­­IEEE P802.11
Wireless LANs

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| Further Comment Resolutions on Clause 10.36.11.4.4 (MU-MIMO channel access procedure)  |
| Date: 2018-05-07 |
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Abstract

This submission proposes resolutions for the following comment on 10.36.11.4.4 (MU-MIMO channel access procedure): 2297. Note this addresses CID 2297, that was not addressed in 11-18/0499r0

Revisions:

* Rev 0: Initial version of 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 TGay Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGay Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGay Editor: Editing instructions preceded by “TGay Editor” are instructions to the TGay editor to modify existing material in the TGay draft. As a result of adopting the changes, the TGay editor will execute the instructions rather than copy them to the TGay Draft.***

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| **CID** | **Clause Number** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2297 | 10.36.11.4.4 | 142.40 | The MU-MIMO transmission or hybrid beamforming protocol begins SIFS interval following the reception or expected reception of the 41 DMG CTS frame by the initiator'.This sentence indicates that there is no requirement for AP to receive DMG CTS to begin MU-MIMO transmissiom.A STA's SISO antenna pattern used to send DMG CTS may differ from the antenna pattern used to receive MU-MIMO PPDUBased on this requirement that AP does not need to receive DMG CTS, STA should be able to send DMG CTS using MU-MIMO reception antenna config to better protect its MU-MIMO reception | change the first sentence (on L29) to 'A STA that receives an RTS frame addressed to an MU group that the STA belongs to shall transmit a DMG CTS frame back to the initiator employing the most recent SISO or MU-MIMO antenna configuration used between the responder and the initiator' | Revised1. To ensure that the AP receives the DMG-CTS, the transmitting STA should use its SISO antenna pattern as the reverse MU-MIMO antenna pattern was not trained and may not close the link if there is no antenna pattern reciprocity.2. The DMG CTS should be transmitted in a manner that can be received by third party STAs and allows each STA to establish NAV even when the RTS is not received. 3.1. Each of the non-AP STA may have different time to respond with the DMG CTS, aSIFS< Response Time <aSIFS + 10% × (aSlotTime – aAirPropagationTime). TGay editor to make the changes shown in 11-18/0714r0 under all headings that include CID 2297 |

*Changes to D1.2*

***TGay Editor: Please make the following change on Pg 180 line 29 (#2297).:***

**10.37.11.4.4 MU-MIMO channel access procedure**

A STA that receives an RTS frame addressed to an MU group that the STA belongs to shall transmit a DMG CTS frame back to the initiator employing the most recent SISO antenna configuration used between the responder and the initiator. The DMG CTS frame shall be transmitted a SIFS interval following the reception of the RTS frame. The TA field of the DMG CTS shall be set to the broadcast MAC address and the Scrambler Initialization field in the PHY header shall be set to the same value as the Scrambler Initialization field of the PPDU that was contained in the received RTS frame. For the STA addressed by the DMG CTS frame to successfully receive the frame, the difference in time between all the DMG CTS transmissions as measured at the receiving STA should be no more than ±30 ns. A STA that transmits the DMG CTS should pre-compensate for carrier frequency offset (CFO) error. After compensation, the absolute value of residual CFO error with respect to the RTS should not exceed 12 KHz. Following transmission of the DMG CTS, the responder shall then configure its antennas based on the antenna setting obtained during the last MU-MIMO beamforming training for the MU group. The MU-MIMO transmission or hybrid beamforming protocol ~~begins~~ shall begin a SIFS + 10% × (aSlotTime – aAirPropagationTime) (#2297) interval following the reception or expected reception of the DMG CTS frame by the initiator. This is shown in Figure 91.

A STA that receives a DMG CTS-to-self frame addressed to an MU group that the STA belongs to shall configure its antennas based on the antenna setting obtained during the last successful MU-MIMO beamforming training for the MU group. The MU-MIMO transmission or hybrid beamforming ~~begins~~ shall begin a SIFS + 10% × (aSlotTime – aAirPropagationTime) (#2297) interval following the end of the DMG CTS-to-self frame transmission by the initiator. This is shown in Figure 92.

**References:**

1. IEEE P802.11ayTM/D1.0.
2. 11-18/0499r0, Comment Resolutions on Clause 10.36.11.4.3 and 10.36.11.4.4 (Channel Access), Kome Oteri, InterDigital

**Straw Poll**

Do you agree to accept comment resolutions for CID 2297 as proposed in 11-18/0714r0?