IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment Resolution for EDMG Channel Access CIDs part2 |
| Date: 2018-07-10 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| SungJin Park | LG Electronics | Yangjae-daero 11gil, Seocho-gu, Seoul, 137-893, Korea |  | allean.park@lge.com |
| JinMin Kim | LG Electronics |  |  | jinmin1230.kim@lge.com |
| Saehee Bang | LG Electronics |  |  | saehee.bang@lge.com |
| SunWoong Yun | LG Electronics |  |  | sunwoong.yun@lge.com |
| Jinsoo Choi | LG Electronics |  |  | js.choi@lge.com |
| Sanggook Kim | LG Electronics | San Diego/California/US |  | sanggook.kim@lge.com |

Abstract

This document proposes resolutions for EDMG channel access CIDs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1224 | 132.24 | 10.36.1 | "SP can span the primary and the secondary channel" -- this statement is intended to be definitive, so the verb is wrong | can -> may |

**Proposed resolution:** accept

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1226 | 138.29 | 10.36.11.2.2 | "An EDMG STA shall maintain physical and virtual CS on a primary channel." -- This normative statement is insufficient because it does not define or reference what is meant. | Add references to subclauses that define physical and virtual CS. Or, if this adds nothing that isn't stated below, turn it into an intoductory declaritive statement. |

**Proposed resolution:** revised

**Discussion**

Physical and virtual CS is defined in 10.3.2.1 (CS mechanism) in REVmd\_D1.0.

**Modification**

*TGay Editor: Modify the paragraph (lines 29) of page 138 as follows*

An EDMG STA shall maintain physical and virtual CS on a primary channel as specified in 10.3.2.1 (CS mechanism).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1227 | 139.13 | 10.36.11.3 | "Channel access during a directional allocation shall follow the same rules that are applicable to a CBAP if the directional allocation is of type CBAP and shall follow the same rules that are applicable to an SP if the directional allocation is of type SP" -- this is lazy and inadequate specification. "Is applicable" has the sense of "you go figure". | Insert references to the "applicable" subclauses defining this behaviour. |

**Proposed resolution:** revised

**Modification**

*TGay Editor: Modify the paragraph (lines 13-15) of page 139 as follows*

Channel access during a directional allocation shall follow the same rules that are applicable to a CBAP defined in 10.36.6.3 (Contention based access period (CBAP) allocation) if the directional allocation is of type CBAP and shall follow the same rules that are applicable to an SP defined in 10.36.6.2 (Service period (SP) allocation) if the directional allocation is of type SP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1370 | 137.26 | 10.36.11.2.1 | "The occupied bandwidth of all BRP frames transmitted during beam refinement shall be the same." - "beam refinement: is not well defined | replace "during beam refinemnet" with "during a beam refinement transacation or a BRP TXSS procedure. |

**Proposed resolution:** revised

**Discussion**

This comment was already resolved by removing this sentence in D1.3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1480 | 144.14 | 10.36.11.6 | It would be helpful to have a reference for asymmetric beamforming. | Reference the section that describes how asymmetric beamforming would be used. |

**Proposed resolution:** revised

**Modification**

*TGay Editor: Modify the paragraph (lines 11-16) of page 144 as follows*

A non-PCP and non-AP EDMG STA may estimate whether its signal can be successfully received by an EDMG PCP or AP which is listening in quasi-omnidirectional mode, i.e., to classify itself as a “Near” or a “Far” STA to the PCP or AP. This allows the EDMG STA to decide whether to access the A-BFT (if it is classified as “Near”) or to use asymmetric beamforming (if it classified as “Far”) defined in 10.38.9.3 (Beamforming for asymmetric links). To enable this, the PCP or AP informs EDMG STAs about its link-budget parameters combined in one value, the PCP/AP Coverage Parameter, which is transmitted in SSW field of the DMG Beacon frame.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1635 | 263.03 | 30.3.5 | the TX mask for contiguous channel aggregation is unclear. What kind of TX mask is used for channel aggregation? | The clarification is needed. |

**Proposed resolution:** revised

**Discussion**

The transmit spectral mask for the 4.32 and 8.64 GHz mask PPDU can be used for the spectral mask for the contiguous channel aggregation. The context is needed to cover it.

**Modification**

*TGay Editor: Modify the paragraph (lines 11-16) of page 377 as follows*

For a 4.32 GHz and mask PPDU and 2.16+2.16 GHz contiguous channel aggregation mask PPDU of EDMG format, the transmit spectral mask shall have a 0 dBr bandwidth of 12 4.04 GHz, –17 dBr at 2.40 GHz frequency offset, –22 dBr at 5.40 GHz frequency offset, and –30 dBr at 6.12 GHz frequency offset and above. The transmit spectral mask for frequency offsets in between 2.02 and 2.40 GHz, 2.40 and 5.40 GHz, and 5.40 and 6.12 GHz shall be linearly interpolated in decibels from the requirements for 2.02 GHz, 2.40 GHz, 5.40 GHz, and 6.12 GHz frequency offsets. Figure 155 shows an example of the resulting overall spectral mask.

*TGay Editor: Modify the paragraph (lines 12-17) of page 378 as follows*

For an 8.64 GHz mask PPDU and 4.32+4.32 GHz contiguous channel aggregation mask PPDU of EDMG format, the transmit spectral mask shall have a 0 dBr bandwidth of 8.36 GHz, –17 dBr at 4.80 GHz frequency offset, –22 dBr at 10.80 GHz frequency offset, and –30 dBr at 12.24 GHz frequency offset and above. The transmit spectral mask for frequency offsets in between 4.18 and 4.80 GHz, 4.80 and 10.80 GHz, and 10.80 and 12.24 GHz shall be linearly interpolated in decibels from the requirements for 4.18 GHz, 4.80 GHz, 10.80 GHz, and 12.24 GHz frequency offsets. Figure 157 shows an example of the resulting overall spectral mask.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1652 | 138.10 | 10.36.11.2.1 | Any reason not to have the flexibility to have SP allocation on two 2.16GHz? | Please clarify |

**Proposed resolution:** reject

**Discussion**

Allowing an SP to be allocated to two 2.16GHz channels without the primary channel makes the DMG Protected Period inapplicable due to no rules exist to support CBAP access to two 2.16GHz channels that no one is the primary channel.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1868 | 137.30 | 10.36.11.2.1 | The channel access rules are explicit to EDMG STA. A reference to a peer STA is made. Needs to be EDMG STA | Change "peer STA" to "peer EDMG STA" |

**Proposed resolution:** accept

**Discussion**

The Supported Channels field in EDMG Capabilities element can be contained only by EDMG STA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 1950 | 103.02 | 10 | There is no definition of protection mechanisms to protect non-EDMG receivers like 10.26.2 Protection mechanism for non-ERP receivers. The protection mechanism and conditions when to activate it should be provided | Provide sub clause 10.26.xyz Protection mechanism for non-EDMG receivers. The intent of a protection mechanism is to cause a STA not to transmit a non-EDMG PPDU unless it has attempted to update the NAV of receiving non-EDMG STAs. One specific case of transmission of PPDU in non-EDMG control mode shall be covered as well. |

**Proposed resolution:** revised

**Discussion**

The definition of protection mechanism needs to be defined.

**Modification**

*TGay Editor: add the subclause 10.27.6 (Protection mechanism for EDMG transmissions) in subclause 10.27 (protection mechanisms) as follows*

**10.27.6 Protection mechanism for EDMG transmissions**

The intent of a protection mechanism is to cause a STA not to transmit an EDMG PPDU unless it has attempted to update the NAV of receiving non-EDMG STAs. The updated NAV period shall be longer than or equal to the total time required to send the Data and any required response frames. An EDMG STA shall use protection if a TXOP is obtained using the contention based channel access and may use protection at service period (SP) access. The protection mechanism may not be used if all PPDUs in the obtained TXOP are transmitted by MCS0.

Protection mechanisms frames shall be sent using DMG MCS0 defined in Clause 20 (Directional multi-gigabit (DMG) PHY specification) or non-EDMG duplicate control mode MCS0 defined in Clause 29 (Enhanced directional multi-gigabit (EDMG) PHY specification), so all STAs in the BSA are able to learn the duration of the exchange even if they cannot detect the EDMG signals using their CCA function.

RTS, DMG CTS, DMG CTS-to-self, DMG DTS or CF-End frames is used as the protection mechanism according to the procedures defined in 10.3.2.4 (Setting and resetting the NAV), 10.3.2.9 (CTS and DMG CTS procedure), and 10.3.2.17 (EDMG RTS procedure). The rules for calculating duration fields of RTS/DMG CTS are unchanged when using RTS/DMG CTS as a protection mechanism.

Control frames that are not RTS, DMG CTS, DMG DTS or CF-End frames are sent in response to a frame according to the rules defined in 10.6.7.2 (Rate selection rules for Control frames transmitted by DMG STA) and 10.6.7.6 (Channel Width selection for Control frames transmitted by EDMG STAs).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 2185 | 145.18 | 10.36.11.5 | The text describes access to the A-BFT or the DTI. DTI is not shown in Figure 93. Update the figure or remove DTI from text. | Fix as commented. |

**Proposed resolution:** reject

**Discussion**

According to the figure 93 (Example behavior for “Near-Far” self-classification), the box with “Access” means the channel access for DTI.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 2223 | 137.21 | 10.36.11.2.1 | "In this case, the PPDU that reduces the occupied bandwidth shall not be a non-EDMG PPDU for which the RXVECTOR of the PPDU indicates the estimated channel bandwidth but no other indication of the occupied channel bandwidth of non-EDMG PPDU is indicated." Doesn't a BW field in a control trailer in a non-EDMG control mode PPDU indicate the occupied channel bandwidth? Remove this sentence, otherwise need additional explanation. | As in comment. |

**Proposed resolution:** revised

**Discussion**

This comment was already revised by removing this sentence in D1.3.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 2263 | 113.09 | 10.22 | There are 'VHT MU PPDU' in clauses 10.22.2.3 and 10.22.2.6 which may need to be updated with EDMG MU PPDU | Add EDMG MU PPDU in those clauses |

**Proposed resolution:** accept

**Discussion**

The sharing an EDCA TXOP is used by an AP that supports DL-MU-MIMO and it is one of the mode of EDCA TXOP defined in REVmd1.0. As a commenter mentioned, The EDMG MU PPDU shall be added into those subclauses because DL-MU-MIMO is also supported by EDMG.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 2290 | 138.25 | 10.36.11.2.1 | Allocation for asymmetric BF and directional reception shall also uses scheduling type 1 | add asymmteric beam forming and directional allocation to this sentence |

**Proposed resolution:** reject

**Discussion**

This paragraph is about channel access over multiple channels and describes that the Scheduling Type subfield shall be set to 1 when an allocation does not include the primary channel. Therefore, an allocation for asymmetric BF and directional reception do not need to be added in this paragraph.

**SP/M:** Do you accept the resolutions of CIDs 1224, 1226, 1227, 1370, 1480, 1635, 1652, 1868, 1950, 2185, 2223, 2263, and 2290?