IEEE P802.11  
Wireless LANs

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| Comment resolution | | | | |
| Date: 2018-06-06 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Solomon Trainin | Qualcomm |  |  | strainin@qti.qualcomm.com |
| Oren Kedem | Intel |  |  | oren.kedem@intel.com |

Resolution of CIDs 1263, 1264, 1482, 1495, 1695, 1952, 1961, 2108, 2269, 2287, 1967 is presented

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| 1263 | 37.09 | 9.3.3.6 |  |  | Why the EDMG Operation element is available for the Associatio Response Frame ? If it's available, and the DMG Beacon also contains the operation elements, which one is overridden? | Please clarify it |
| 1264 | 37.15 | 9.3.3.6 |  |  | Why the EDMG Operation element is available for the reassociatio Response Frame ? If it's available, and the DMG Beacon also contains the operation elements, which one is overridden? | Please clarify it |

**Proposal: Reject**

Discussion: The EDMG operation element is property of the BSS and contains current BSS setup, does not matter how the element is sent. The EDMG operation element is optionally present in the beacon and is mandatory present in the Association and Reassociation Response frames. See Table 9-41, Table 9-30, and Table 9-32 (IEEE P802.11ay/D1.2, April 2018) for reference. No need for any additional clarification of the frames’ formats.

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| 1482 | 147.06 | 10.38.2.2.2 |  |  | It would be helpful here to explain why a station would start an unsolcited RSS or reference another part of the standard in which there is an explanation. | Provide reference or add explanatory text. |

**Proposal: Revised**

Discussion:

Comprehensive explanation of the unsolicited RSS is presented in 10.39.6.2 (SLS phase execution), therefore there is no need to duplicate the explanation. Suggest adding reference.

***TGay Editor modify as follows (Draft 1.2)***

**10.39.2.2.2 Initiator TXSS**

P185L14

During a CBAP, an EDMG STA may obtain a TXOP with an unsolicited RSS or use an existent TXOP for an unsolicited RSS, see 10.39.6.2 (SLS phase execution).

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| 1695 | 130.33 | 10.28.1 |  |  | The relationship between a DMG STA and dot11RDResponderOptionImplemented is not clear. This MIB object is part of the dot11HTStationConfigTable so its applicability to a DMG STA is not clear. The DMG MIB conformance objects don't mention it. | Remove all dependency between a DMG/EDMG STA and the dot11RDResponderOptionImplemented MIB object. Replace the inserted sentence with "An EDMG STA shall set the Reverse Direction subfield of the DMG STA Capability Information field of the DMG Capability element to 1." |

**Proposal: Reject**

Discussion:

1. The comment is not consistent with IEEE P802.11-REVmd/D1.1, May 2018, there the dot11RDResponderOptionImplemented attribute is used for HT, DMG, and S1G STAs, so the mentioned case is not DMG specific.
2. The proposed change is EDMG specific and does not resolve the issue identified in the comment in relation to all DMG STAs.

For the reasons (1) and (2) if some change is needed it should be resolved in 802.11md.

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| 1952 | 46.18 | 9.4.2.53 |  |  | The Extended Channel Switch Announcement element does not provide information about channel width that is needed to enable functionality at the time the channel is switched. The channel width information is provided by Wide Bandwidth Channel Switch element that does provide the VHT information but does not have the TGay relevant information. | Extend the existent Wide Bandwidth Channel Switch element or define new element to provide channel width information compliant with .11ay |
| 1495 | 206.06 | 11.6.8.7 |  |  | It isn't clear what "shall not operate" means in this context. Does it mean "shall not transmit on a non-primary channel"? Maybe it means something else? | Replace the wording with something more precise, such as "shall not transmit a frame other than a probe request". |

**Proposal (CID1952): Revise**

Discussion:

The current solution requires that the EDMG Operation element is conveyed by the DMG beacon or if the element is not conveyed by the beacon additional transactions are needed to get the channel width information to continue with data traffic in the new channel. In the basic spec full information about new channels is provided at the time the channel switching instruction is issued.

The current definition is limited to channel switching that the primary channel changes and does not provide solution of operating channels changes if the same primary is kept.

The proposal resolves the mentioned primary channel issue and is in line with the basic spec by delivering new defined EDMG Wide Bandwidth Channel Switch element together with the Extended Channel Switch Announcement element.

**Proposal (CID1495): Reject**

Discussion:

The resolution of CID 1952 replaces the commented text. The rule no more exists, so no change is needed.

***TGay Editor append new sub clause after 9.4.2.269 TDD Route element***

**9.4.2.2xy EDMG Wide Bandwidth Channel Switch element**

The Wide Bandwidth Channel Switch element is included in DMG Beacon frames, Announce frames, or Information Response frames, as defined in 11.8.8.7 Selecting and advertising new channels in an EDMG BSS. The format of the EDMG Wide Bandwidth Channel Switch element is shown in Figure xyz (EDMG Wide Bandwidth Channel Switch element format).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID  Extension | EDMG New operating channel |
| Octets | 1 | 1 | 1 | 2 |

**Figure xyz —EDMG Wide Bandwidth Channel Switch element format**

The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1.

The EDMG New operating channel field is defined in Figure xyz1

|  |  |  |
| --- | --- | --- |
|  | BSS Operating Channels | Operating Channel Width |
| Octets | 1 | 1 |

**Figure xyz1 — EDMG New operating channel field format**

The BSS Operating Channels field and Operating Channel Width field are defined in 9.4.2.251 EDMG Operation element.

***TGay Editor add new line in Table 9-77 on P69***

|  |  |  |  |
| --- | --- | --- | --- |
| EDMG Wide Bandwidth Channel Switch | 255 | <ANA> | Yes |

**11.8.8.7 Selecting and advertising new channels in an EDMG BSS**

***TGay Editor modify as follows (Draft 1.2)***

*P257L21*

Changing of BSS Operating Channels filed and/or Operating Channel Width field content of the EDMG Operation element is referred in the sub clause as a change of operating channels. The decision to switch to new operating channels in an EDMG BSS shall be made only by an AP or PCP.

*P258L1*

An AP or PCP shall inform associated STAs that the AP or PCP is changing to a new operating channels and shall maintain the association by advertising the switch using the Extended Channel Switch Announcement element and EDMG Wide Bandwidth Channel Switch element in its transmitted DMG Beacon frames, Announce frames, or Information Response frames until the intended channel switch time. The channel switch should be scheduled so that all non-AP and non-PCP 4 STAs in the BSS, including STAs in power save mode, have the opportunity to receive at least one Extended Channel Switch Announcement element and EDMG Wide Bandwidth Channel Switch element before the switch. A STA may ignore the Channel Switch Mode field and either cease transmissions or attempt new transmission in the operating channel until the channel change occurs.

A STA that receives an Extended Channel Switch Announcement element and EDMG Wide Bandwidth Channel Switch element may or may not choose to perform the specified switch. If a STA that receives an Extended Channel Switch Announcement element and an EDMG Wide Bandwidth Channel Switch element chooses to perform the specified switch, it shall operate on channels indicated in the EDMG Wide Bandwidth Channel Switch element. If a STA that receives an Extended Channel Switch announcement element and EDMG Wide Bandwidth Channel Switch element chooses not to perform the specified switch, it may take alternative action. For example, it may choose to move to a different BSS. A non-AP and non-PCP STA in an infrastructure BSS or PBSS shall not transmit the Extended Channel Switch Announcement element and the EDMG Wide Bandwidth Channel Switch element.

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| 1961 | 100.01 | 9.7.1 |  |  | There is a reference in Table 9-42 that EDMG PPDU is described in 10.13.6. No such a definition in the 10.13.6 exist. | Make the existent definition applicable for EDMG or/and provide relevant definition |
| 2108 | 112.16 | 10.13.7 |  |  | The use of EDMG Single MPDU is not needed. In 11ac, the VHT-Single-MPDU is defined to allow frames (like management frame that does not have Block-Ack policy) to be used within the A-MPDU framework. VHT frame format always contains A-MPDU and has no Aggregation bit. So after association, there will be management frames exchange prior to BA session is established, 11ac defined VHT-single MPDU to allow that.  11ay has such problem compared to 11ac case. | Remove the use of EDMG Single MPDU. |
| 2269 | 35.05 | 9.3.1.9.8 |  |  | For ack type '10', if the eliciting frame is an EDMG single MPDU, then Ack frame would be sufficient | remove EDMG single MPDU |

**Proposal: Revised**

Discussion:

1. The issue of MAC padding of MU PPDU that is noted “pre-EOF padding” is resolved per CID1867 in 11-18-0667-00-00ay-LB 231 Comment resolution of CID in range of 1069 – 2402). The resolution is that PHY padding of EDMG is sufficient and no MAC padding is needed.
2. EDMG PHY provides PSDU length for SU PPDU in Header A (Table 42 —EDMG-Header-A field structure and definition for a SU PPDU) and for MU PPDU in Header B (Table 46 —EDMG-Header-B field structure and definition)

CID1961 – The referred subclause 10.13.6 is the pre-EOF padding specific and is not relevant for EDMG due to (1). The reference should be removed

CID2108 – As it is mentioned by the commenter there is no need for the EDMG single MPDU. Any single MPDU may be delivered in EDMG PPDU with no need for A-MPDU subframe delimiter due to (2) and no need for MAC padding due to (1). There is no need to keep the EDMG single MPDU, so definition of the EDMG single MPDU in (10.12.7) and use of the EDMG single MPDU shall be removed as proposed by the commenter.

CID2269 – Per resolution of the CID2108, the EDMG single MPDU does not exist and the wording shall be removed.

P133L2

**TGay editor change as follows in** the *Table 9-423—MPDU delimiter fields (DMG)*

|  |  |  |
| --- | --- | --- |
| **MPDU Delimiter field** | **Size (bits)** | **Description** |
| EOF | 1 | End of frame indication.   * - Reserved in non-EDMG PPDU   - In the EDMG PPDU is set to 1 in EOF Padding Subframes and set to 0 otherwise as described in 10.12.7 Setting the EOF field of the MPDU delimiter. |
| Reserved | 2 |  |
| MPDU Length | 13 | Length of MPDU in octets |
| CRC | 8 | 8-bit CRC on preceding 16 bits |
| Delimiter Signature | 8 | Pattern that can be used to detect an MPDU delimiter when scanning for a delimiter. The unique pattern is 0x4E. |

**9.7.1 A-MPDU format**

**TGay editor change as follows in** P1531L14 (IEEE P802.11-REVmd/D1.0, February 2018)

The EOF Padding field is shown in Figure 9-874 (EOF Padding field format). This is present only in a VHT PPDU and in EDMG PPDU.

**TGay editor change as follows in** P146L13

**10.12.7 Setting the EOF field of the MPDU delimiter**

The EOF field may be set to 1 in an A-MPDU subframe carried in a VHT PPDU if the subframe’s MPDU Length field is nonzero and the subframe is the only subframe that has a nonzero MPDU Length field. The EOF field of each A-MPDU subframe with an MPDU Length field with a nonzero value that is not the only A-MPDU subframe with MPDU Length field with a nonzero value in the A-MPDU carried in a VHT PPDU shall be set to 0. The EOF field shall be set to 0 in all A-MPDU subframes that are carried in an HT PPDU.

An MPDU that is the only MPDU in an A-MPDU and that is carried in an A-MPDU subframe with 1 in the EOF field is called a *VHT single MPDU* if transmitted by a VHT STA.

In the EDMG STA the EOF padding can be used to indicate that no more MPDUs are at end of the A-MPDU in the case the PSDU length exceeds the accumulated size of A-MPDU subframes plus number of bytes used for MPDU Start spacing.

In the sequence of A-MPDU subframes transmitted in the EDMG PPDU the EOF field is set as follows:

* Shall be set to 0 in all A-MPDU subframes if the subframe’s MPDU Length field is nonzero,
* May be set to 1 in all A-MPDU subframes if the subframe’s MPDU Length field is zero and no one A-MPDU subframe with nonzero value in the subframe’s MPDU Length field is set for transmission in the A-MPDU subframes sequence after the subframe with MPDU Length field equal to zero is transmitted.

**TGay editor change as follows in** P60L5

**Table 3 —AckType subfield definition**

|  |  |  |  |
| --- | --- | --- | --- |
| **AckType subfield value** | **TID subfield value** | **Presence of Block Ack Starting Sequence Control subfield and Block Ack Bitmap subfields** | **Context of a Per TID Info subfield in a Multi-STA BlockAck frame** |
| 00 | 0-15 | Present | Block acknowledgment context:  Sent as a response to MPDUs in an A-MPDU that solicits an immediate block acknowledgement or to a BlockAckReq frame. |
| 10 | 0-15 | Not present | Acknowledgment context:  Sent as a response to an MPDU in an A-MPDU that solicits an immediate acknowledgment. |
| 11 | 0-15 | Not present | All-ack context:  Sent as a response to an A-MPDU that solicits an immediate response and all MPDUs contained in the A-MPDU are received successfully. |
| 01 | N/A | N/A | Reserved |

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| 1967 | 194.01 | 10.39 |  |  | EDMG spatial stream feedback and Fast link adaptation are limited in scope or suffer from substantial overhead. Provide solution that is optimized to resolve instant receiver needs. | Bring submission for minimal overhead link adaptation agnostic to specific PHY and antenna configuration. |

**Proposal: Revised**

Discussion:

Fast link adaptation (10.40.3) uses a DMG Link Margin element to convey relevant link information. Extension of the DMG Link Margin element (9.4.2.142) presented in 11-18-0786-03-00ay-draft-text-for-protocol-and-frames-for-tdd-link-maintenance resolves the comment.

No additional changes are needed.

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| **2287** | **131.10** | **10.28.1** |  |  | **In baseline 10.28.3 "An RD initiator shall not transmit a +HTC or DMG frame with the RDG/More PPDU subfield set to 1 that requires a response MPDU that is not one of the following frames:  -- Ack  -- Compressed BlockAck"    Need to add new BA types for EDMG** | **add 10.28.3 Rules for RD initiator  change the sentence to  "An RD initiator shall not transmit a +HTC or DMG frame with the RDG/More PPDU subfield set to 1 that requires a response MPDU that is not one of the following frames:  -- Ack  -- Compressed BlockAck  -- EDMG Compressed BlockAck  -- EDMG Multi-TID BlockAck"** |

**Proposal: Accept**

**TGay editor implement and in the Proposed Change.**

**References:**

1. IEEE P802.11ay/D1.2, April 2018
2. IEEE P802.11-REVmd/D1.0, February 2018