IEEE P802.11
Wireless LANs

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| LB324-Comment Resolutions |
| Date: 2019-01-14 |
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Abstract

This submission proposes resolutions to the following 6 CIDs. These CIDs include:

3739 3669 3359 3510 3261 3262

The CIDs are in reference to Draft IEEE 802.11ay/D2.0, the proposed resolutions are in reference to Draft IEEE 802.11ay/D2.2 and IEEE 802.11REVmd\_D2.0.

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| CID | Clause | Comment | Proposed change |
| 3739 | 10.24.2.13 P187 L6 | a) Transmit a 8.64 GHz mask PPDU if...b) Transmit a 4.32+4.32 GHz mask PPDU if...c) Transmit a 6.48 GHz mask PPDU if...d) Transmit a 4.32 GHz mask PPDU if...e) Transmit a 2.16+2.16 GHz mask PPDU if...The N GHz mask PPDUs are not defined. Please add the definitions in the clause 3.2. | As in comment. |

**Discussion:**

1. We need to add the definitions for “mask PHY PPDU”.

**Proposed resolution:** Revised

*Change the definition of 2.16 GHz PHY PPDU as follows:*

**2.16 GHz physical layer (PHY) protocol data unit (PPDU)**: A Clause 20 directional multi gigabit (DMG) PPDU, or a ~~A~~ Clause 29 2.16 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a Clause 29 2.16 GHz non-enhanced directional multi gigabit (non-EDMG) PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

*Insert the following new definitions:*

**2.16 GHz mask physical layer (PHY) protocol data unit (PPDU)**: One of the following PPDUs:

a) A directional multi gigabit (DMG) PPDU transmitted using the 2.16 GHz transmit spectral mask defined in Clause 20.

b) A 2.16 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG) transmitted using the 2.16 GHz transmit spectral mask defined in Clause 29.

**4.32 GHz mask physical layer (PHY) protocol data unit (PPDU)**: A PPDU that is transmitted using the 4.32 GHz transmit spectral mask defined in Clause 29 and that is one of the following:

a) A 4.32 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 4.32 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

b) A 2.16 GHz EDMG PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

**6.48 GHz mask physical layer (PHY) protocol data unit (PPDU)**: A PPDU that is transmitted using the 6.48 GHz transmit spectral mask defined in Clause 29 and that is one of the following:

a) A 6.48 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 6.48 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

b) A 4.32 GHz EDMG PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 4.32 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

c) A 2.16 GHz EDMG PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

**8.64 GHz mask physical layer (PHY) protocol data unit (PPDU)**: A PPDU that is transmitted using the 8.64 GHz transmit spectral mask defined in Clause 29 and that is one of the following:

a) A 8.64 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 8.64 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

b) A 6.48 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 6.48 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

c) A 4.32 GHz EDMG PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 4.32 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

d) A 2.16 GHz EDMG PPDU (TXVECTOR parameter FORMAT equal to EDMG) or a 2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

**2.16+2.16 GHz mask physical layer (PHY) protocol data unit (PPDU)**: A PPDU that is transmitted using the 2.16+2.16 GHz transmit spectral mask defined in Clause 29 and that is one of the following:

a) A 2.16+2.16 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG).

b) A 2.16+2.16 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

**4.32+4.32 GHz mask physical layer (PHY) protocol data unit (PPDU)**: A PPDU that is transmitted using the 4.32+4.32 GHz transmit spectral mask defined in Clause 29 and that is one of the following:

a) A 4.32+4.32 GHz enhanced directional multi gigabit (EDMG) PPDU (TXVECTOR parameter FORMAT equal to EDMG).

b) A 4.32+4.32 GHz non-EDMG PPDU (TXVECTOR parameter FORMAT equal to NON\_EDMG).

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| CID | Clause | Comment | Proposed change |
| 3669 | 9.3.1.8.7P70 L5 | Where is the "EDMG Compressed BlockAck frame" defined?  It took me quite some time to work out that this is a BlockAck frame with the EDMG Compressed variant. I think the terminology in the text is very confusing, as it's not possible to find the definition of a "EDMG Compressed BlockAck frame". | Change "EDMG Compressed BlockAck frame" to "BlockAck frame EDMG Compressed variant".  Incidentally, I realise that this would result in similar changes to Draft P802.11REVmd\_D1.2.pdf.  Talking of which, there's an error in Draft P802.11REVmd\_D1.2.pdf, Page 802, Line 60 (Clause 9.3.1.8.4), as the text should refer to "Extended Compressed BlockAck frame", or as I would prefer it "BlockAck frame Extended Compressed variant". |

**Discussion:**

1. It is better to change the name to “EDMG Compressed BlockAck frame variant”.

**Proposed resolution:** Revised

*Change the first paragraph in 9.3.1.8.7 as follows:*

The TID\_INFO subfield of the BA Control field of the EDMG Compressed BlockAck frame variant contains the TID for which a BlockAck frame is requested.

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| CID | Clause | Comment | Proposed change |
| 3359 | 10.71P305 L28 | There is no description if distributed scheduling runs based on the assumption that neighboring BSSs maintain their own local TSFs without time sync coordination. CID1796 pointed out the problem in the previous ballot. Resolution to the CID1796 reads "The AP/PCP estimates the timing of its neighbors' allocations based on when it received its neighbors' ESEs" in 11-18/905r0. However, coordinating multiple AP's SPs without having clock drift compensation is extremely difficult, as the orthogonal channel time among APs will be moving all the way due to clock drift. The spec should define practical use of the distributed scheduling protocol. For your information, MCCA defined for mesh STA has similar characteristic. We may be able to reuse some portion of the feature for distributed scheduling protocol. | Please specify how we cope with clock drift for distributed scheduling protocol. |

**Discussion:**

As noted in the answer regarding time sync in the previous ballot, APs do not need to synch in order for this protocol to work.  In the Extended Schedule element, the transmission time of SPs are given *relative* to the beacon time.  Thus, when an AP hears a beacon from a neighbor and parses the Extended Schedule element, it can determine when the SPs will be transmitted relative to the time it received the neighbor’s beacon.  Analysis and simulation show that any clock drift that happens between the time the beacon arrives and when the SPs are transmitted is small enough that any potential misalignment does not cause packet loss.

**Proposed resolution:** Rejectd

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| CID | Clause | Comment | Proposed change |
| 3510 | 10.71.3P306 L3 | The distributed scheduling protocol parse the Extended Scheduling element and the EDMG extended Scheduling element contained in the DMG beacon to determine upcoming transmission schedules. This scheduling information lacks directional information to identify which direction this allocation is occupying. | Please consider adding direction information to the EDMG extended schedule information to identify the direction of transmission of each allocation |

**Discussion:**

In EDMG Extended Schedule element, there is already a “Receive Direction” subfield within each Channel Allocation field when Scheduling Type is 1 (Figure 64 in D2.1). If the allocation is a directional allocation, this field will indicate the information about the direction (see 10.40.11.3). As a result, there is no need to add additional fields since the directional information mentioned in this CID already exists in EDMG Extended Schedule element.

**Proposed resolution:** Rejectd

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| CID | Clause | Comment | Proposed change |
| 3261 | 10.40.11.2.1 | "This allows the peer EDMG STA to Choose to operate over multiple channels only after receiving such a frame and noting the value of the Allocation Duration field, thus saving power". This statement implies the use of a Grant frame is mandatory and that is not true. | Suggest removing this text since it does not appear to be either normative nor correct. |

**Discussion:**

Changes to text made to reflect the fact that the feature described is optional and thus may not always be used by a STA.

**Proposed resolution:** Revised

*Modify the 3rd paragraph of Section 10.40.11.2.1 as follows:*

An EDMG STA may transmit a Grant frame to a peer EDMG STA to indicate intent to transmit an EDMG PPDU to the peer STA over a 4.32 GHz, 2.16+2.16 GHz, 6.48 GHz, 4.32+4.32 GHz, or 8.64 GHz channel at the time indicated by the value of the Allocation Duration subfield within the Grant frame as described in 9.5.2 Dynamic Allocation Info field. When a peer EDMG STA receives the Grant frame it may:

---Limit its receiver bandwidth to 2.16 GHz until the time indicated in ~~Choose to operate over multiple channels only after receiving such a frame and noting the value of~~ the Allocation Duration sub-field, thus saving power; or

---Configure its receive DMG antenna(s) to a directional antenna pattern only at the time indicated in ~~after~~ ~~receiving such a frame and noting the value of the~~ Allocation Duration subfield~~., thus increasing coverage.,~~ allowing it to employ a quasi-omni antenna pattern beforehand. This would allow the peer EDMG STA to receive from a wider coverage area.

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| CID | Clause | Comment | Proposed change |
| 3262 | 10.40.11.2.1 | "An EDMG AP or EDMG PCP may use the EDMG Extended Schedule element to allocate an SP or a CBAP over channels with different bandwidths. When allocations over different channels overlap in time, 23 the source AID and destination AID of such allocations shall be different from each other." | The phrasing here is awkward which makes it difficult to understand what is specified by this paragraph. For example, a source AID is always different from a destination AID. I think the text is referring to simultaneous SPs and so, I think you want to say that "both the source AID and the destination AID from one allocation shall be different than both the source AID and destination AID from a simultaneous allocation> |

**Proposed resolution:** Revised

*Modify the 3rd paragraph of Section 10.40.11.2.1 as follows:*

An EDMG AP or EDMG PCP may use the EDMG Extended Schedule element to allocate an SP or a CBAP over channels with different bandwidths. For partially or fully simultaneous ~~When~~ allocations ~~over different channels overlap in time~~, both the source AID and the destination AID of each ~~such~~ allocation~~s~~ shall be different from ~~each other~~ both the source AID and destination AID of every other over-lapping allocation. Channels used for such allocations shall be included in the EDMG Operation element transmitted by the AP or PCP. An allocation and channel access within the allocation follow the following rules:

**Straw Poll:**

* **Do you agree to accept comment resolutions as proposed in doc 11-19/0060r0?**