### IEEE P802.11Wireless LANs

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| 11ax D2.3 MAC Comment Resolution for Random Access |
| Date: 2018-04-30 |
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Abstract

This submission proposes resolutions for comments of TGax Draft 2.3 with the following CIDs:

13082, 13083

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 TGax D2.3 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D2.3 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.***

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 13082 | Patrice Nezou | 91.27 | 9.3.1.23 | When the value of the AID12 field is 0 or 2045, then the RU Allocation subfield indicates the first RU of one or more contiguous random access RUs. If there are more than one random access RUs, the sizes of all random access RUs are the same and equal to the size of the first RU. Further all the subfields of the User Info field apply to all the random access RUs.A user Info field allocates only ONE RU ? Allocate multiple RU with only one user info field implies that all random access RU have the same properties. Give different properties allows increasing the efficiency of random access by decreasing the number of eligible RUs for STAs. | Remove the following words "more contiguous" | Revised – Different properties of random access RU complicates STA’s requirement to check availability of different RU in SIFS response to Trigger frame.Further, the possibility of more than one User Info field for indicating random access RU for associated or unassociated STA complicates STA’s requirement to processs User Info field in SIFS response to Trigger frame.Note that currently, AP can only put one User Info field for associated STA non random access response. We propose to have similar simplification for random access.We also clarify that unassociated STA can only respond management frame for random access RU and the random access operation rule. TGax editor to make the changes shown in 11-18/0692r0 under all headings that include CID 13082. |
| 13083 | Patrice Nezou | 92.26 | 9.3.1.23 | "The Random Access RU Number subfield indicates the number of contiguous RUs allocated for UORA.The value of the Random Access RU Number subfield is equal to the number of contiguous random accessRUs minus one."Define random access Rus with the same properties is not appropriate to optimize random access procedure. Moreover contiguous random access RUs implies that several RUs can remain empty. It is impossible in that case to ensure sufficient signal strength in a 20MHz sub-channel. It becomes impossible to decode the HE TB PPDU in that case. | Remove the feature "Random Access RU Number" | Revised – Different properties of random access RU complicates STA’s requirement to check availability of different RU in SIFS response to Trigger frame.Further, the possibility of more than one User Info field for indicating random access RU for associated or unassociated STA complicates STA’s requirement to processs User Info field in SIFS response to Trigger frame.Note that currently, AP can only put one User Info field for associated STA non random access response. We propose to have similar simplification for random access.We also clarify that unassociated STA can only respond management frame for random access RU and the random access operation rule. TGax editor to make the changes shown in 11-18/0692r0 under all headings that include CID 13082. |

**Discussion:** *None.*

**Propose:** Revised for CID 13082 per discussion and editing instructions in 11-18/0692r0.

***TGax editor: Change 27.5.3.2.******3 Allowed settings of the Trigger frame fields and UMRS Control subfield as the following: (Track change on)***(…existing texts….)

If an AP transmits one or more Trigger frames or frames carrying a UMRS Control subfield(#14137), then the frames shall collectively elicit HE TB PPDU responses such that at least one scheduled RU is allocated for each 20 MHz channel occupied by the eliciting PPDU. An AP shall not allocate an RU in any 20 MHz channel that is not occupied by the immediately preceding DL PPDU. An AP may indicate an unassigned RU by using value 2046 in the AID12 subfield. An AP shall put a User Info field with AID12 subfield equal to 2046 after User Info fields with an AID12 subfield less that 2046.(#12226, #13716) A Trigger frame shall not contain more than one User Info field with the same value in the AID12 subfield except when the value of the AID12 subfield is not 2045 and greater than 2007.(#13082) When a Trigger frame contains User Info fields with the same value in the AID12 subfield, they shall appear in a contiguous block. When a Trigger frame contains User Info fields with AID12 subfield equal to 0 or greater than 2007, they shall appear after User Info fields with values of AID12 subfield greater than 0 and less than 2008 (if any present). When a unicast Trigger frame contains one User Info field, the AID12 subfield of the User Info field shall be set to the 12 LSBs of the AID of the non-AP STA whose MAC address is set in the RA field of the frame.

(…existing texts….)

***TGax editor: Change 27.5.3.4 A-MPDU contents in an HE TB PPD: (Track change on)***(…existing texts….)

An unassociated STA that responds to a Basic Trigger frame shall only include management frame in the response.(#13082)

An associated(#13082) STA that responds to a Basic Trigger frame addressed to it shall construct the A-MPDU carried in the HE TB PPDU as defined in:

* Table 9-428 (A-MPDU contents MPDUs in the control response context(#13283)) with the exception that the A-MPDU not contain QoS Data frames, if(#Ed) the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160) is 0, the Trigger frame is contained in an A-MPDU, and the STA receives at least another MPDU that solicits an immediate acknowledgment.(#13283, #13744)
* Table 9-426 (A-MPDU contents in the data enabled no immediate response context(#13283)) if(#Ed) the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160) is 0 and the Trigger frame is either not carried(#Ed) in an A-MPDU or is carried(#Ed) in an A-MPDU but the STA receives no other MPDUs that solicit an immediate acknowledgment.
* Table 9-429 (A-MPDU contents in the S-MPDU context) if the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160) is greater than 0 and the STA intends to carry only one MPDU in the A-MPDU, where the MPDU is preceded by a nonzero length MPDU delimiter with EOF equal to 1. The MPDU is subject to the following restrictions:
* It shall be a control response frame if the STA received at least one other(#Ed) MPDU that solicits an immediate acknowledgment.
* If the MPDU is a Multi-TID BlockAckReq frame(#12854) then the number of TIDs present in the Multi-TID BlockAck frame shall not exceed the TID aggregation limit indicated by the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame.(#11160, #13283)
* Table 9-425 (A-MPDU contents in the data enabled immediate response context) when the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160) is greater than 0 and the STA intends to carry one or more MPDUs, each preceded by nonzero length MPDU delimiter with EOF equal to 0 (see 10.13 (A-MPDU operation)) and 27.10.4.2 (Non-ack enabled multi-TID A-MPDU operation)). The A-MPDU is subject to the following restrictions:
* It shall contain a control response frame if the STA received at least one other(#Ed) MPDU that solicits an immediate acknowledgment.
* The number of TIDs present in the A-MPDU shall count towards reaching the TID aggregation limit indicated by the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160).
* Table 9-425 (A-MPDU contents in the data enabled immediate response context) if(#Ed) the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160) is greater than 0 and the STA intends to carry an ack-enabled A-MPDU (see 27.10.4.1 (General) and 27.10.4.3 (Ack-enabled multi-TID A-MPDU operation). The A-MPDU is subject to the following restrictions:
* It shall contain a control response frame if the STA receives at least another MPDU that solicits an immediate acknowledgment.(#13283)
* The number of TIDs present in the A-MPDU, in either QoS Data or BlockAckReq frames, shall count towards reaching the TID aggregation limit that is obtained from the TID Aggregation Limit field of the User Info field addressed to the STA in the Trigger frame(#11160).

(…existing texts….)

**Discussion:**

It is unclear why a STA that is doing random access and senses the RU busy needs to reselect the OBO counter from [0, OCW]. Fundamentally, a STA shall not be punished for sensing the RU busy. We propose to remove this rule.

***TGax editor: Change 27.5.5.3 UORA procedure as follows: (Track change on)***

If the selected RU is idle as a result of both physical and virtual CS as defined in 27.5.3.5 (UL MU CS mechanism), the HE STA transmits the HE TB PPDU in the selected RU following the rules of 27.10.4 (Multi-TID A-MPDU and ack-enabled A-MPDU). If the selected RU is considered busy as a result of either physical or virtual CS, then the HE STA shall not transmit the HE TB PPDU.(#13082)