IEEE P802.11
Wireless LANs

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| --- |
| Short BRP Frame Variant |
| Date: 2017-06-08 |
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|  |  |  |  |  |

Abstract

This document suggests a short variant of the BRP frame to facilitate fast micro-code processing

**Discussion**:

We propose to create a new variant of the BRP frame. This variant will be composed only of fields (which by nature, are of constants size). The purpose of this variant is to facilitate fast processing by micro-code. This is done by using two reserved bits in the BRP request field. The first bit indicates EDMG BRP field (containing mainly requests) and the second bit indicates a constant size feedback. The EDMG BRP field contains all the fields that were in the DMG BRP element and the EDMG BRP request

***TGay Editor: Modify the BRP Request field (9.5.4) as follows:***

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 B16 | B17 B24 | B25 B26 |
|  | L-RX | TX-TRN-REQ | MIDC-REQ | MID-Grant | BC-REQ | BC-Grant | Chan-FBCK-CAP | TX Sector ID | Other\_AID | TX-Antenna ID |
| Bits: | 5 | 1 | 1 | 1 |  | 1 | 1 | 6 | 8 | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B27 | B28 | B29 | B30 B31 |
|  | Additional Feedback Requested | EDMG-SHORT-BRP | EDMG-SHORT-FBCK | Reserved |
| Bits: | 1 | 1 | 1 | ~~5~~2 |

***TGay Editor: Add the following text at the end of clause 9.5.4 (802.11-16 P1152):***

The EDMG-SHORT-BRP field indicates that following the BRP request field an EDMG BRP field is present.

The EDMG-SHORT-FBCK field indicates that following the EMDG BRP field an EDMG Short FBCK field is present. This field is set to 1 only if the EMDG-SHORT-BRP is set to 1.

***TGay Editor: Add the following text before clause 9.6***

**9.5.7 EMDG BRP field**

The EDMG BRP field is shown in Figure 1.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B1 | B2 B9 | B10 | B11 | B12 | B13 | B14 |
|  | Initiator | L-RX | TX-FBCK-REQ | TX-Train-Response | RX-Train-Response | TX -TRN-OK | TXSS-FBCK-REQ |
| bits: | 1 | 8 | 1 | 1 | 1 | 1 | 1 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B15 B26 | B27 B38 | B39 B41 | B42 | B43 | B44 B48 | B49 B50 | B51 B54 |
|  | TX sector ID | Best Sector FB  | Best-FBCK Antenna Id  | MID Extention | BRP-TXSS-OK | L-RX-TX | EDMG TRN-Unit P | EDMG TRN-Unit M  |
| bits: | 12 | 12 | 3 | 1 | 1 | 5 | 2 | 4 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B55 B56 | B57 | B58 | B59 B67 | B68 B73 | B74 B81 | B82 B88 |
|  | EDMG TRN-Unit N | TXSS-REQ | TXSS-REQ-RECIPROCAL | TXSS-SECOTRS | BRP CDOWN | TX Antenna Mask | Reserved |
| bits: | 2 | 1 | 1 | 9 | 6 | 8 | 7 |

Figure 1- EDMG BRP Field

The Initiator, TX-train-response, RX-train-response, TX-TRN-OK, TXSS-FBCK-REQ, BS-FBCK-Antenna-ID and MID Extension subfields are defined in subclause 9.4.2.130.

The L-RX, L-TX-RX, TX-Sector-ID, EDMG TRN-Unit P, EDMG TRN-Unit M, EDMG TRN-Unit N, TXSS-REQ, TXSS-RECIPROCAL, TXSS-SECTORS, BRP CDOWN and TX Antenna Mask are defined in subclause 9.4.2.255

**9.5.8 Short BRP Feedback Field**

The short BRP feedback carries feedback information of up to 16 sectors measurement. It contains 16 repetitions of the following structures:

|  |  |  |
| --- | --- | --- |
|  | Field Name | Length |
| $$×16$$ | Sector Id/CDOWN/AWV Id | 11 |
| BRP CDOWN | 6 |
| TX antenna Id | 3 |
| RX antenna Id | 3 |
| SNR  | 8 |

Figure 2 - Short BRP Feedback Field

If the Short BRP Feedback field contains the feedback for a sector sweep performed using Sector Sweep frames, or Short Sector Sweep packets, or DMG Beacon Frames, the Sector Id/CDOWN/AWV Id subfield indicates the Sector Id of a packet received in the sector sweep, the TX antenna Id indicates the antennas Id indicated in that packet, The RX antenna Id indicate the antenna through which the SNR in the SNR subfield was measured.

If the Short BRP Feedback field contains the feedback for a sector sweep performed using BRP-TX packets, the Sector Id/CDOWN/AWV Id contains the AWV feedback ID of the TRN subfields over which the SNR in the SNR subfield was measured. The BRP CDOWN field contains the BRP CDOWN in the BRP packet in which the SNR in the SNR subfield was measured. The TX antenna Id is from the TX antenna mask in the BRP frame in the received packet and the RX antenna Id is the RX antenna through which the SNR in the SNR subfield was measured.

The encoding of the SNR subfield is defined in 9.4.2.136. A value of 0xFE in the field indicates SNR values greater than or equal to 55.5dB. A value of 0xFF indicates that this field is invalid.

TGay Editor: modify the text in P44L32 as follows:

*Modify the text in P1284 (9.6.22.3) as follows;*

The BRP frame is an Action No Ack frame. The ~~format of a~~ BRP frame Action field ~~is shown in~~

*~~Table 9-417~~* can either have the format shown in table 9-417 or the format shown in table 9-418 depending the on the value of theEDMG-SHORT-BRP subfield*.*

*Change Table 9-417 as follows*

|  |  |
| --- | --- |
| Order | Information |
| 1 | Category |
| 2 | Unprotected DMG Action |
| 3 | Dialog Token |
| 4 | BRP Request field |
| 5 | DMG Beam Refinement element |
| 6 | Zero or more Channel Measurement Feedback elements |
| 7 | EDMG Partial Sector Sweep element |
| 8 | EDMG BRP Request element (optional) |
| 9 | Zero or more EDMG Channel Measurement Feedback elements |

*Table 9-418*

|  |  |
| --- | --- |
| Order | Information |
| 1 | Category |
| 2 | Unprotected DMG Action |
| 3 | Dialog Token |
| 4 | BRP Request field |
| 5 | EDMG BRP Field |
| 6 | Short BRP Feedback Field |

***TGay Editor Add the following text after the second paragraph in P1544 (802.11-2016)***

An EDMG STA may send a BRP request with the EDMG-SHORT-BRP subfield set to 1. An EDMG STA shall send the response to this request separated by at least SIFS and at most MBIFS. The response shall also have the EMDG-SHORT-BRP subfield set to 1.

***TGay Editor: Add the following text after the penultimate paragraph in P1563 (802.11-2016)***

An EDMG STA responding to a transmit beam refinement training request in which the EDMG-SHORT-BRP subfield was set to 1, shall respond with a frame in which the EDMG-SHORT-BRP subfield set to 1 and the EDMG-SHORT-FBCK set to 1. The number of valid AWV feedback IDs in the Short BRP Feedback field shall be 16 unless $\frac{N-TRN×TRN-M}{TRN-N}<16$ where N-TRN, TRN-M and TRN-N are the values of the EMDG-TRN-LEN, EDMG-TRN-M and EDMG-TRN-N respectively in BRP-TX packet that included the transmit training request.

***TGay Editor Add the following text after the fourth paragraph in in P1564 (802.11-2016)***

An EDMG STA may request a TXSS sector list by sending a BRP Frame with the EDMG-SHORT-BRP subfield, TXSS-FBCK-REQ subfield and the SNR Requested subfield within the FBCK-REQ set to 1. The responding EDMG STA shall send a BRP frame with the EDMG-SHORT-BRP subfield and the EDMG-SHORT-FBCK set to 1 within MBIFS from the request.