 11301 | Alfred Asterjadhi | 242.40 | 27.5.1.1 | Other parts of the spec allow this combination (i.e., with Ack Policy set to HTP Ack to be carried in HE SU PPDUs as well (see Ack policy subfield setting). As such this rule should be applicable to HE SU PPDUs. Clarify that this is the case for any HE PPDU that carries the Trigger frame with Data and HTP Ack. | Clarify that this capability applies independently of the PPDU that carries this particular ack-enabled A-MPDU. | Revised-  Agree in principle with the commenter. The combination of “A QoS Data frame with Ack Policy field set to HTP Ack carried in an A-MPDU subframe with the EOF field set to 1 and a Trigger frame.” In HE SU PPDU is allowed. However, section 27.5.1.1 only discusses the DL MU procedure that doesn’t involve HE SU PPDU transmission in DL direction. The case that the commenter referred to is already clarified in section 27.10.4.  TGax editor makes no changes on CID 11301. |
| 11302 | Alfred Asterjadhi | 242.62 | 27.5.1.2 | Focus from the receive side of things. And the STA may discard all other RUs (not only broadcast) if it is the intended receiver of an RU as identified by one of the elements in the STA\_ID\_LIST. | As in comment. | Revised-  Agree in principle.  TGax editor makes changes as shown in 11-18/054r0 that are marked with CID 11302 |
| 13092 | Patrice Nezou | 242.64 | 27.5.1.2 | "An MPDU of an HE MU PPDU sent in a broadcast RU shall not include information intended for a STA that is identified as the recipient of another RU in the same HE MU PPDU."  What is the definition of a broadcast RU. Usually, "Broadcast" means "addressed to ALL STAs. In that case, no other STAs can be identified as the recipient of another RU in the same HE MU PPDU. | Please rename broadcast RU as a multi-STA RU and define it as a RU destined to multiple STAs. | Rejected-  A Broadcast RU is an RU that allows more than one STAs to behaviour as a recipient.  Kindly refer to section 3.2 for the definition of the Broadcast RU.  TGax editor makes no changes on CID 13092. |

**Discussion:**

Clarifying the language as suggested.

**Proposed Changes to Draft Text of TGax D2.0:**

TGax editor: change section 27.5.1.1 as follows

**27.5.1.1 General**

HE DL MU operation allows an AP to transmit simultaneously to one or more non-AP STAs in DL OFDMA, DL MU-MIMO or both.

The PSDU on each RU in an HE MU PPDU shall be padded to end at the same time, indicated by the L-SIG field as described in 28.3.10.5 (L-SIG).

The padding procedure for each A-MPDU in an HE MU PPDU is defined in 27.10.2 (A-MPDU padding for an HE SU PPDU, HE ER SU PPDU and HE MU PPDU).

~~A STA~~ An AP (#CID 13091, 13707) shall not transmit an HE MU PPDU of DL MU-MIMO with OFDMA allocated in an RU that is addressed to a STA unless the AP has received from the STA an HE Capabilities element with the Partial Bandwidth DL MU-MIMO subfield in the HE PHY Capabilities Information field equal to 1.

An AP shall not send to a STA an A-MPDU contained in an HE MU PPDU that contains one of the following combinations of frames unless the AP has received from the STA an HE Capabilities element with the Ack-Enabled Aggregation Support subfield in the HE MAC Capabilities Information field equal to 1:

— A QoS Data frame with Ack Policy field set to HTP Ack carried in an A-MPDU subframe with the EOF field set to 1 and a Trigger frame.

— A Management frame carried in an A-MPDU subframe with the EOF field set to 1 where the Management frame is a Disassociation frame, Re(Association) Response frame, Authentication frame or Action frame, and a Trigger frame.

TGax editor: change section 27.5.1.2 as follows.

**27.5.1.2 RU addressing in an HE MU PPDU**

The Type and Subtype subfields in the Frame Control field and address type (individually addressed or group addressed) of MPDUs may be different across A-MPDUs in different RUs within the same HE MU PPDU.

An AP shall set one or more elements in the TXVECTOR parameter array STA\_ID\_LIST, which represents the list of STAs that are the recipients of the transmitted HE MU PPDU as described in 27.11.1 (STA\_ID\_LIST). A STA\_ID\_LIST element with a particular value shall not appear more than once in the array except is the value is 2046, which identifies an unallocated RU. If an AP sets the TXVECTOR parameter STA\_ID\_LIST to match the 11 LSBs of the AID of a non-AP STA, then the non-AP STA may disregard any non-broadcast RU as identified by other elements in the STA\_ID\_LIST and (#CID 11302) any broadcast RU in the same HE MU PPDU.

An MPDU of an HE MU PPDU sent in a broadcast RU shall not include information intended for a STA that is identified as the recipient of another RU in the same HE MU PPDU.

**End of proposed changes.**