IEEE P802.11
Wireless LANs

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| Proposed resolutions to CID 901, 926-931 |
| Date: 2017-07-11 |
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Abstract

This submission proposes resolutions to several CIDs submitted on the 11aj D6.0.

The discussion is in reference to Draft IEEE P802.11aj D6.0.

**Revision History**

R0: Initial version.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 901 |  |  |  | G | 10.37a.4 Cluster report and reschedulingRegardless of whether an AP or PCP cluster starts on a 2.16 GHz channel or a 1.08 GHz channel, the cluster report and rescheduling follow the rules defined in 10.37.4 (Clus*t*er report and re-scheduling). | One example representative example where the intent of the statement is unclear (will, may, shall ?)."rescheduling follow the rules ..."may follow, will follow, shall follow ?There are a number of examples where the intent is unclear. |

**Discussion:** Need to use “may”, “should” or “shall” to make the statement clear. Because the commenter mentions that “There are a number of examples where the intent is unclear.”, we use the keywords “follow” and “follows” to identify all the cases require such a modification.

**Proposed resolution: Revised**

***Change the title of* 10.37a.4 *as follows***

**10.37a.4 Cluster report and re-scheduling**

***Change the first paragraph in* 10.37a.4 *as follows***

Regardless of whether an AP or PCP cluster starts on a 2.16 GHz channel or a 1.08 GHz channel, a CDMG STA shall follow the rules defined in 10.37.4 (Cluster report and re-scheduling) for the cluster report and re-scheduling.

**10.37a.5 Decentralized AP or PCP cluster request**

***Change the first paragraph in* 10.37a.5 *as follows***

Regardless of whether a BSS starts on a 2.16 GHz channel or a 1.08 GHz channel, a CDMG STA shall follow the rules defined in 10.37.4 (Cluster report and re-scheduling) for the cluster request.

**10.31a CMMG beamforming**

***Change the first bullet in 10.31a as follows:***

— Directional beamforming (BF) that does not use an omnidirectional antenna pattern or quasi-omni antenna pattern is a mechanism that is used by a pair of STAs to achieve the necessary link budget for subsequent communication. Directional BF training is a bidirectional sequence of BF frame transmissions that uses sector sweep and provides the necessary signaling to allow each STA to determine appropriate antenna system settings for both transmission and reception. CMMG STAs shall follow the same beamforming training rules defined in 10.38 (DMG beamforming). BF frame transmitted by a CMMG STA is contained in CMMG PPDU.

**10.37a CDMG AP or PCP clustering**

**10.37a.1 General**

***Change the third paragraph in 10.37a.1 as follows:***

A clustering enabled AP or PCP that is operating on a 1.08 GHz channel and transmitting DMG Beacon frames with the DBC Option subfield of the Dynamic Bandwidth Control element is 0 (10.64.2.2 (CDMG BSS operating on a 1.08 GHz channel)) is able to start an AP or PCP cluster on a 1.08 GHz channel, which shall follow the rules defined in 10.37 (DMG and CMMG AP or PCP clustering) and in this subclause.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 926 | 10.37a.6 | 128 | 2 | T | How to obtain the "SP allocation information" is not clear. | Add "The SP allocation information is obtained by receiving the Extended Schedule element in the DMG Beacon frame of other AP or PCP in the cluster." at the end of this paragraph. |

**Discussion:** Accept the commenter’s suggestion. Only text is improved compared to the commenter’s “Proposed Change”.

**Proposed resolution**: **Revised**

**10.37a.6 Spatial sharing in a CDMG AP or PCP cluster**

***Change the first paragraph on page 128* *as follows***

In the SP spatial sharing phase, each AP or PCP in the cluster should schedule SPs to achieve spatial sharing according to the received SP allocation information that indicates scheduled SP allocation for link(s) of other BSSs in the same AP or PCP cluster and according to the interference information from link(s) of other BSS to its BSS and the interference information from link(s) of its BSS to link(s) of other BSS(s) obtained in SPSH measurement phase. The SP allocation information is obtained by receiving the Extended Schedule element in the DMG Beacon frame of other AP(s) or PCP(s) in the AP or PCP cluster.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 927 | 10.38.9 | 135 | 37 | T | It is not clear how to "specifies the alternative TX AWV", because AWV indication may be a TRN index. | Add the rule for how to indicate the AWV. |

**Discussion:** According to the comment, we need to make the statement of alternative TX AWV clear. For BRP phase, we should use the “index of the TRN-T field that was received with the second best quality in the last received SSW frame or BRP-TX PPDU” to specifiy the alternative TX AWV.

**Proposed resolution: Revised**

**10.38.9 CDMG enhanced beam tracking**

***Change the third paragraph in 10.38.9 as follows***

The initial alternative link of the peer STA under enhanced beam tracking is configured in the BRP phase.

Specifically, in the first BRP phase after the SLS, the initiator STA returns the sector and antenna IDs of the alternative link to the responder STA, via transmitting the SSW Report element or the Enhanced Beam Tracking element in the BRP frame(s). The responder STA shall specify the alternative TX AWV according to the received Report Info field in the SSW Report element or the Peer TX Antenna Parameter field in the Enhanced Beam Tracking element. For the BRP phase, the index of the TRN-T field that was received with the second best quality in the last received BRP-TX PPDU is included in the Enhanced Beam Tracking element to specify the alternative TX AWV. The alternative link is not used for the current data transmission.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 928 | 10.37a.6 | 127 | 37 | T | "estimate" is ambiguous, it should be changed to "determine". | Change "estimate" to "determine". |

**Proposed resolution: Accepted**

**10.37a.6 Spatial sharing in a CDMG AP or PCP cluster**

***Change the fifth paragraph in* 10.37a.6 *as follows***

A CDMG S-AP or S-PCP that supports SPSH among BSSs should indicate whether all the member APs or member PCPs in a cluster in the SPSH measurement phase or the SP spatial sharing phase by setting the SPSH Measurement Enabled subfield in the Clustering Control field of the DMG Beacon frame to 1 or by setting the Clustering SPSH Enabled field within the Clustering Interference Assessment element to 1. The SPSH Measurement field is set to 1 to indicate that SPSH measurement phase starts. Each member AP or member PCP that supports SPSH among BSSs should request STAs in its BSS to perform directional channel quality measurement during SPs of other BSSs in the same cluster, as described in 11.11 (Radio measurement procedure). The CDMG AP or PCP should send directional channel quality request to STAs in the same BSS and receive directional channel quality report from the STAs. The period of the directional channel quality measurement is indicated by the Channel Quality Measurement Duration subfield within the Clustering Interference Assessment element. The AP or PCP can obtain the interference information that indicates link(s) in its BSS experience interference from at least one link of other BSS within the AP or PCP cluster through channel measurement of STAs. The AP or PCP can determine the channel quality across STAs within multiple BSSs and implement spatial sharing based on the results of the measurements performed by the STAs associated with the AP or PCP. The S-AP or S-PCP should periodically set the SPSH Measurement Enabled subfield, generating and sending the indicated information of interference measurement.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 929 | 10.36.11 | 115 | 45 | E | There is no "EDMG Extended Schedule element in 11aj Draft", typo in "EDMG". | Change "EDMG" to "CDMG" |

**Proposed resolution: Accepted**

**10.36.11 Opportunistic transmission in alternative channel for CDMG STAs**

***Change the "EDMG Extended Schedule element” in P115L45 to "CDMG Extended Schedule element”***

If the NoPrimaryChannel subfield in the BF Control field is equal to 1 and the Beamforming Training field is equal to 1 in the SPR frame, the CDMG AP or PCP can allocate SPs on an alternative channel using the CDMG Extended Schedule element included in a DMG Beacon frame or an Announce frame for the initiator and the responder. If the CDMG AP or PCP receives SPR frames from multiple pairs of initiators and responders, the CDMG AP or PCP may allocate time overlapping SPs on designated channels with different channel numbers for different pairs of STAs to perform an SLS.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 930 | 10.36.11 | 115 | 42 | T | The rule for the case of the NoPrimaryChannel subfield set to 0 is not defined. | Add the rule for the case of the NoPrimaryChannel subfield set to 0 |

**Proposed resolution: Accepted**

**10.36.11 Opportunistic transmission in alternative channel for CDMG STAs**

***Change the last paragraph in 10.36.11as follows***

A CDMG STA may reuse the transmit sector indicated by the Sector Select field obtained from the operating channel which is the primary channel on an alternative channel with the same channel width, and vice-versa. If an SPR frame with the Beamforming Training field equal to 1 is received from a CDMG STA, the CDMG AP or PCP may configure a channel for the initiator and the responder designated by the initiator to perform BF training according to the AllocationType field in the SPR frame. The SPR frame contains channel allocation request in the AllocationType field and BF Control field for the pair of BF initiator and responder. If the NoPrimaryChannel subfield in the BF Control field is equal to 1 and the Beamforming Training field is equal to 1 in the SPR frame, the CDMG AP or PCP can allocate SPs on an alternative channel using the EDMG Extended Schedule element included in a DMG Beacon frame or an Announce frame for the initiator and the responder; otherwise, the CDMG AP or PCP should allocate SPs on the current operating channel. If the CDMG AP or PCP receives SPR frames from multiple pairs of initiators and responders, the CDMG AP or PCP may allocate time overlapping SPs on designated channels with different channel numbers for different pairs of STAs to perform an SLS.

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| CID | Clause | Page | Line | Type | Comment | Proposed Change |
| 931 | 9.4.2.224 | 48 | 24 | T | It is not clear what is the meaning when the "NoPrimaryChannel subfield" is transmitted by an AP or PCP. | Add "This subfield is reserved when it is transmitted by an AP or PCP" at the end of this paragraph. |

**Proposed resolution: Accepted**

***Change the second paragraph after “Figure 9-589j—BF Control field format in all other cases” as follows***

The NoPrimaryChannel subfield is set to 1 to indicate the CDMG initiator does not need to perform SLS on the primary channel. It is set to 0 to indicate that the CDMG initiator needs to perform SLS on the primary channel. This subfield is reserved when it is transmitted by an AP or PCP.

**References:**

1. Draft P802.11aj\_D6.0