IEEE P802.11  
Wireless LANs

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| Resolution of Analog Beam Tracking-related CIDs II | | | | |
| Date: 2018-03-01 | | | | |
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Abstract

This submission proposes resolutions to analog beam tracking-related CIDs. The text used as reference is D1.0.

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1242 |  | 160.07 | "SU or MU MIMO scenarios " -- exactly what is a scenario? It's use here is a bit like my elder aunt who uses the word "thing" when she can't remember the right word. | Define what "scenario" means, or replace it with something like "transmissions", "frame exchange sequences", "PPDUs". |

**Proposed resolution**: Revised

**Modification:** Modify lines 7 and 8 of page 160 as follows:

*Baseband beam tracking ~~in SU or MU MIMO scenarios tracks~~ may be used to track changes in the baseband beamformer only for SU and MU MIMO transmissions that employ ~~in a~~ hybrid beamforming ~~transmission~~.*

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| 2103 | 30.9.2.1 | 383.07 | Unclear how to set the PHY bits for BRP-RX, BRP-TX, BRP-RX/TX | Description is incomplete and should contain references to 10.38.7. The text should be something similar to:  "A value of 0 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value of 0 or 1 in the EDMG Beam Tracking Request field, and a value of 0 in the RX TRN-Units per Each TX TRN-Unit field indicate an EDMG BRP-RX packet. A value of 1 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value of 1 in the EDMG Beam Tracking Request field, and a value of 0 in the RX TRN-Units per Each TX TRN-Unit field indicate an EDMG BRP-TX packet. A value of 1 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value of 1 in the EDMG Beam Tracking Request field, and a value greater than 0 in the RX TRN-Units per Each TX TRN-Unit field indicate an EDMG BRP-RX/TX packet." |

**Proposed resolution**: Revised

**Discussion:** The EDMG Beam Tracking Request field is only set to 1 when the BRP frame is used for beam tracking (as opposed to for all BRP procedures).

**Modifications:** In page 383, delete the second paragraph of 30.9.2.1 (General)

*~~An EDMG PPDU with the Beam Tracking Request field in the L-Header equal to 0, the Packet Type field in the L-Header equal to 0, the EDMG Beam Tracking Request field in the EDMG-Header-A equal to 1, and the EDMG TRN Length field in the EDMG-Header-A greater than 0 shall not include a TRN field.~~*

Add the following text at the end of 30.9.2.2.1 (General) in page 383:

*An EDMG PPDU shall not include a TRN field:*

* *If the EDMG TRN Length field is equal to 0; and*
* *If the EDMG TRN Length field is greater than 0, the Beam Tracking Request field is equal to 0, the EDMG Beam Tracking Request field is equal to 1, the Packet Type field is equal to 0, and the RX TRN-Units per Each TX TRN-Unit field is equal to 0. As defined in 10.38.7, this configuration corresponds to a request for receive beam tracking.*

*A value of 0 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value of 0 in the EDMG Beam Tracking Request field, a value of 0 in the RX TRN-Units per Each TX TRN-Unit field, and a value greater than 0 in the EDMG TRN Length field indicate an EDMG BRP-RX packet.*

*A value of 1 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value of 0 in the RX TRN-Units per Each TX TRN-Unit field, and a value greater than 0 in the EDMG TRN Length field indicate an EDMG BRP-TX packet.*

*A value of 1 in the Packet Type field, a value of 0 in the Beam Tracking Request field, a value greater than 0 in the RX TRN-Units per Each TX TRN-Unit field, and a value greater than 0 in the EDMG TRN Length field indicate an EDMG BRP-RX/TX packet.*

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1393 | 30.2.2 | 224.01 | Parameter EDMG\_BEAM\_TRACKING\_REQUEST is only set to 1 for beam tracking procedures, and no other BRP procedure. | Make reference to 10.38.7: "This parameter indicates whether beam tracking (see 10.38.7) is requested." (That is, add" (see 10.38.7)".) |

**Proposed resolution**: Accepted

**Modification**: Modify the value for the parameter EDMG\_BEAM\_TRACKING\_REQUEST in page 224 as follows:

*This parameter indicates whether beam tracking is requested (see 10.38.7).*

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1054 | 30.7 | 370.00 | Original text is not correct in cases (transmit beam tracking, for example). | Replace "It may also not be transmitted if EDMG\_TRN\_LEN > 0 and beam tracking request was initiated (see 30.9)." with "The TRN field is also not transmitted if the Beam Tracking Request field in the L-Header is equal to 0, the Packet Type field in the L-Header is equal to 0, the EDMG Beam Tracking Request field in the EDMG-Header-A is equal to 1, and the EDMG TRN Length field in the EDMG-Header-A is greater than 0." |

**Proposed resolution**: Revised

**Modification:** Modify lines 1-3 of page 370 as follows:

The TRN field is not transmitted if EDMG\_TRN\_LEN ~~parameter indicating the number of TRN-Units~~ is set to 0 (see 30.2.2, Table 27)~~. It may also not be transmitted if EDMG\_TRN\_LEN > 0 and beam tracking request was initiated (see 30.9).~~ and, as defined in 10.38.7, if EDMG\_TRN\_LEN set to a value greater than 0, BEAM\_TRACKING\_REQUEST set to 0, EDMG\_BEAM\_TRACKING\_REQUEST set to 1, and EDMG\_PACKET\_TYPE set to EDMG-TRN-R-PACKET.

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| 2099 | 30.7 | 370.02 | Should be EDMG beam tracking request instead of (legacy) beam tracking request | Replace "beam tracking" with "EDMG beam tracking" |

**Proposed resolution**: Rejected

**Discussion:** Comment and proposed change are correct. This issue was solve with the resolution for CID 1054.

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1396 | 30.2.2 | 223.01 | EDMG\_TRN\_LEN may also be used to indicate a requested number of TRN-Units used for RX beam tracking (see 10.38.7). | Add note stating EDMG TRN Length may also be used to indicate a requested length as part of bem tracking. |

**Proposed resolution**: Revised

**Modification:** Change the value of the parameter EDMG\_TRN\_LEN in page 223 as follows

*Indicates the number of TRN-Units in the TRN field of a PPDU or, as defined in 10.38.7, a requested number of TRN-Units for receive beam tracking. Values are in the range 0–255 (see 30.9.2.2.5).*

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1395 | 30.3.3.3.2.3 | 248.01 | EDMG TRN Length may also be used to indicate a requested number of TRN-Units used for RX beam tracking (see 10.38.7). | Add note stating EDMG TRN Length may also be used to indicate a requested length as part of bem tracking. |

**Proposed resolution**: Revised

**Modification:** Modify the description of the EDMG TRN Length field in Table 36 as follows

*Corresponds to the TXVECTOR parameter EDMG\_TRN\_LEN. Indicates the number of TRN-Units present in the TRN field of the PPDU or, as defined in 10.38.7, a requested number of TRN-Units for receive beam tracking.*

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed change** |
| 1490 | 10.38.7 | 160.15 | In 802.11ad beam tracking was optional and it should remain so for 802.11ay. The text here needs to clarify that and EDMA may only request and EDMG STA to perform beam tracking if both STAs set their DMG STA BeamTrackingTimeLimit values to something non-zero. | Add the text as described. |

**Proposed resolution**: Rejected

**Background: “**Mandatory and optional procedures in the beamforming mechanism” are defined in Table 10-19 of 802.11-2016. Under beam tracking, it is defined that supporting beam tracking with Feedback = BS-FBCK is mandatory, and supporting beam tracking with Feedback = Channel measurement is optional. The 802.11ay spec draft does not change this specification.

As described in 10.38.7 of 802.11-2016, BeamTrackingTimeLimit does not impact the mandatory status of beam tracking support. All it does is to specify the timing of the feedback. The 802.11ay spec draft does not change this specification.

**SP/M:** Do you accept the resolutions given in 18/0392r0 to the following CIDs: 1054, 1242, 1393, 1395, 1396, 1490, 2099, and 2103?