### IEEE P802.11Wireless LANs

|  |
| --- |
| **11ax SA2 draft 7.0 comment resolutions** |
| Date: 2 October 2020 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Menzo Wentink | Qualcomm | Utrecht, the Netherlands | +31-65-183-6231 | mwentink qti.qualcomm.com |
| Youhan Kim | Qualcomm |  |  |  |
| Bin Tian | Qualcomm |  |  |  |

Abstract

This document contains proposed resolutions for sounding related comments on 802.11ax SA ballot 2, on 11ax draft 7.0.

1. 25038 a 25044

The baseline for this document is 802.11ax draft 7.0 and 802.11REVmd draft 4.0.

|  |  |  |  |
| --- | --- | --- | --- |
| CID 250389.3.1.19117.1Seok, Yongho | The comment requested by a non-member of this TGax SA Ballot (Young-hoon Kwon). In the 80+80MHz case, value 37 indicates the 26-tone RU 1 in the upper 80 MHz frequency segment and value 73 should indicate the 26-tone RU 37 (not 74) in the upper 80 MHz frequency segment. | Change the text "… 73 indicates the 26-tone RU 74 in the upper 80 MHz frequency segment" to "… 73 indicates the 26-tone RU 37 in the upper 80 MHz frequency segment". | Revised - make changes in <this document> under CID 25038, which changes the text in the direction suggested by the commenter. |

The current text is as follows:

— Values 0 to 73 if the bandwidth of the HE NDP Announcement frame is 160 MHz, where 0 indicates 26-tone RU 1 and 73 indicates 26-tone RU 74. In the 80+80 MHz case, value 0 indicates the 26-tone RU 1 in the lower 80 MHz frequency segment and 36 indicates the 26-tone RU 37 in the lower 80 MHz frequency segment and 37 indicates the 26-tone RU 1 in the upper 80 MHz frequency segment and 73 indicates the 26-tone RU 74 in the upper 80 MHz frequency segment. Values 74-127 are reserved. For 80+80 MHz, feedback is not requested for the gap between the 80 MHz segments. See Table 27-9 (Data and pilot subcarrier indices for RUs in an 80 MHz HE PPDU and in a non-OFDMA 80 MHz HE PPDU).

The commenter is correct that the RUs for the upper 80 MHz frequency segment are RU 1 through RU 37. So 74 should be changed to 37.

In addition to fixing the RU number, the proposed changes also make an editorial change by moving the 80+80 case into a separate bullet item.

***--- Start of changes for CID 25038 ---***

***116.61 change as shown***

— Values 0 to 73 if the bandwidth of the HE NDP Announcement frame is 160 MHz, where 0 indicates 26-tone RU 1 and 73 indicates 26-tone RU 74. Values 74-127 are reserved.

— Values 0 to 73 if the bandwidth of the HE NDP Announcement frame is 80+80 MHz, where value 0 indicates 26-tone RU 1 in the lower 80 MHz frequency segment, 36 indicates 26-tone RU 37 in the lower 80 MHz frequency segment, 37 indicates 26-tone RU 1 in the upper 80 MHz frequency segment, and 73 indicates 26-tone RU 37 in the upper 80 MHz frequency segment. Values 74-127 are reserved. For 80+80 MHz, feedback is not requested for the gap between the 80 MHz segments. See Table 27-9 (Data and pilot subcarrier indices for RUs in an 80 MHz HE PPDU and in a non-OFDMA 80 MHz HE PPDU).

***--- End of changes for CID 25038 ---***

|  |  |  |  |
| --- | --- | --- | --- |
| CID a11.10.14322.14Wentink, Menzo | REVmd limited n to 8, and also concluded that this did not depend on dot11RMMeasurementPilotActivated.Therefore, the changes made to this clause in 11ax draft 7.0 can be simplified or removed, depending on the baseline used for 11ax. | As in comment. | Revised - make changes as shown in <this document> under CID a, which change the draft in the direction suggested by the commenter. |

REVmd draft 5.0 changes the exponent n of the maximum number of BSSIDs in Multiple BSSID (MSSID) from 46 to 8. However, because 11ax draft 7.0 is based on REVmd draft 4.0, it is fine to leave the maximum value of n at 46 (because the change is made in REVmd 5.0).

But the item related to dot11RMMeasurmentPilotActivated can be deleted from 11ax after REVmd established that the maximum number of BSSIDs does not depend in this MIB variable.

***--- Start of changes for CID a ---***

***322.14 change as shown in Word revision marks:***

**11.10 Radio measurement procedures**

**11.10.14 Multiple BSSID set**

Change the 1st paragraph as follows:

A multiple BSSID set is characterized as follows:

— All members of the set use a common operating class, channel, Channel Access Functions, receive antenna connector, and transmit antenna connector.

— The set has a maximum range of 2n for at least one n, where 1 ≤ n ≤ 8

— Members of the set have the same 48-n bits (BSSID[0:(47-n)]) in their BSSIDs.

— All BSSIDs within the multiple BSSID set are assigned in a way that they are not available as MAC addresses for STAs using a different operating class, channel, receive antenna connector, or transmit antenna connector

***--- End of changes for CID a ---***

***Note to the editor: REVmd D5.0 changed 46 to 8.***

|  |  |  |  |
| --- | --- | --- | --- |
| CID 2504410.23.2.11292.65Seok, Yongho | The comment requested by a non-member of this TGax SA Ballot (Young-hoon Kwon). In case of 6 GHz band operation, TXOP termination is not needed for HE PPDU. | Modify the text in Table 10-18 from "HE" to "HE (not in 6GHz band operation)". | Rejected - TXOP termination was introduced to avoid spurious EIFSs from occurring after a final response frame at a rate higher than 6 Mbps (like 12 or 24 Mbps) when Dynamic EIFS was not supported. Dynamic EIFS is optional for HE, also in 6 GHz, so it appears that the same reasoning still holds, and 6 GHz should not be excluded from Table 10-18 (Modulation classes eligible for TXOP termination). |

From Yongho Seok:

Young hoon rationale is:

"TXOP termination is needed to protect legacy STAs for the channel access when later version of PPDUs (HT/VHT/HE etc) are used during the TXOP. However, in 6 GHz band, there are HE STAs only and thus there’s no need to have a TXOP termination process for the legacy protection."

Some background on TXOP termination:

There is the note at 1834.46 (REVmd D4.0):

NOTE—The final transmission at the lowest data rate within the modulation class is needed because a final transmission at a higher rate can cause spurious EIFSs to occur, because the PHY header of such frames travels farther than the MPDU.

Document 11-16-0117-03-000m-eifs-comment explains the following:

Spurious EIFSs as addressed in the comment can be caused by any final control response frame transmitted at a rate higher than 6 Mbps (typically 12 or 24 Mbps), because the preamble of such PPDUs travels far beyond the MPDU, which causes an EIFS to occur in a potentially very large region. The response rate selection can not be controlled however, so an option is that the TXOP holder sends a short frame at 6 Mbps as the terminating frame in a TXOP. This final terminating transmission truncates an EIFS in a large region around the TXOP holder, strongly reducing the area where a a spurious EIFS may occur.

Based on offline discussion, it appears that there is a preference to use a CF-End as the terminating frame, because its definition already exists. A CF-End is longer than an ACK but probably still not causing much overhead. The proposed resolution therefore proposes to add an explanation about terminating any TXOP with a CF-End at 6 Mbps, and makes it a should requirement, while also allowing the use of a CTS-to-self.

Note that an alternative solution would be to deprecate EIFS altogether.

So TXOP termination was introduced to avoid spurious EIFSs from occurring after a final response frame at a rate higher than 6 Mbps (like 12 or 24 Mbps) when Dynamic EIFS was not supported.

Dynamic EIFS is optional for HE, also in 6 GHz, so it appears that the same reasoning still holds, and 6 GHz should not be excluded from Table 10-18 (Modulation classes eligible for TXOP termination).

However, since HE will be the first PHY in 6 GHz, and a received HE frame with RXVECTOR parameter TXOP\_DURATION not set to UNSPECIFIED will not cause an EIFS, this type of trame is also possible final frame in the 6 GHz band (see 260.44: "EIFS shall not be invoked if the RXVECTOR parameter TXOP\_DURATION of a received HE PPDU is not set to UNSPECIFIED.".)

Therefore, this type of frame can be added to the list of possible final frames in the TXOP.

***--- Start of changes for CID 25044 ---***

***1834.44 change as shown***

The final transmission can be a CF-End, or a CTS-to-self when no NAV needs to be truncated, or in the 6 GHz band, an HE frame with RXVECTOR parameter TXOP\_DURATION not set to UNSPECIFIED.

***--- End of changes for CID 25044 ---***

(Note: To avoid introducing any potential new issues in 11ax, it would also be fine to reject this comment at this time. The changes can then be made in REVme.)