IEEE P802.11
Wireless LANs

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| Resolution to 11ay related CIDs |
| Date: 2017-09-20 |
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Abstract

This submission proposes a resolution to several CIDs submitted on the 11ay draft text. These CIDs are: 110, 143, 385, and 514.

The discussion is in reference to Draft IEEE P802.11ay/D0.5.

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| CID | Clause | Comment | Proposed change |
| 110 | 10.36.11.3 | What if the value of the Section ID and DMG Antenna ID subfields identified in the allocation do not correspond to a sector and DMG antenna reported by the STA? What is the expected behavior? | Please clarify |

**Discussion**:

If the value of the Sector and DMG Antenna ID subfields identified in a directional allocation do not correspond to a sector and DMG antenna reported by the STA, the chances that the STA is able to talk with the AP or PCP is very low. Moreover, allowing these STAs to access a directional allocation that does not correspond to a sector and DMG antenna reported by them may lead to more collisions and interfere with those STAs whose reported sector and DMG antenna correspond to the directional allocation. Considering these, this behaviour should be prohibited.

**Proposed resolution:** Revised.

*Change the second paragraph in 10.36.11.3 as follows:*

The Sector ID and DMG Antenna ID subfields of a directional allocation shall be set to the sector and DMG antenna, respectively, that the PCP or AP uses to receive frames during the entire allocation. If the Destination AID field of the allocation is not the broadcast AID, the Sector ID and DMG Antenna ID subfields of the allocation shall be set to indicate the sector and DMG antenna that are to be used during the allocation for communication with the STA identified by the Destination AID field. Otherwise if the Destination AID field of the allocation is the broadcast AID, the PCP or AP may choose any antenna configuration for communication during the allocation and shall indicate the configuration through the Sector ID and DMG Antenna ID subfields. A non-PCP and non-AP EDMG STA receiving such allocation shall stay awake during the allocation if the value of the Sector ID and DMG Antenna ID subfields identified in the allocation correspond to a sector and DMG antenna reported by the STA to the PCP or AP in the last beamforming feedback to the PCP or AP, respectively. If the value of the Sector ID and DMG Antenna ID subfields identified in the allocation do not correspond to a sector and DMG antenna reported by the STA to the PCP or AP in the last beamforming feedback, the non-PCP and non-AP EDMG STA shall not access the directional allocation.

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| CID | Clause | Comment | Proposed change |
| 143 | 10.38.9.2.4 | Need to specify how groups in the EDMG Group ID Set element are maintained. What are the rules that ensure STAs have the same view and remain updated? | As noted |

**Discussion:**

1. In the September IEEE meeting, the contribution “11-17-1184-02-00ay-mu-mimo-bf-selection” passed the motion. In that proposal, after MU-MIMO beamforming is done, the AP or PCP will transmit a -MIMO BF Selection frame to all STAs in the MU group and it includes several MU-MIMO transmission configurations, each of which is associated with a subset of the STAs in the MU group corresponding to a specific MU-MIMO transition pattern.
2. If the AP or PCP needs to change the MU group corresponding to an existing EDMG Group ID, the AP or PCP can update the EDMG Group ID in Beacon frame, but some STAs may miss the Beacon frame and therefore lose track of the update. As a result, it is better that the AP or PCP sends an announce frame to each of the STAs that will be affected by such change.

**Proposed resolution:** Revised

*Change the 3rd paragraph in 10.38.9.2.4.1 as follows:*

The execution of the MU-MIMO beamforming protocol uses the EDMG Group ID Set element transmitted by the AP or PCP of the BSS. The AP or PCP shall transmit an EDMG Group ID Set element prior to performing MU-MIMO beamforming protocol. The EDMG Group ID Set element shall include all existent groups in a BSS. A MU-MIMO capable EDMG STA shall store the groups in the last received EDMG Group ID Set element transmitted by the AP or PCP. If an AP or PCP needs to change the STAs in an MU group associated with an existing EDMG group ID, it shall send an announce frame to each of the STAs that will be affected by the change to notify the update.

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| CID | Clause | Comment | Proposed change |
| 385 | 10.36.11.4 | How does a STA know it is an intended receiver of a CTS-to -self? | add AIDs in control trailer of CTS to self or RTS if SU/MU MIMO bit in control trailer indicates MU |

**Discussion:**

In the September IEEE meeting, the contribution “11-17-1184-02-00ay-mu-mimo-bf-selection” passed the motion. In that proposal, EDMG Group ID is included in the contrail trailer when CT\_TYPE is GRANT\_RTS\_CTS2self. As a result, STAs in the MU group will know they are intended receivers of a CTS-to-self.

**Proposed resolution:** Rejected.

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| CID | Clause | Comment | Proposed change |
| 514 | 10.38.9.3.3 | It is not clear what to do when a collision happens | Add "A STA that did not receive feedback from the AP or PCP in terms of a Sector ACK shall continue asymmetric beamforming training during next scheduled beamforming training allocation." |

**Discussion:**

This should not be a “shall” requirement. In 11ad, if a STA does not receive a SSW Feedback frame in A-BFT, the STA may contend for further slots during the A-BFT n the same or a following BI. We can apply the same rules here in asymmetric beamforming.

**Proposed resolution:** Revised

*Add the following bullet at the end of the last bullet of the 1st paragraph in 10.38.9.3.3*

*---*A STA that does not receive a Sector ACK frame from the AP or PCP may continue asymmetric beamforming training during next scheduled beamforming training allocation.

**Straw Poll:**

* **Do you agree to accept comment resolutions as proposed in doc 11-17/1532r0?**