IEEE P802.11
Wireless LANs

|  |
| --- |
|  Comment Resolution for CID 1161 |
| Date: 2021-3-10 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Hiroyuki Motozuka | Panasonic | 600 Saedo-cho, Tsuzuki-ku, Yokohama, Kanagawa, Japan |  | motozuka.hiroyuki@jp.panasonic.com |
| Takenori Sakamoto |  | sakamoto.takenori@jp.panasonic.com |
| Masataka Irie |  | irie.masataka@jp.panasonic.com |
| Kazu Takahashi |  | takahashi.kazu@jp.panasonic.com |
| Gaius Wee | 202 Bedok South Ave 1 Singapore 469332 |  | yaohuang.wee@sg.panasonic.com |
| Michael Sim |  | michael.simhc@sg.panasonic.com  |
| Takayuki Shimizu | Toyota Motor North America | 465 Bernardo Ave, Mountain View, CA 94043, USA |  | takayuki.shimizu@toyota.com |

Abstract

This submission proposes resolution of a comment related to 60 GHz operation from Comment Collection on TGbd Draft 1.0

CID 1161

Revision history:

r0 initial

r1 - Change the subfield name, “OCB Mode subfield” to “OCB subfield.”

- Modified text in 11.1.4.X and 31.3.3.

r2 Fixed the title of Figure 11-y

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 1161 | 6 | 23.01 | For STAs operating in 60GHz band, it is unclear whether some context (e.g. operating channel) is shared between the MAC and higher layer or not before the MAC receives MLME-\*\*.request primitive. For example, it is needed to specifed over which channel the STA performs beamforming training when it receives MLME-BF-TRAINING.request from the higher layer. | 11-20/1303r1 proposes MLME primitives to perform initial beamforming.Another contribution to be provided for extension on MLME-BF-TRAINING. | **Revised**It is proposed that the channel number information is indicated by higher layer through MLME-DMG-OCB-START.request primitive in 11-21/0045r2. So MLME-BF-TRAINING.request doesn’t need to include the channel number information. But there’re missing subfield in SSW frame in Draft 1.1 to be used outside the context of a BSS.TGbd Editor: Incorporate the change in <https://mentor.ieee.org/802.11/dcn/21/11-21-0383-02-00bd-comment-resolution-for-cid-1161-dmg-beamforming.docx> for CID 1161. |

**Discussion**

**In 11-21/0045r2, the procedure to perform discovery of peer STAs by a DMG STA outside the context of a BSS was proposed. The procedure includes transmission of DMG Beacon frames, and enables the DMG STA to perform discovery and initial beamforming training with a peer STA without any information of the peer STA in advance. The parameters required to perform discovery are informed by the higher layer within the MLME-DMG-OCB-START.request primitive that was proposed in 11-21/0045r2.**

|  |
| --- |
| MLME-DMG-OCB-START.request( Channel Number, Discovery Beacon, DMG Parameters, DMG Capabilities, EDMG Capabilities VendorSpecificInfo ) |

**The other case is that the STA obtains the MAC address and the basic capability of a peer STA from the higher layer – for example, the information is advertised over the other frequency band. This case is not described in 11-21/0045r2. We propose the text below to describe:**

1. **MLME-BF-TRAINING.request primitive, which was initially defined in 11ad and extended in 11ay, can be used when the peer MAC address is known outside the context of a BSS. An example sequence chart is proposed to describe it.**
2. **We propose to add the OCB subfield to the Sector Sweep Feedback Field when transmitted as part of an Initiator Sector Sweep (ISS), so the peer (responder) STA can know the beamforming training (BFT) is intended to be performed outside the context of a BSS, when the initiator STA starts the BFT upon the reception of an MLME-BF-TRAINING.request primitive.**

**Proposed changes to D1.1**

9.5.3 Sector Sweep Feedback Field

*TGbd Editor: Please insert the following at the beginning of the subclause:*

*Change Figure 9-848 as follows*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 B8 | B9 B10 | B11 B15 | B16 | B17 | B~~17~~18 B23 |
|  | Total Sectors in ISS | Number of RX DMG Antennas | Reserved | Poll Required | OCB  | Reserved |
| Bits: | 9 | 2 | 5 | 1 | 1 | ~~7~~6 |

**Figure 9-848 – SSW Feedback field format when transmitted as part of an ISS**

*TGbd Editor: Please replace “OCB Mode (subfield)” with “OCB (subfield)” in the Figure 9-848a and the paragraph after the figure in subclause 9.5.3 in 11-21/0045r2, and incorporate to Draft P802.11bd:*

*Change Figure 9-848a as follows (Draft P802.11ay)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B5 | B6 B7 | B8 B15 | B16 | B17 | B~~17~~18 B21 | B22 | B23 |
|  | Sector Select | DMG Antenna Select | SNR Report | Poll Required | OCB | Reserved | Unsolicited RSS Enabled | EDMG Extension Flag |
| Bits: | 6 | 2 | 8 | 1 | 1 | ~~5~~4 | 1 | 1 |

**Figure 9-848a – SSW Feedback field format when not transmitted as part of an ISS and the EDMG Extension Flag subfield is 0**

The OCB subfield is set to 1 if dot11OCBActivated is true, and is set to 0 otherwise. If equal to 1, this subfield indicates that the STA is operating outside the context of a BSS.

11.1.4.X DMG Discovery outside the context of a BSS

*TGbd Editor: Please replace “OCB Mode subfield” with “OCB subfield” in the third to fifth paragraphs in subclause 11.1.4.X in 11-21/0045r2, and incorporate to Draft P802.11bd:*

When the STA receives one or more SSW frames with the OCB subfield set to 1 during an A-BFT or DTI and completes SLS with the peer STA, and the address of the peer STA is an address that is newly discovered, the STA shall issue an MLME-OCB-DMGDISCOVERY.indication with the PeerInfoSet parameter including the PeerInfo defined in 6.3.X.4 (MLME-OCB-DMGDISCOVERY.indication) for the peer STA that transmitted the SSW frame.

When the STA receives one or more DMG Beacon frames including a DMG OCB element from a peer STA, and the address of the peer STA is an address that is newly discovered, the STA shall perform an SLS with the OCB subfield set to 1 in transmitted SSW frames during the A-BFT following the DMG Beacon frames if present, or during the DTI. If the SLS is completed, the STA shall issue an MLME-OCB-DMGDISCOVERY.indication with the PeerInfoSet parameter including the PeerInfo for the peer STA transmitted the DMG Beacon frame.

When the STA completes SLS with a peer STA which transmitted an SSW frame with the OCB subfield set to 1 or a DMG Beacon frame including a DMG OCB element, and the address of the peer STA is not an address that is newly detected, the STA may issue an MLME-OCB-DMGDISCOVEREY.indication with the PeerInfoSet parameter including the PeerInfo regarding the peer STA.

*TGbd Editor: Please add the following paragraphs after the sixth paragraph:*

Figure 11-x illustrates an example of the DMG Discovery outside the context of a BSS, in which the Discovery Beacon parameter is set to true in the MLME-DMG-OCB-START.request primitive for both STAs.

Figure 11-y illustrates an example of beamforming training during the DMG Discovery outside the context of a BSS, in which the MAC address of the peer STA is informed over higher layer and included in the MLME-BF-TRAINING.request primitive.

*TGbd Editor: Please add Figure 11-y after Figure 11-x as follows:*



**Figure 11-y – Beamforming training during the DMG Discovery outside the context of a BSS**

31.3.3 DMG Beamforming outside the context of a BSS

*TGbd Editor: Please replace “OCB Mode subfield” with “OCB subfield” in the second paragraph in subclause 31.3.3 in 11-21/0045r2, and incorporate to Draft P802.11bd:*

When a DMG STA for which dot11OCBActivated is true receives a DMG Beacon frame with a DMG OCB element, the STA may perform beamforming training as described in 10.42.5 (Beamforming in A-BFT). When the DMG STA transmits SSW frames during the A-BFT after a BTI in which the STA received a DMG Beacon frame with a DMG OCB element, the STA shall set the OCB subfield to 1 in the SSW frames transmitted during the A-BFT.

*TGbd Editor: Please add the following paragraph after the third paragraph:*

A DMG STA for which dot11OCBActivated is true may transmit SSW frames as described in 10.42.6 (Beamforming in DTI) outside the context of a BSS. The DMG STA shall set the OCB subfield to 1 in the SSW frames during beamforming training outside of the context of a BSS.

**References**

[1] Draft P802.11bd D1.1

[2] 11-21/0045r2 CIDs 1154 1158 1344 DMG STA operation in OCB