IEEE P802.11
Wireless LANs

|  |
| --- |
| Text related to Fast BSS Discovery |
| Date: 2017-01-04 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Gaius Wee | Panasonic Corporation | 202 Bedok South Avenue 1 #02-11, Singapore 469332 | +65 6550 5335 | yaohuang.wee@sg.panasonic.com |
| Carlos Cordeiro | Intel | 2111 NE 25th Ave, Hillsboro OR 97124, USA | +1-503-712-9356 | carlos.cordeiro@intel.com |

Abstract

This document proposes draft specification text for Fast BSS Discovery [1].

***Text related to motion 1:***

9. Frame formats

9.5 Fields used in Management and Extension frame bodies and Control frames

9.5.1 Sector Sweep field

*Change the first paragraph as follows*

When the sector sweep (SSW) field is not transmitted in a DMG Beacon frame, ~~T~~the format of the ~~sector sweep (SSW)~~ field is as shown in Figure 9-635. The format of the field when transmitted in a DMG Beacon frame is shown in Figure *TBD1*.

*At the end of the caption of Figure 9-635, insert “when not transmitted in a DMG Beacon frame”*

*Insert the following figure after Figure 9-365*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1-B9 | B10-B15 | B16-B17 | B18 | B19-B23 |
|  | Direction | CDOWN | Sector ID | DMG Antenna ID | Quasi-omni TX | Reserved |
| Bits: | 1 | 9 | 6 | 2 | 1 | 5 |

Figure *TBD1*—SSW field format when transmitted in a DMG Beacon frame

*Insert the following at the end of the subclause:*

The Quasi-omni TX subfield is set to 1 to indicate that the frame containing the Sector Sweep field is transmitted with a quasi-omni antenna pattern and is set to 0 to indicate that the frame is not transmitted with a quasi-omni antenna pattern.

10. MAC sublayer functional description

10.38 DMG beamforming

10.38.2 Sector-level sweep (SLS) phase

10.38.2.1 General

*Change the tenth paragraph and insert a new eleventh paragraph as follows*

A frame transmitted by a DMG STA as part of a sector sweep does not include training fields. A DMG STA shall set the TRN-LEN parameter of the TXVECTOR to 0 for a frame transmitted as part of a sector sweep.

A frame transmitted by an EDMG STA as part of a sector sweep and that is not a DMG Beacon does not include training fields. An EDMG STA shall set the TRN-LEN parameter of the TXVECTOR to 0 for a frame transmitted as part of a sector sweep and that is not a DMG Beacon.

10.38.4 Beamforming in BTI

*Insert the following paragraphs at the end of the subclause*

A DMG Beacon frame transmitted by an EDMG STA may include training fields to enable receive training by an EDMG STA receiving the DMG Beacon.

An EDMG STA may set the TRN-LEN parameter of the TXVECTOR to 0 if the PACKET-TYPE is set to 0 and shall set the TRN-LEN parameter of the TXVECTOR to 0 if the PACKET-TYPE is set to 1 for a DMG Beacon frame.

If a DMG Beacon frame is transmitted by an EDMG STA using a quasi-omni antenna pattern, the Quasi-omni TX subfield in the Sector Sweep field in the frame shall be set to 1. An EDMG STA may append receive training (TRN-R) subfields to DMG Beacon frames with the Quasi-omni TX subfield in the Sector Sweep field set to 1 to enable receive training, and subsequently, selection of a transmit sector by a receiving STA that supports antenna reciprocity or antenna pattern reciprocity as indicated by setting the DMG Antenna Reciprocity field or Antenna Pattern Reciprocity field in the DMG Capabilities element to 1 respectively, for transmission to the transmitter of the DMG Beacon based on the result of the receive training.

11. MLME

11.1 Synchronization

11.1.3 Maintaining synchronization

11.1.3.3 Beacon generation in a DMG infrastructure BSS and in a PBSS

*Insert the following two paragraphs after the eighth paragraph*

An EDMG AP or EDMG PCP can transmit a DMG Beacon frame using a quasi-omni antenna pattern as described in 10.38.4.

NOTE—The reception of a DMG Beacon frame transmitted using a quasi-omni antenna pattern indicates to the receiving STA a possibility of communicating with the AP or PCP (e.g., Probe Request, Probe Response) using a quasi-omni transmit antenna pattern.

11.1.3.4 DMG Beacon generation before establishment of a BSS

*Insert the following two paragraphs after the sixth paragraph*

An EDMG STA can transmit a DMG Beacon using a quasi-omni antenna pattern as described in 10.38.4.

NOTE—The reception of a DMG Beacon frame transmitted using a quasi-omni antenna pattern indicates to the receiving STA a possibility of communicating with the transmitting STA (e.g. probe request and response) using a quasi-omni transmit antenna pattern.

***Text related to motion 2:***

11.1.4 Acquiring synchronization, scanning

11.1.4.3 Active scanning

11.1.4.3.3 Active scanning procedure for a DMG STA

*Change item (g) in the first paragraph as follows*

1. If an SSW-Feedback frame is neither transmitted nor received in step d), then:
	1. Optionally send a probe request to the broadcast destination address. The probe request is sent with the SSID and BSSID from the received MLME-SCAN.request primitive and includes the DMG Capabilities element. An EDMG STA may transmit the probe request using a quasi-omni antenna pattern and, in this case, may append receive training (TRN-R) subfields to the probe request. The basic access procedure (10.3.4.2) is performed prior to the probe request transmission.
	2. When the SSID List is present in the invocation of the MLME-SCAN.request primitive, send zero or more probe requests to the broadcast destination address. Each probe request is sent with an SSID indicated in the SSID List and the BSSID from the MLME-SCAN.request primitive and includes the DMG Capabilities element. An EDMG STA may transmit the probe request using a quasi-omni antenna pattern and, in this case, may append receive training (TRN-R) subfields to the probe request. The basic access procedure (10.3.4.2) is performed prior to each probe request transmission.

11.1.4.3.4 Criteria for sending a probe response

*Change item (k) in the first paragraph as follows*

1. The STA is a DMG STA and the transmit antenna of the DMG STA is not trained to transmit to the STA from which the Probe Request frame was received, and the STA is not an EDMG STA that intends to transmit the response using a quasi-omni antenna pattern.

*Insert the following paragraph after the first paragraph*

An EDMG STA that receives a probe request before performing transmit antenna training may use a quasi-omni antenna pattern for transmission of the Probe Response. An EDMG STA that receives a probe request with TRN-R subfields appended to it may perform receive training and select a transmit sector if the STA supports antenna reciprocity or antenna pattern reciprocity as indicated by setting the DMG Antenna Reciprocity field or Antenna Pattern Reciprocity field in the DMG Capabilities element to 1 respectively, for transmission to the transmitter of the probe request based on the result of the receive training.

**References:**

1. 11-16-1571-00-00ay-fast-bss-discovery.pptx