IEEE P802.11
Wireless LANs

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| Comment resolution on OFDMA Random access procedure |
| Date: 2016-09-10 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs:

* 787, 2471

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 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 Random Access

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 787 | 60.47 | Sending HE tirgger-based PPDU in the randomly selected RU without any may cause the interference to on-going transmission in the channel which the selected RU belongs to.STA should send the UL MU frame in random access procedure considering the channel status (idle/busy). | Provide a method of sending UL MU frame considering the channel status in OFDMA Random access procedure | **REVISED**Agree in principle with the comment. We need to clarify the RU selection rule based on the result of carrier sensing.See the discussion and adopt the proposed text of 11-16/1158r2. |
| 2471 | 60.48 | "If the OBO counter for an HE STA is a zero value or if the OBO counter decrements to 0, it randomly selects any one of the assigned RUs for random access and transmits its UL PPDU in the selected RU."If the CS Required subfield in a Trigger frame for random access is set to 1, what is the random RU selection rule?For example, first candidate rule is that the STA randomly selects any one of the assigned RUs and it checks the CCA on the selected RU. If the CCA on the selected RU is busy, the STA wait the next Trigger frame for random access.Second candidate rule is that the STA first checks the CCA on the assigned RUs and it randomly selects any one of the assigned idle RUs.For the performance improvement of the random access, the second candidate rule is more appropirate.Please clarify the random RU selection rule if the CS Required subfield in a Trigger frame for random access is set to 1. | As per comment | **REVISED** Agree in principle with the comment. We need to clarify the RU selection rule based on the result of carrier sensing.See the discussion and adopt the proposed text of 11-16/1158r2. |

**Discussion on CID 787, 2471:**

According to the current text in 11axD0.1, OFDMA random access does not consider the carrier sensing result. In OFDMA random access, sending HE trigger-based PPDU in the randomly selected RU without channel status (idle/busy) may result in the interference to on-going transmission in the channel which the selected RU belongs to. There are two possible options of random access procedure considering carrier sensing(virtual&physical). One option (option 1) is that after selecting the RU according to the current rule, if the selected RU is in busy channel, the STA does not send the frame through the selected RU. The other option (option 2) is that before selecting the RU, the STA checks which RUs among all RUs assigned by TF-R belong to idle channels. And then, the STA randomly chooses one among only RUs in idle channels. Option 2 may be more efficient than option 1 in terms of transmission opportunity of STAs because the STA has more TX opportunity in option 2 rather than option 1. However, in option 2, option 2 can increase more implementation complexity than option 1 because the STA should perform random Random backoff and RU selection after checking CCA-ED. And option 1 is very similar to the normal UL MU procedure.

**TGax Editor: *Change the last paragraph in the subclause 25.5.2.6.1 as follows:***

25.5.2.6.1 Random access procedure

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If the OBO counter for an HE STA is a zero value or if the OBO counter decrements to 0, it randomly selects any one of the ~~assigned~~ RUs assigned to AID value 0 ~~for random access~~. If the selected RU is idle as a result of both physical and virtual carrier sensing as defined in subclause 25.5.2.4 (UL MU CS mechanism), the HE STA ~~and~~ transmits its UL PPDU in the selected RU. If the selected RU is considered busy as a result of either physical or virtual carrier sensing, then the HE STA shall not transmit its HE trigger-based PPDU in the selected RU and it randomly selects any one of the RUs that are assigned to AID value 0 in the subsequent Trigger frame.

Otherwise, the STA resumes with its OBO counter in the next Trigger frame for random access.