IEEE P802.11
Wireless LANs

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| Comment Resolution on MIMO BF misc |
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| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Lei Huang | Panasonic |  |  | lei.huang@sg.panasonic.com |
| Motozuka Hiroyuki | Panasonic |  |  |  |

Abstract

This submission proposes resolution of comments on MIMO BF received from LB# 231 (TGay Draft 1.0).

- 2 CID:

2307, 2315

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| **CID** | **Page Number** | **Line Number** | **Comment** | **Proposed Change** | **Resolution** |
| 2307 | 166 | 6 | It is not clear if the initiator does not have Aggregation Request set to 1 in the MIMO setup frame from initiator, whether responder can have this field set to 1 in the MIMO setup frame from respponder?If it is allowed, does it mean BW of R-SMBT can be greater than I-SMBT within the txop?Furthermore, BW is not signaled in MIMO setup frame, and there is no CT or scrambler initiation for indicating the BW of MIMO setup frame. MIMO setup frame cannot be sent with header-A based on the requirement on p167 L5 | Add an exception in 10.7.7.6 that same CH\_BANDWIDTH requirement within a TXOP does not apply to the procedres in 10.38.9.2 | Revised-Suggest that the responder set the Channel Aggregation Request field of the MIMO BF Setup frame to the same value as its counterpart in the MIMO BF Setup frame received from initiator so that the R-SMBT’s bandwidth is always the same as the I-SMBT’s bandwidthTGay editor to make the changes shown in 11-18/0993r0 under all headings that include CID 2307. |
| 2315 | 173 | 29 | MIMO poll frame should set an upper bound on how long a responder can perform BRP-RX/TX | add a field in MIMO BF Poll frame to indicate an upper bound duration for each responding STA | RevisedAgreed in principle. TGay editor to make the changes shown in 11-18/0993r0 under all headings that include CID 2315. |

**Proposed changes to D1.2 and 18/0610r1:**

1.

10.39.9.2.2 SU-MIMO beamforming

10.39.9.2.2.3.2 Non-reciprocal MIMO phase

*TGay Editor: Change the paragraph starting at P207L17 as follows (#2307)*

The responder shall send a MIMO BF Setup frame a SIFS following the reception of the MIMO BF Setup frame from the initiator. The TA field and the RA field of the MIMO BF Setup frame shall be set to the MAC address of the responder and the initiator, respectively. The MIMO BF Setup frame shall indicate a unique dialog token in the Dialog Token field for identifying SU-MIMO BF training. In the MIMO Setup Control element of the MIMO BF Setup frame, the SU/MU, Non-reciprocal/Reciprocal MIMO Phase and Initiator fields shall be set to 0. The L-TX-RX field and the Requested EDMG TRN-Unit M field shall indicate the number of TRN subfields requested for receive AWV training in the following initiator SMBT subphase. The number of transmit sector combinations requested for the responder link ($N\_{tsc}^{(R)}$) shall be indicated in the Number of TX Sector Combinations Requested subfield of the MIMO FBCK-REQ field. Whether time domain channel response is requested as part of SU-MIMO BF feedback shall be indicated in the Channel Measurement Requested subfield of the MIMO FBCK-REQ field. If the time domain channel response is requested as part of SU-MIMO BF feedback, the Channel Measurement Requested subfield of the MIMO FBCK-REQ field shall be set to 1 and the Number of Taps Requested subfield of the MIMO FBCK-REQ field shall indicate the number of channel taps requested in time domain channel response. The Channel Aggregation Requested subfield of the MIMO FBCK-REQ field shall be set to the same value as its counterpart in the MIMO BF Setup frame received from the initiator. Additionally, based on the SNRs of the transmit sectors collected from the initiator in the SISO phase, the responder may select a subset of candidate transmit sectors per DMG antenna to reduce the responder SMBT training time. Each DMG antenna should have the similar number of candidate transmit sectors in order to avoid biasing a DMG antenna.

9.4.2.260 MIMO Poll Control element

*TGay Editor: Change Table 14 as follows (#2315)*

Table 14—MIMO Poll Control element format

|  |  |  |
| --- | --- | --- |
| Field | Size (bits) | Meaning |
| Element ID | 8 |  |
| Length | 8 |  |
| Element ID Extension | 8 |  |
| Poll Type | 1 | This field is set to 1 to indicate training packet poll used in reciprocal MIMO phase of MU-MIMO beamforming and set to 0 to indicate MIMO BF feedback poll used in non-reciprocal MIMO phase of MU-MIMO beamforming. |
| L-TX-RX | 8 | Indicates the requested number of consecutive TRN-Units in which the same AWV is used in the transmission of the last M TRN subfields of each TRN-Unit. This field is reserved when the Poll Type field is set to 0. |
| Requested EDMG TRN-Unit M | 4 | The value of this field plus one indicates the requested number of TRN subfields in a TRN-Unit transmitted with the same AWV following a possible AWV change. This field is reserved when the Poll Type field is set to 0. |
| Requested EDMG TRN-Unit P | 2 | Indicates the requested number of TRN subfields at the start of a TRN-Unit that use the same AWV. A value of zero indicates zero requested TRN subfields, a value of one indicates one requested TRN subfield, a value of two indicates two requested TRN subfields and a value of three indicates four requested TRN subfields. This field is reserved when the Poll Type field is set to 0. |
| Training Duration | 14 | Indicates the maximum duration in microsecond during which EDMG BRP-RX/TX packets can be transmitted by the polled responder, including any IFS after the MIMO BF Poll frame containing this element is transmitted. Possible values range from 1 to 16383. This field is reserved when the Poll Type field is set to 0. |
| Reserved | 3 |  |

1.

10.39.9.2.3 MU-MIMO beamforming

10.39.9.2.3.3.3 Reciprocal MIMO phase

*TGay Editor: Change the two paragraphes starting at P217L21 as follows (#2315, 2308)*

The initiator shall initiate an MU-MIMO BF training subphase a MBIFS following the transmission of the MIMO BF Setup frame. In the MU-MIMO BF training subphase, the initiator shall transmit a MIMO BF Poll frame to each remaining responder in the MU group. Each MIMO BF Poll frame should be sent using the DMG control mode or using a non-EDMG duplicate PPDU transmitted with the DMG control modulation class. The TA field of each MIMO BF Poll frame shall be set to the BSSID of the initiator and the RA field shall be set to the MAC address of the corresponding responder. Each MIMO BF Poll frame carries the dialog token in the Dialog Token field that identifies the MU-MIMO BF training. In the MIMO Poll Control element of each MIMO BF Poll frame, the Poll Type field shall be set to 1. The Training Duration field shall be set to the maximum duration during which EDMG BRP-RX/TX packets can be transmitted by the polled responder. Additionally, in order to reduce training time, the initiator may reduce the number of TRN subfields used for receive AWV training in the following EDMG BRP-RX/TX packets transmitted by each remaining responder based on the SNRs of transmit sectors collected from each remaining responder in the SISO phase. The L-TX-RX field and the Requested EDMG TRN-Unit M field shall indicate the number of TRN subfields required for receive AWV training in the following EDMG BRP-RX/TX packets to be transmitted by the corresponding responder. The Requested EDMG TRN-Unit P field shall indicate the number of TRN subfields in a TRN-Unit which need to be transmitted with the same AWV as the preamble and Data field in the following EDMG BRP-RX/TX packets to be transmitted by the corresponding responder.