IEEE P802.11
Wireless LANs

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| Resolution of CID 4166 |
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Abstract

This document proposes resolution to CID4262 of LB239

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| --- | --- | --- | --- | --- | --- | --- |
| 4262 | 138.24 | 24 | 9.4.2.253 | If Sector Sweep Frame Type field of the DMG Beam Refinement element contained in the frame equal to 2, the description seems to say there will be Ntsc matrices (NTX x NRX). This is useful if the responder is repiorting multiple channel matrices, but for the case when the BRP frame is just reporting TXSS sector list, it does not really need to report tx sector combinations/matrices with Ntsc x NTx x NRx entries | add 1 bit to distinguish whether the EDMG sector ID order, BRP CDOWN are in the form of sector ID list, or they are Ntsc number of matrices |  **Revise** |

Discussion:

Adding a bit to either the EMDG Channel Measurement feedback element or the Beam Refinement element does not solve the basic problem of the MIMO feedback. The MIMO feedback is not self descriptive, because NTX and NRX  are not part of any field of the frame. I prefer to add these fields to the MIMO BF feedback frame rather than add a bit field to the BRP frame. The MIMO BF feedback frame needs to be added to the list of valid responses in beam tracking because of needs to support Digital BF feedback anyway. In the specific text referenced by the commnet, the interpretation of the EMDG Channel Measurement Feedback will be based on whether it is included in a MIMO BF feedback frame or a BRP frame.

***TGay Editor: Modify the text in P138L24 and on as follows:***

When the EDMG Channel Measurement Feedback element is carried within a MIMO BF feedback frame, the number of measurements, *Nmeas*, is equal to *Ntsc* × *NTX* × *NRX*, where *Ntsc* is given the Number of TX Sector Combinations Present field in the accompanying MIMO Feedback Control element of the MIMO BF Feedback frame. Also, *NTX* refers to the value indicated by the Number of Concurrent RF Chains subfield of the PHY Capability field in the EDMG Capabilities element of the receiver of the EDMG Channel Measurement Feedback element; and *NRX* refers to the value indicated by the Number of Concurrent RF Chains subfield of the PHY Capability field in the EDMG Capabilities element of the transmitter of the EDMG Channel Measurement Feedback element.

When the EDMG Channel Measurement Feedback element is carried within a MIMO BF feedback frame, every *NTX*×*NRX* consecutive SISO ID subsets constitute a set which corresponds to a specific TX sector combination (or equivalently a specific TX-RX AWV configuration). Each TX sector combination comprises a single TX sector for each of *NTX* TX DMG antennas.

 ***TGay Editor Modify the text in P138L24-31 as follows:***

When the EDMG Channel Measurement Feedback element is carried within a MIMO BF feedback frame, the number of measurements, *Nmeas*, is equal to *Ntsc* × *NTX* × *NRX*, where *Ntsc* is given either by the Number of TX Sector Combinations Present field in the accompanying MIMO Feedback Control element of the MIMO BF Feedback frame. Where *NTX* refers to the value indicated by the Number of TX Antennas subfield in MIMO Feedback Control element; and *NRX* refers to the value indicated by the Number of TX Antennas subfield in MIMO Feedback Control element.

When the EDMG Channel Measurement Feedback element is carried within a MIMO BF feedback frame, every *NTX*×*NRX* consecutive SISO ID subsets constitute a set which corresponds to a specific TX sector combination (or equivalently a specific TX-RX AWV configuration). Each TX sector combination comprises a single TX sector for each of *NTX* TX DMG antennas.

***TGay Editor: Modify figure 75 MIMO FBCK-TYPE field format in P146L10 as follows:***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Channel Measurement Present | Tap Delay Present | Number of Taps Present | Number of TX Sector Combinations Present | Precoder Information Present | Channel Aggregation Present | Number of TX Antennas | Number of RX Antennas |
| Bits: | 1 | 1 | 2 | 6 | 1 | 1 | 3 | 3 |

***TGay Editor: Modify table 19 – MIMO Feedback Control Element format as follows:***

|  |  |  |
| --- | --- | --- |
| Field | Size (bits) | Meaning |
| Element ID | 8 |  |
| Length | 8 |  |
| Element ID Extension | 8 |  |
| SU/MU | 1 | This field is set to 0 to indicate SU-MIMO beamforming and is set to 1 to indicate MU-MIMO beamforming.  |
| Link Type | 1 | This field is set to 0 to indicate initiator link and is set to 1 otherwise. This field is set to 0 when the SU/MU field is set to 1. |
| Comeback Delay | 3 | This field indicates whether MIMO BF feedback is included in the MIMO BF Feedback frame containing the MIMO Feedback Control element or when the EDMG STA transmitting the MIMO Feedback Control element will be ready with MIMO BF feedback. The encoding of this field is defined in Table 14.  |
| MIMO FBCK-TYPE | 18 |  |
| Digital Fbck Control | 30 | Defines the requirements for the digital feedback type.  |
| Reserved | 3 |  |

 ***TGay Editor: Add the following text after P47L3***

The Number of TX Antennas and the Number of RX antennas subfields describe the NTX and NRX used in each of the Ntsc sector combination.

***TGay Editor: Modify P276L43-47 and P277L1-8 as follows;***

* If, in the packet sent by the initiator requesting beam tracking, BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Requested, EDMG\_BEAM\_TRACKING\_TYPE in the RXVECTOR is Analog Beam Tracking, and EDMG\_PACKET\_TYPE is equal to EDMG-TRN-T-PACKET, the responder shall respond with all subfields of the FBCK-TYPE field equal to 0 and set the BS-FBCK field to the AWV feedback ID 1 corresponding to TRN subfields received with best quality.
* If, in the packet sent by the initiator requesting beam tracking, BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Not Requested, EDMG\_BEAM\_TRACKING\_REQUEST parameter in the RXVECTOR is Beam Tracking Requested and EDMG\_BEAM\_TRACKING\_TYPE in the RXVECTOR is Baseband Beam Tracking, the initiator shall include a FBCK-REQ in a DMG Beam Refinement element to request the needed feedback. The responder shall respond with the requested feedback in a MIMO Feedback frame..

***TGay Editor: Modify P276L35-38 as follows:***

grant, provided the reverse direction protocol is supported by both the initiator and responder. The feedback type shall be the same as the feedback type in the last BRP frame that was transmitted from the initiator to the responder with TX-TRN-REQ equal to 1. If the NUM\_TX\_CHAINS in the RXVECTOR of the frame that elicits the feedback is greater than 1, the responder may send the feedback in a MIMO feedback frame. If the responder has never received a BRP frame from the initiator with TX-TRN-REQ equal to 1: