IEEE P802.11  
Wireless LANs

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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.1 with the following CIDs:

* CIDs: 5036, 8140, 9332, 7254, 7546

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.***

# OFDMA based Random Access (27.5.2.6)

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 5036 | 173.61 | 27.5.2.6.2 | It is mentioned that the acknowledgement procedure for random access is as defined in  10.3.2.10.3; however, for an unassociated STA, due to its absence of an AID, may not be  acknowledged as similar to an associated STA; | Suggest to define an MU acknowledgement procedure for unassociated STAs  using UL OFDMA-based random access, following a definition of an AID for the  TBD in Subclause 27.5.2.3. | Revised  Agree with the comment.  Added text to cover ACK procedure of RA for unassociated STAs.  TGax editor please make the changes as shown in 11-17/0xxxr0 |
| 8140 | 164.47 | 27.5.2.2.1 | Random Access UL OFDMA for unassociated STAs is mentioned here, but how does such a STA recognize the DL OFDMA response? Such a STA needs some sort of AID value to identify its DL RU allocation - the text refers me to 27.5.2.6 but there is nothing here mentioning what to do for unassociated STA, while over in 27.5.2.3, there is a TBD in a sentence that refers to unassociated STA | Define the rules for unassociated STA operation within UL OFDMA Random Access | Revised  Agree with the comment.  Added text to cover ACK procedure of RA for unassociated STAs.  TGax editor please make the changes as shown in 11-17/0xxxr0 |
| 9332 | 172.25 | 27.5.2.6 | Currently, it is considered that both the associated STAs and unassociated STAs are allowed to join the UL OFDMA-based random access. However, the real state that the STA is in and the state that the AP thinks the STA is in according to the association may be different. This is because there is no complete mechanism for the AP to syncrhonize with the STA. Therefore, when the AP acknowledges to those STAs that the AP thinks they are still associated with the Multi-STA BlockAck, some of the STAs that already disassociated may not distinguish the AIDs that the AP used for those STAs. The opposite perception gap may also occur. And as the unassociated STAs don't have their AIDs assigned, the AP can't acknowledge those unassociated STAs with the regular Multi-STA BlockAck procedure. | If both the associated STAs and unassociated STAs are handled together in the UL OFDMA-based random access, the way to solve the problems described in the comment will be to have the STAs responding to the UL OFDMA-based random access to set their AIDs if they are associated and temporary AIDs if they are unassociated in the Duration/ID field of the MPDUs. The temporary AIDs will be selected randomly from the range other than the one for AIDs. The AP will use the AIDs and/or temporary AIDs set in the Duration/ID fields for the Multi-STA BlockAck to respond to those transmission sent through UL OFDMA-based random access. For the probability of temporary AIDs colliding, as the unassociated STAs will only transmit management request frames and have timeout to wait for management response frames, the unassociated STAs can solve by themselves.  The other way will be to divide the STAs to those associated and unassociated for the UL OFDMA-based random access. Specify in the Trigger frame such as AID=0 for only the associated STAs and AIDs with special values to allocate random access RUs for the unassociated STAs. The special AID values are assigned to each of the RUs and the AP will use that special AIDs when acknowledging with the Multi-STA BlockAck. The AP will acknowledge with the regular Multi-STA BlockAck procedure for the STAs that accessed in the "associated" RUs. But with this method, the behavior at the AP has to be different for the "associated" RUs and "unassociated" RUs. So, only assigning random access RUs to unassociated STAs may make the mechanism more simple. | Revised  Agree with the comment.  Added text to cover ACK procedure of RA for unassociated STAs.  TGax editor please make the changes as shown in 11-17/0xxxr0 |
| 7254 | 173.64 | 27.5.2.6.2 | Acknowledgment procedure in response to the OFDMA random access request from unassociated STAs needs to be specified. | As in the comment | Revised  Agree with the comment.  Added text to cover ACK procedure of RA for unassociated STAs.  TGax editor please make the changes as shown in 11-17/0xxxr0 |
| 7546 | 173.62 | 27.5.2.6.2 | It is not clear how STA without AID could participate the UL MU ack procedure in 10.3.2.10.3. | describe specifically how STA without AID acquires its ack following the procedure in 10.3.2.10.3, when there are multiple acks to multiple STA without AID | Revised  Agree with the comment.  Added text to cover ACK procedure of RA for unassociated STAs.  TGax editor please make the changes as shown in 11-17/0xxxr0 |

**TGax Editor: Add this subclause as follows:**

**27.5.2.6.4 Response of UL OFDMA random access for un-associated STA**

When receiving at least one frame from one or more un-associated HE STA(s) and that require an immediate acknowledgement, an AP may send an Ack frame to the un-associated HE STA in HE MU PPDU. STA-ID field in HE-SIG-B of Ack frame for un-associated HE STA shall be 2045.

An AP may send a management frame to an un-associated HE STA in HE MU PPDU with the STA-ID field set to 2045 in HE-SIG-B.

**TGax Editor: Modify this table as follows:**

**28.3.10.8.5 HE-SIG-B per-user content**

**Table 28-22—Fields of the HE-SIG-B user field for an non-MU-MIMO allocation**

|  |  |  |  |
| --- | --- | --- | --- |
| Bit | Field | Number of bits | Description |
| B0-B10 | STA-ID | 11 | The STA-ID refers to the AID described in 9.4.1.8  (AID field). The 11 LSBs of the AID field are used to  address the STAs in this field.  For RUs that carry a broadcast allocation:  — For single BSS AP, the STAID for broadcast will be 0  — For Multiple BSS AP, the STAID for broadcast to a specific BSS will follow the group addressed AID assignment in the TIM according to the existing Multi-BSSID TIM operation  — For multiple BSS AP, the STAID for broadcast to all BSS of the AP is set to 2047  And further:  — STAID value 2046 is used to indicate that the RU carries no data  — When a STA transmits on the uplink using the HE MU PPDU format, the STA-ID field is populated by the AID of the transmitter assigned by the AP  — STAID value 2045 is used to indicate that the RU is used to transmit PPDU to an un-associated HE STA |

**TGax Editor: Modify this subclause as follows:**

**27.5.1.2 HE MU PPDU payload**

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 a same HE MU

PPDU.

Two STA-ID fields in HE-SIG-B shall not have the same value, unless the value is 2046, which is used to

indicate an unallocated RU. If an AP sets one of the STA-ID field in the HE-SIG-B field to match the AID of

a non-AP STA, then the non-AP STA may disregard any broadcast RU in the same HE MU PPDU.

An MPDU sent in a broadcast RU of an HE MU PPDU shall not include information intended for a STA that

is identified as the recipient of another RU in the same HE MU PPDU.

There shall be only one STA-ID field having the value is 2045 in HE-SIG-B, which is used to indicate that an RU is used to transmit PPDU to a HE STA which is not associated with the AP.