IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 11-12-0177-00-00ad-BF and PHY Clarification-CID6001 | | | | | |
| Date: 25 January 2012 | | | | | |
| Author(s): | | | | | |
| Name | Affiliation | Address | Phone | email | |
| Gal Basson | Wilocity | Israel | +972542273373 | Gal.basson@wilocity.com | |
| Amichai Sanderovich | Wilocity |  |  |  |
| Ruvi Alpert | Wilocity |  |  |  |
| Assaf Kasher | Intel Corporation |  |  |  |
| Carlos Cordeiro | Intel Corporation |  |  | [carlos.cordeiro@intel.com](mailto:carlos.cordeiro@intel.com) |

Abstract

[This document is provided as part of resolution to CID 6001]

In order to avoid redundant BF retraining during CBAP operation, the direction bit which indicated who’s the initiator of the ScS is returned to the ScS frame.

##### Instruct the Editor to intsert the following text into subsection 9.35.6.4.4

##### 9.35.6.4.4. Normative Behavior during BRP for reciprocal STA pair

A STA that has the DBand Antenna Pattern Reciprocity subfield within the DBand STA Capability Information field of the DBand Capabilities element set to 1 and that has received a BRP-RX packet from a peer STA that also has the DBand Antenna Pattern Reciprocity subfield within the DBand STA Capability Information field of the peer STA’s DBand Capabilities element set to 1, shall use the same AWV that was configured with the BRP-RX packet in subsequent transmissions and receptions with the peer STA during the DTT. This can allow STAs that use reciprocity to shorten the beamforming training time.

Instruct the Editor to replace figure 86 with

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0-B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11-B16 | B17-B24 | B25-B26 | B27-B31 |
|  | L-RX | TX-TRN-REQ | MID-REQ | BC-REQ | MID-Grant | BC-Grant | Chan-FBCK-CAP | TX Sector ID | Null | Tx  Antenna  ID | Reserved |
| Bits: | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 2 | 2 | 5 |

Instruct the Editor to add the following text Page 168 Line 33The TX Antenna ID field indicates the Antenna ID that is used when transmitting the packet.

Instruct the Editor to change table 20, raw 7 to

|  |  |  |  |
| --- | --- | --- | --- |
| Sector and Antenna ID order subfield | Sector ID1 | 6 bits | Sector ID for SNR1 being obtained, or sector ID of the first detected beam. |
|  | 2 | Antenna ID for SNR1 being obtained, or Antenna ID of the first detected beam. |
| Sector ID2 | 6 bits | Sector ID for SNR2 being obtained, or sector ID of the second detected beam. |
|  | 2 | Antenna ID for SNR2 being obtained, or Antenna ID of the second detected beam. |
| Sector IDNmeas  Antenna IDNmeasOr  Sector IDNbeam  Antenna IDNbeam | 8 bits | Sector ID and Antenna ID for SNRNmeas being obtained, or sector ID and Antenna ID of the Nbeam’th detected beam. 6 bits of Sector ID located on the LSBs bits while the Antenna ID 2 bits located on MSBs field bits |

Instruct the Editor to replace the text in page 136, lines 35 to line 36 with

The DBand Beam Refinement element is defined as shown in Figure 42.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0-B7 | B8-B15 | B16 | B17 | B18 | B19 | B20 |
|  | Element ID | Length | Initiator | TX-train-response | RX-train-response | TX-TRN-OK | TXSS-FBCK-REQ |
| Bits: | 8 | 8 | 1 | 1 | 1 | 1 | 1 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B21-B26 | B27-B28 | B29-B33 | B34-B50 | B51 | B52 | B53-B55 |
|  | BS-FBCK | BS-FBCK  Antenna ID | FBCK-REQ | FBCK-TYPE | MID extension | Capability Request | Reserved |
| Bits: | 6 | 2 | 5 | 17 | 1 | 1 |  |

Instruct the Editor to add the following text Page 137 Line 27

BS-FBCK Antenna ID specifies the Antenna ID corresponding the sector in BF-FBCK field.

***MIDC text clarification***

Instruct the Editor to replace figure 117 with

.

and remove figure 116.

Instruct the Editor to replace the text in page 281, line 5 to line 26 with

“Setting up the MID sub-phase: To request an MIDC sub-phase with R-MID sub-phase, the initiator transmits an ScS-Feedback with the MID request subfield set to 1 and the BC request subfield set to 0 in the BRP request field. The responder uses the ScS-ACK to request an MIDC sub-phase, with the I-MID sub-phase. It does so by setting the MID request subfield to one and the BC request subfield to zero in the BRP request field.

In addition to using the MID request during the SLS to setup the MID sub-phase, the responder and initiator need to know the SNRs of the sectors tested during the SLS phase for use in the R-MID and I-MID respectively. The initiator (or responder) should send with a BRP frame with the MID request, SNR present, sector ID order present subfields set to 1, and the *Nmeas*field in the FBCK-TYPE field indicating the number of SNR measurements from the last SLS phase. In the channel measurement field, the initiator (or responder) should set the SNR subfield to the SNRs corresponding to the TX sectors received during the SLS phase. In the Sector ID subfield, it should list the sector IDs of the received sectors.

The responder receiving the BRP MID request with the channel measurement field will send a BRP MID grant packet containing the MID grant subfield, sector ID order present subfields set to 1, and the *Nbeams*field in the FBCK-TYPE field indicating the number of sectors that the responder will transmit during the MID subphase. The sector ID in the channel measurement feedback field will be in MID phase transmission order.”

Instruct the Editor to replace the text in page 138 line8 Table 15 FBCK-TYPE field description

| **Field** | **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 is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Tap Delay Present | Set to 1 to indicate that the Tap delays field is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Number of Taps Present (*Ntaps*) | Number of taps in each channel measurement:  0x0 1 tap  0x1 5 taps  0x2 17 taps  0x3 63 taps |
| Number of Measurements (*Nmeas*) | Number of measurements in the SNR subfield and the channel measurements 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 TXSS-FBCK-REQ to one. |
| Sector ID Order Present | Set to 1 to indicate that the Sector ID order subfield is present as part of the channel measurement feedback. Set to 0 otherwise. |
| Number of Beams  (*Nbeam*) | On MID sub-phase only indicates the number of sectors that the responder will transmit during the MID sub-phase.  For MIDC sub-phase, indicates the number of beams in the Sector ID order subfield for the MIDC sub-phase with the direction and the TX/RX antenna identification. The 1st bit is set to 0 for the initiator link and 1 for the responder link. The 2nd bit is set to 0 for the transmitter antenna and 1 for the receiver antenna. The 3rd to 5th bits represent the number of beams for beam combining. E.g. “01101” stands for Nbeam(I, RX) = 5. |