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Wireless LANs

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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Lei Huang | Panasonic |  |  | lei.huang@sg.panasonic.com |

Abstract

This document proposes changes on 9.4.2.136 Channel Measurement Feedback element, 9.4.2.130 DMG Beam Refinement element and 9.4.2.253 EDMG Channel Measurement Feedback element included in the BRP frame to fix some mistakes (both technical and editorial).

**#1**

**9.4.2.136 Channel Measurement Feedback element**

***Change Table 9-240 as follows:***

|  |
| --- |
| * Channel Measurement Feedback element format  (11ad)
 |
| Field | Size | Meaning |
| Element ID | 8 bits |  |
| Length | 8 bits |  |
| SNR |  | 8 bits | SNR as measured in the first TRN-T field or at the first sector from which SSW frame or Short SSW packet is received.  |
|  | 8 bits | SNR as measured in the second TRN-T field or at the second sector from which SSW frame or Short SSW packet is received.  |
|  |  |  |
|  | 8 bits | SNR as measured in the *Nmeas*TRN-T field or at sector *Nmeas* from which SSW frame or Short SSW packet is received.  |
| Channel Measurement | Channel Measurement 1 | *Ntaps×*16 bits | Channel measurement for the first TRN-T field |
| Channel Measurement 2 | *Ntaps×*16 bits | Channel measurement for the second TRN-T field |
|  |  |  |
| Channel Measurement *Nmeas* | *Ntaps×*16 bits | Channel measurement for the *Nmeas* TRN-T field |
| Tap Delay | Relative Delay Tap #1 | 8 bits | The delay of Tap #1 in units of *Tc*(#2127)/*NCB* relative to the path with the shortest delay detected. |
| Relative Delay Tap #2 | 8 bits | The delay of Tap #2 in units of *Tc*/*NCB*  (#2127)relative to the path with the shortest delay detected. |
|  |  |  |
| Relative Delay Tap #*Ntaps* | 8 bits | The delay of Tap #*Ntaps* in units of *Tc*/*NCB* (#2127) relative to the path with the shortest delay detected. |
| Sector ID Order | Sector ID1 | 6 bits | Sector ID for SNR1 being obtained, or sector ID of the first detected beam. |
| Antenna ID1 | 2 bits | Antenna ID corresponding to (#2217)sector ID1. |
| Sector ID2 | 6 bits | Sector ID for SNR2 being obtained, or sector ID of the second detected beam. |
| Antenna ID2 | 2 bits | Antenna ID corresponding to (#2217)sector ID2. |
|  |  |  |
| Sector ID*Nmeas*or (#2217)sector ID*Nbeam* | 6 bits | Sector ID for SNR*Nmeas* being obtained, or sector ID of the detected beam *Nbeam*. |
| Antenna ID*Nmeas*or Antenna ID*Nbeam* | 2 bits | Antenna ID corresponding to (#2217)sector ID*Nmeas*or (#2217)sector ID*Nbeam* |

**#2**

**9.4.2.253 EDMG Channel Measurement Feedback element**

***Change the Table 3 as follows***

Table 3—EDMG Channel Measurement Feedback element format

|  |  |  |
| --- | --- | --- |
| Field | Size | Meaning |
| Element ID | 8 bits | Defined in 9.4.2.1 |
| Length | 8 bits | Defined in 9.4.2.1 |
| Element ID Extension | 8 bits | Defined in 9.4.2.1 |
| EDMG Sector ID Order | Sector ID1/CDOWN1 | 11 bits |  |
| TX Antenna ID1 | 3 bits |  |
| RX Antenna ID1 | 3 bits |  |
| Sector ID2/CDOWN2 | 11 bits |  |
| TX Antenna ID2 | 3 bits |  |
| RX Antenna ID2 | 3 bits |  |
| … | … |  |
| Sector IDNmeas/CDOWNNmeas | 11 bits |  |
| TX Antenna IDNmeas | 3 bits |  |
| RX Antenna IDNmeas | 3 bits |  |
| Beam Tracking Feedback | TX Sector Combination 1 AWV 1 | 11 bits | Contains the AWV for TX DMG antenna 1 |
| TX Sector Combination 1 AWV 2 | 11 bits | Contains the AWV for TX DMG antenna 2 |
| … | … |  |
| TX Sector Combination 1 AWV NTX | 11 bits | Contains the AWV for TX DMG antenna NTX |
| TX Sector Combination 2 AWV 1 | 11 bits | Contains the AWV for TX DMG antenna 1 |
| TX Sector Combination 2 AWV 2 | 11 bits | Contains the AWV for TX DMG antenna 2 |
| … | … |  |
| TX Sector Combination 2 AWV NTX | 11 bits | Contains the AWV for TX DMG antenna NTX |
| … | … | … |
| TX Sector Combination Nmeas AWV 1 | 11 bits | Contains the AWV for TX DMG antenna 1 |
| TX Sector Combination Nmeas AWV 2 | 11 bits | Contains the AWV for TX DMG antenna 2 |
| … | … |  |
| TX Sector Combination Nmeas AWV NTX | 11 bits | Contains the AWV for TX DMG antenna NTX |

***Change 2ndparagraph after Table 3:***

The EDMG Sector ID Order subfield indicates the TX sector IDs, TX antenna IDs and RX antenna IDs corresponding to the SNRs in the SNR subfield when the SNR Present subfield is set to 1 and the Short SSW Packet Used subfield is set to 0. The EDMG Sector ID Order subfield indicates the CDOWN values and RX antenna IDs corresponding to the SNRs in the SNR subfield when the SNR Present subfield is set to 1 and the Short SSW Packet Used subfield is set to 1. The EDMG Sector ID Order subfield indicates the TX sector IDs or CDOWN values ranked in the decreasing order of link quality, determined in an implementation dependent manner, when the SNR Present subfield is set to 0. The TX Antenna ID subfield per channel measurement feedback data is reserved when the Short SSW Packet Used subfield is set to 1.

**#3**

**9.4.2.130 DMG Beam Refinement element**

*Change Figure 9-512 as follows*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 | B16 | B17 | B18 | B19 | B20 | B21 B26 | B27 B28 | B29 B33 |
|  | Element ID | Length | Initiator | TX-train-response | RX-train-response | TX-TRN-OK | TXSS-FBCK-REQ | BS-FBCK | BS-FBCK Antenna ID | FBCK-REQ |
| Bits: | 8 | 8 | 1 | 1 | 1 | 1 | 1 | 6 | 2 | 5 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B34 B51 | B52 | B53 | B54 B55 | B56 B59 | B60 | B61 B64 | B65 | B66 |
|  | FBCK-TYPE | MID Extension | Capability Request | Reserved | BS-FBCK MSB | BS-FBCK Antenna ID MSB | Number of Measurements MSB  | EDMG Extension Flag | EDMG Channel Measurement Present  |
| Bits: | 18 | 1 | 1 | 2 | 4 | 1 | 4 | 1 | 1 |

|  |  |  |
| --- | --- | --- |
|  | B67 | B68 B71 |
|  | Short SSW Packet Used | Reserved |
| Bits: | 1 | 4 |

*Insert the following paragraphs*

The definition of the Number of Measurements MSB field depends on the value of the EDMG Extension Flag field. If the EDMG Extension Flag field is set to 1, the Number of Measurements MSB field is prepended to the Number of Measurements field to form a single Number of Measurements field of size 11 bits. Otherwise, the Number of Measurements MSB field is reserved.

The Short SSW Packet Used field sets to 1 to indicate Short SSW packet is used in the last sector sweep. The Short SSW Packet Used field sets to 0 to indicate Short SSW packet is not used in the last sector sweep.

***Change Table 9-234 as follows***

|  |
| --- |
| * FBCK-REQ field description(11ad)
 |
| Subfield(#3097) | Meaning |
| SNR Requested | If set to 1, the SNR subfield is requested as part of the channel measurement feedback. Otherwise, set to 0. |
| Channel Measurement Requested | If set to 1, the Channel Measurement subfield is requested as part of the channel measurement feedback. Otherwise, set to 0. |
| Number of Taps Requested | Number of taps in each channel measurement:0x0 – 1 tap0x1 – 5 taps0x2 – 15 taps0x3 – 63 taps |
| Sector ID Order Requested  | If set to 1, the Sector ID Order subfield is requested as part of the channel measurement feedback when the EDMG Extension Flag field is set to 0, or the EDMG Sector ID Order subfield including TX sector IDs is requested as part of the channel measurement feedback when the EDMG Extension Flag field is set to 1 and the Short SSW Packet Used field is set to 0, or the EDMG Sector ID Order subfield including CDOWN values is requested as part of the channel measurement feedback when the EDMG Extension Flag field is set to 1 and the Short SSW Packet Used field is set to 1. Otherwise, set to 0. |

 ***Change Table 9-235 as follows***

|  |
| --- |
| * FBCK-TYPE field description(11ad)
 |
| Subfield(#3097) | Meaning |
| SNR Present | Set to 1 to indicate that the SNR subfield is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Channel Measurement Present | Set to 1 to indicate that the Channel Measurement subfield is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Tap Delay Present | Set to 1 to indicate that the Tap Delay subfield is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Number of Taps Present(#3106) | Number of taps in each channel measurement:0x0 – 1 tap0x1 – 5 taps0x2 – 15 taps0x3 – 63 taps |
| Number of Measurements(#3106) | Number of measurements in the SNR subfield and the Channel Measurement subfield. It is equal to the number of TRN-T subfields in the BRP-TX packet on which the measurement is based, or the number of received sectors if TXSS result is reported by setting the TXSS-FBCK-REQ subfield(#3097) to 1.  |
| Sector ID Order Present | Set to 1 to indicate that the Sector ID Order subfield is present as part of the channel measurement feedback when the EDMG Extension Flag field is set to 0, or the EDMG Sector ID Order subfield including TX sector IDs is present as part of the channel measurement feedback when the EDMG Extension Flag field is set to 1 and the Short SSW Packet Used field is set to 0, or the EDMG Sector ID Order subfield including CDOWN values is present as part of the channel measurement feedback when the EDMG Extension Flag field is set to 1 and the Short SSW Packet Used field is set to 1. Set to 0 otherwise. |
| Link Type(#2033) | Set to 0 for the initiator link and to 1 for the responder link |
| Antenna Type(#2033) | Set to 0 for the transmitter antenna and to 1 for the receiver antenna |
| Number of Beams (#2033) | Indicates the number of beams in the Sector ID Order subfield for the MIDC subphase (#2033) |