IEEE P802.11
Wireless LANs

|  |
| --- |
| LB239-BRP-Related-CIDs |
| Date: 2019-03-07 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Assaf Kasher | Qualcomm |  |  | akasher@qti.qualcomm.com |
| Alecsander Eitan | Qualcomm |  |  | eitana@qti.qualcomm.com |
| Solomon Trainin | Qualcomm |  |  | strainin@qti.qualcomm.com |

Abstract

This document proposes resolutions on LB239 comments of BRP structures and PHY capability subelement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4259 | 111.09 | 9.4.2.129 | There is no BF training type for beam tracking | add ', is set to 3 to indicate beam tracking' |

Proposed Resolution: **Reject**

**Discussion:**

The BF type field is used only in the MIMO and SU-MIMO request phases, and when request sector list feedback for an SLS, it is not clear how it will be used in beam tracking. In beam tracking the requests are carrier in the PHY header and only the feedback is a BRP frame.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4258 | 110.07 | 9.4.2.129 | The format of SISO ID set for BRP TXSS can also be used for beam tracking | change to 'This field is set to 2 to indicate that BRP frames are used in the last sector sweep, or the BRP frame which contains this Beam Refinement element carries a feedback for EDMG beam tracking' |

Proposed Resolution: **Revised**

**Discussion:**

The solution proposed seems to be correct, but it is wrong. The purpose of this field is to clarify the meaning and validty of fields within the EDMG Channel Measurement feedback. Since some fields are invalid in the case of Beam Tracking, we need a different value to cover that.

***TGay Editor: modify the following text in P110L5-8 (9.4.2.129) as follows:***

The Sector Sweep Frame Type field is set to 0 to indicate that DMG Beacon frames or SSW frames are used in the last sector sweep. This field is set to 1 to indicate that Short SSW packets are used in the last sector sweep. This field is set to 2 to indicate that BRP frames are used in the last sector sweep. The field is set to 3 to indicate that the BRP frame which contains this Beam Refinement element carries a feedback for beam tracking.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4036 | 112.13 | 9.4.2.136 | Antenna ID(i) in Channel Measurement Feedback element should be 3bit to be coherent with EDMG number of RF chains | Extend these fields to range of 0-7 |
| 4037 | 112.13 | 9.4.2.136 | Sector ID(i) in Channel Measurement Feedback element should be 11bit to be coherent with EDMG number of sectors | Extend these fields to11bit |

Proposed Resolution: **Reject**

**Discussion:**

The Antenna ID and Secotr ID in the channel Measurement Feedback cannot be extended as they are part of an element already existing in 802.11-16. However, they don’t need to be extended. If there is need for feedback on a sector sweep with more than 128 sectors or 4 antennas, it can be carried in the EDMG Channel Measurement feedback by setting the EDMG extension flag to 1 in the Beam Refinement element of both the requesting PPDU and the feedback PPDU.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4205 | 114.15 | 9.4.2.136 | "... fields, 1 < i < N\_means, is associated to the i^th entry..."I think the range should be inclusive (i.e. 1<=i<=N\_means) | as in comment |

Proposed Resolution: **Accept**

***TGay Editor: Modify the text is P114L15 as follows:***

Additional SNRi and Additional Channel Measurementi fields, 1 ≤ *i* ≤ *Nmeas*, is associated to the *ith* entry

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4311 | 114.15 | 9.4.2.136 | index just focuses on Nmeas as opposed to both Nmeas and Nbeam | Add index to Nbeam |

Proposed Resolution: **Reject**

**Discussion:**

The Nbeam option is used only when MID + BC is used as part of the MIDC protocol (see. 10.43.6.4) This has not been modified to allow EMDG BRP packets, so the feedback should be carried in without the EDGM Channel Measurement feedback so the $1\leq i\leq N\_{BEAMS}$ is irrelevant

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4314 | 124.06 | 9.4.2.250.2 | "The Requested BRP SC Blocks subfield indicates the minimum number of data SC blocks that the STA 6 requests" : Used for OFDM as well. See 29.9.2.2.4 EDMG BRP packet duration | add discussion on OFDM symbols |

Proposed Resolution: **Revise**

**Discussion**:

There is text in 29.9.2.2.4 on the behaviour when the PPDU is sent in OFDM. There is no need for a full-fledged discussion of OFDM in 9.4.2.250.2.

***TGay Editor: Add at the end of the pargraph at P124L8:***

For OFDM transmission, the minimum number of OFDM symbols is calculated as described in 29.9.2.2.4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4318 | 138.03 | 9.4.2.253 | "corresponding to the SNRs in the 7 SNR field when the SNR Present subfield of the FBCK-TYPE field is equal to 1". May be helpful to indicate that this corresponds to the short SSW frame rather than the reader having to hunt through the spec to find out | add sentence "corresponding to the short SSW frame" and possibly add reference. Pg 110 line 5 |
| 4319 | 138.12 | 9.4.2.253 | "the Sector Sweep 5 Frame Type field is equal to 0 " May be helpful to indicate that this corresponds to the beacon or SSW frame rather than the reader having to hunt through the spec to find out | add sentence "corresponding to the beacon or sSW frame" and possibly add reference. Pg 110 line 5 |
| 4320 | 138.12 | 9.4.2.253 | summary of Txsector ID, Tx antenna ID, Rx antenna ID, CDOWN, BRP CDPWN, AWV feedback ID for the different types of frames i.e. beacon, SSW frame, short SSW frame, BRP frame, MIMO BF feedback is difficult to track. May be easier with a table. | Create table to summarize relationships. I can help with a submission if needed. |

Proposed Resolution: **Revise**

***TGay Editor: Modify the text in P138L8-9 as follows:***

SNR field when the SNR Present subfield of the FBCK-TYPE field is equal to 1 and the Sector Sweep Frame Type field is equal to 1 (Short SSW packets) in the DMG Beam Refinement element contained in the frame. The TX Antenna ID

***TGay Editor: Modify the text in P138L5-6 as follows:***

in the SNR field when the SNR Present subfield of the FBCK-TYPE field is equal to 1 and the Sector Sweep Frame Type field is equal to 0 (DMG Beacon or SSW frames) in the DMG Beam Refinement element contained in the frame

***TGay Editor: Add the following table after P138L23:***

Table 1 - Sector ID interpretation according to frame type

|  |  |  |  |
| --- | --- | --- | --- |
| **Sector Sweep Frame Type field value** | **Basis for sector sweep results** | **TX Sector ID interpretation** | **TX Antenna Id** |
| 0 | DMG Beacon or SSW frame | Sector ID  | DMG/CMMGAntenna ID subfield in frame |
| 1 | Short SSW packet | CDOWN field in Short SSW packet | RF Chain ID ID field in Short SSW packet |
| 2 | BRP frame | AWV Feedback ID | TX Antenna Mask field in EDMG BRP requests element |
| 3 | TRN field as part of beam tracking | AWV Feedback ID | invalid |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4317 | 138.03 | 9.4.2.253 | "When the EDMG Channel Measurement Feedback element is included in a BRP frame, the EDMG Sector 3 ID Order field indicates the TX sector IDs, TX antenna IDs and RX antenna IDs corresponding to the SNRs 4 in the SNR field": Not true if using BRP frame in BRP TXSS. | Need qualifier to state "and the BRP TXSS procedure is not used" |

Proposed Resolution: **Reject**

**Discussion**

This text is later qualified by the text “when the SNR Present subfield of the FBCK-TYPE field is equal to 1 and the Sector Sweep Frame Type field is equal to 0” which, as clarified above, refers to beacon and SSW frames. Therefore it is (somewhat) clear it does not refer to BRP TXSS which will Sector sweep Fraem Type field set to 2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4262 | 138.24 | 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 |

Proposed Resolution: **Revised**

**Discussion:**

The problem is that a structure that is important for SU-MIMO and MU-MIMO training, is also proposed to be used in BRP frames. I think the simplest solution is to disallow the concept of “sector combinations” unless the feedback is carried in a MIMO feedback 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.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4263 | 136.01 | 9.4.2.253 | For the channel feedback of EDMG beam tracking, there may be no BRP frame sent within the BRP packet. In that case, the setting of BRP CDOWN and tx antenna ID setting needs to be described. | add the description 'For the channel feedback of EDMG beam tracking, BRP CDOWN is set to 0 and tx antenna ID is set to the sequence id used to identify the transmit chain of the BRP PPDU |

Proposed Resolution: **Revised**

**Discussion:**

Even within beam tracking, the channel measurement feedback cannot be sent without a BRP frame. As for the ambiguity in the interpretation of the fields, it is resolved by the table proposed for the resolution of 4319 and 4320

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4044 | 126.27 | 9.4.2.250.4 | PHY Capabilities subelement has only one spare bit. Add 8 ir 16 more | Add 8 or 16 additional bits |

Proposed Resolution: **Reject**

**Discussion:**

At this state in the project it is unlikely that new feature will pop up. If they do, it will be easy to create a new subelement to add these capabilities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4166 | 127.01 | 9.4.2.250.4 | The Long CW bit appears to be the equal to the logical OR of the Long CW Punctured Supported and the Long CW Superimposed Supported bits and is therefore redundant. | Suggest removing the Long CW bit or providing a sentence explaining how it is different from the logical OR of the other two capability bits. |

Proposed Resolution: **Reject**

**Discussion:**

As stated in P127L12, the long CW Punctured Supported and the Long CW Superimposed Supported bits are relevant code rate 7/8 while stated in P128L20, the Long CW bit indicates support for 1344 bits LDPC code word for all other rates. I don’t think there is confusion here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4323 | 188.20 | 9.5.7 | no defiition of what the EDMG BRP field does. | Add Definition e.g. "Combines EDMG BRP request element and DMG Beam Refinement element to a fixed-size field for the short EDMG packet" |

Proposed Resolution: **Revised**

***TGay Editor: Modify the text in P188L20 as follows:***

The EDMG BRP field combines the EDMG BRP Request element and the DMG Beam Refienment element into a fixed size field for use in a fixed sized version of the BPR frame (see 9.6.21.3**)** The EDMG BRP field is defined in Figure 116.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4119 | 200.05 | 9.7.3 | No definition of how BRP is aggregated in 9.7. | Add the following after note 3: NOTE 4 - Limits on using BRP frames in A-MPDU are defined in 10.43.6.4.1 |

Proposed Resolution: **Accept**

***TGay Editor: Add the following note after note 3 in P200L5:***

NOTE 4 - Limits on using BRP frames in A-MPDU are defined in 10.43.6.4.1

**Strawpoll:** Do you support the resolution of CIDs 4259, 4258, 4036, 4037, 4205, 4311, 4314, 4317, 4318, 4319, 4320, 4262, 4263, 4044, 4166, 4323, 4119 as proposed in this (11-19-355) document?

**References:**