IEEE P802.11
Wireless LANs

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| Comment Resolution on CID for Clause 10.38.9.4 |
| Date: 2017-7-8 |
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Abstract

This submission proposes the resolution of comment received from TGay comment collection (TGay Draft 0.3).

- CID: 119, 189

1. **Introduction**

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. The introduction and the explanation of the proposed changes are 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 | Page Number | Line Number | Comment | Proposed Change | Resolution |
| 119 | 10.38.9.4 | 76 | 10 | What if the maximum number of receive sectors and antennas across all intended responders is greater than the maximum number of TRN-R subfield | Please clarify | Revised- Agreed in principle. The text is revised as shown.. |
| 189 | 10.38.9.4 | 76 |  | it is unclear whether the group beamforming is performed during the DTI or BTI and if the latter, what is actually the difference to the description of 10.38.4 | as commented, clarify which part of this training happens in DTI and when and which happens in the BTI. Reference or relation to MU mimo may be helpful for this. | Revised –Agreed in principle. The text is revised as shown. |

**Discussion for CID 119 and 189**

If the the maximum number of receiver sectors and antennas across all intended responders is greater than the maximum number of TRN-R subfield, the responder(s) may train selected receive sectors and antennas using the TRN-R appended to the beacon and continues to its receive sectors/antennas training in the next beacon transmitted by the same transmit sector and the TRNs are appended.

The group beamforming should be performed in BTI. The draft text is updated to reflect this.

Quasi-omni antenna is used to transmit the beacon frame in 10.38.4 and the responders use omni antenna to receive the beacon frame first before switching to directional beam during TRN-R subfields. This is limited to short range. In the case of 10.38.9.4, there is no restrictions on quasi-omni antenna pattern for the transmission and no restriction on the reception of beacon frame.

**Proposed Changes:**

Instruct the editor to revise the text for Clause 10.38.9.4

* + - 1. Group beamforming

An initiator that is an AP or PCP may simultaneously train a group of responder STAs that have antenna pattern reciprocity. This is referred to as group beamforming and, if performed, takes place in the BTI of a beacon interval. In group beamforming, the initiator trains its transmit antennas and sectors while a group of responders train their receive antennas and sectors. A DMG STA supports antenna pattern reciprocity if the value of the DMG Antenna Reciprocity field in the STA’s DMG Capabilities element is one.

To perform group beamforming, an AP or PCP shall include TRN-R subfields within the TRN field of each PPDU containing a DMG Beacon frame transmitted in a BTI as specified in 10.38.4. The number of TRN-R subfields included in the PPDU should be based on the maximum number of receive sectors and antennas across all intended responders. If the number of TRN-R subfields exceeds the responder(s)’ receive sectors and antennas, the responder(s) may train selected receive sectors and antennas with the available TRN-R subfields in the beacon and continue to train the other receive sectors and antennas at the subsequent beacon(s) transmitted by the same transmit sector and with TRN-R subfields appended. Through reception of these training fields, responders can determine the initiator’s transmit antenna(s) and sector(s) which were received with the best quality and, given antenna pattern reciprocity, the responders can also determine their corresponding transmit antenna(s) and sector(s) with best quality.

If the responder detects a change in the initiator’s best TX antenna and sector, the responder may inform the AP or PCP of the change by transmitting an unsolicited Information Response frame to the AP or PCP containing an EDMG Channel Measurement Feedback element with an updated list of antenna and sector pairs.