### IEEE P802.11Wireless LANs

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| 11ax D0.1 Comment Resolution for MU-RTS Scrambling Seed |
| Date: 2016-07-07 |
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Abstract

This submission proposes resolutions for comments in clause 10.3.2.8a of TGax Draft 0.1 with the following CIDs:

* 14, 127, 370, 371, 2602

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial change: corrected document number.
* Rev 2: Editorial change: corrected date and typos.

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 D0.1 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D0.1 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** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 127 | 41.17 | 10.3.2.8a.3 | MAC knows nothing of Scrambler Initialization of the Service field. It needs to ask the PHY.RXEND Primitive (given upon end of rx of MU RTS) to give it this parameter. Same for giving to the PHY the scrambler to use for the Service field of the CTS frame. | As in comment. | Revised.Agreed to the comment. For the transmission of CTS frame, as the scrambler seed value needs to be the same with that of preceding MU-RTS frame, MAC may need to indicate the used scrambler seed value to PHY. For this purpose, PHY needs to send scrambler seed value at least for PPDU types that MU-RTS can use. And, when MAC needs to decide the scrambler seed, the MAC forwards the scrambler seed value to PHY using a TXVECTOR parameter. Otherwise, PHY will generate the scrambler seed by itself. TGax editor to make the changes shown in 11-16/0815r1 under all headings for CID 127. |
| 370 | 72.20 | 26.2.2 | Scrambler Seed or Service field is not listed yet the MAC needs this according to 10.3.2.8a.3 CTS Repsonse to MU-RTS | Add | Revised.Agreed to the comment. Please refer to the Resolution for CID 127.TGax editor to make the changes shown in 11-16/0815r1 under all headings for CID 370. |
| 371 | 41.18 | 10.3.2.8a.3 | For PAPR reasons, "shall be copied from the Scrambler Initialization in the SERVICE field of the MU-RTS frame" is a limited choice | Scrambing seed for the CTS should be signalled by the MU-RTS | Rejected.To signal the scrambling initialization for the CTS frame in the MU-RTS frame, MAC layer needs to consider the PAPR of its own MU-RTS frame and responding CTS frame, which does not follow current design principle.Moreover in most of current implementation, PAPR is not considered in determining the scrambling initialization of a frame.Also, power back-off for transmitting a CTS frame may be different among different participating STAs. Therefore, the effect of scrambling initialization on signal distortion from each participating STA is not controllable. Also, even in worst case that PAPR of the CTS frame happens to be high, as the MCS of the CTS frame sent in response to MU-RTS frame uses the primary rate, signal distortion by high PAPR is not significant.  |
| 2602 | 40.61 | 10.3.2.8a.2 | After TXOP is set, an AP may change the user group for DL/UL frame exchangeand MU-RTS frame can be sent within the TXOP. In this case, similar to Trigger frame transmission, more than one MU-RTS frame can be sent simultaneously (e.g., one for unicast RTS, and the other for broadcast RTS). In this case, the scrambling seed of more than one RTS frame shall be identical, such that CTS frames in response to all RTS frames have identical Scrambler Initialization in the SERVICE field. | Add the following sentence at the end of the paragraph: " If more than one (MU) RTS frame is sent from an AP, the Scrambler Initialization in the SERVICE field of all (MU) RTS frames shall be identical. | Rejected.As MU-RTS frame can not be carried in HE MU PPDU format, the mentioned operation case does not happen. |
| 14 | 41.17 | 10.3.2.8a | The setting of "the Scrambler Initialization in the SERVICE field of the CTS sent in response to an MU-RTS frame" should be dependent on the CTS format type. The requirement specified here applies to the case where the CTS frame is sent in non-HT duplicate format. | Specify that the requirement for the scrambling initialization is for the case where the STAs are required to send the CTS response in non-HT duplicate format. | Rejected. The CTS response to an MU-RTS shall be carried in a non-HT or a non-HT duplicate PPDU. Therefore, the requirement for the scrambling initialization is for all CTS response to an MU-RTS frame.  |

**Discussion:** *None.*

***TGax editor: Modify the third paragraph of sub-clause 10.3.2.8a.3 on Page 41 Line 17 as the following (CID 127 & 370):***

~~The Scrambler Initialization in the SERVICE field of the CTS sent in response to an MU-RTS frame shall be copied from the Scrambler Initialization in the SERVICE field of the MU-RTS frame.~~ An HE non-AP STA transmitting a CTS frame in response to an MU-RTS frame shall set the TXVECTOR parameter SCRAMBLER\_INITIAL\_STATE to the same value as the RXVECTOR parameter SCRAMBLER\_INITIAL\_STATE of the received MU-RTS frame. The rate of the CTS response is defined in 10.7.6.

***TGax editor: Add the following row at the end of Table 26-1 – TXVECTOR and RXVECTOR parameters shown on Page 73 Line 23.***

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| SCRAMBLER\_INTIAL\_STATE | FORMAT is NON\_HT | In TXVECTOR, if present, indicates the initial state of the scrambler of the transmitted PPDU.In RXVECTOR, indicates the Scrambler Initialization value in the Service field, prior to descrambling. | O | Y |
| FORMAT is HE\_MU or HE\_TRIG | Not present | N | N |
| Otherwise | Indicates the Scrambler Initialization value in the Service field, prior to descrambling. | N | Y |