IEEE P802.11  
Wireless LANs

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| Suggested Resolutions for CIDs on Beam Tracking | | | | |
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|  |  |  |  |  |

Abstract

Compromise beam tracking resolutions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2071 | 1277.00 | 44 | 9.4.2.127.4 | "Beam Tracking is unsupported" - in another place (10.43.1) it is stated as mandatory | reconcile - if it is optional - write text in 10.43.7 to say that request cannot be sent to a STA that does not support, if is mandatory, delete the option to set Beam Tracking Time Limit to 0 | **Revise** |
| 2070 | 1277.00 | 40 | 9.4.2.127.4 | "BeamTrackingTimeLimit" - Beam Tracking may be joined to a single word - but "Time" and Limit should be separated by spaces. Also add "field" after the name, because otherwise there is a mix between the field and the MIB variable | as in comment - separate the field name by spaces and and "field" | **Revised** |
| 2066 | 1277.00 | 27 | 9.4.2.127.4 | ":The BeamTrackingTimeLimit subfield contains the value of dot11BeamTrackingTimeLimit. The resulting value of dot11BeamTrackingTimeLimit ..." - it is not clear whether the MIB variable is the result of the exchange or the input to the exchange. I don't think it should be both. | Separate the input( the mib variable ) from the SME with the result of calculation (may be another MIB variable) | **Revise** |

**Discussion:**

IEEE 802.11-2016 introduced the capability for STAs to signal beam tracking as not supported. See 802.11-15/0538r4. Recent straw poll results in 802.11ay suggest that further clarification would be helpful.

In the January 2019 meeting, the TGay task group held the following strawpoll:

* 1. Presentation by Assaf Kasher (Qualcomm), Beam tracking mandatory?, Doc. IEEE 11-19/0007r0.
     1. Opened floor for discussion.
     2. Straw poll: Do you support:

Option1: Beam Tracking Fully optional

Option2: Beam Tracking Mandatory for RX BT and optional for TX BT

Option3: Beam Tracking Fully Mandatory

* + 1. Result: Option 1: 1; Option 2: 2; Option 3: 11; Abstain: 4.

Following this guidance, we propose to deprecate the option of signaling beamtracking as unsupported. This means that the variable dot11BeamTrackingTimeLimit is allowed to take the value of zero, but that this option could be removed in future revisions of 802.11.

***Editor: Modify clause 9.4.2.127.4 as follows.***

**9.4.2.127.4 DMG STA Beam Tracking Time Limit field**

The DMG STA BeamTrackingTimeLimit field contains the value of dot11BeamTrackingTimeLimit. This field indicates the maximum time a beam tracking initiator waits for feedback for transmit beamtracking. This use of this field is discussed in 10.43.7 (Beam Tracking)

***Editor: Change the last pargraphs of 10.43.7 (P2041L21-46 D2.2) as follows:***

— The time duration since the last PPDU it transmitted to the beam tracking responder that requested transmit beam tracking is greater than the beam tracking time limit plus BRPIFS.

— A BRP frame with the channel measurement feedback from the beam tracking responder has been

received.

If the beam tracking initiator does not receive the expected feedback from the beam tracking responder within a time period that is less than the beam tracking time limit of the last request, the beam tracking request has failed. If the initiator receives the expected feedback from the responder within time that is greater than or equal to a beam tracking time limit of the last request, the beam tracking initiator should ignore it.

The time of arrival of the beam tracking responder’s feedback is indicated by the PHY-RXEND.indication primitive of PPDU that contains the BRP MMPDU.

The time of transmit completion of the beam tracking initiator’s PPDU is indicated by the PHYTXEND.

confirm primitive.

The beam tracking responder shall not transmit a BRP frame with feedback to the beam tracking initiator if the time period between PHY-RXEND.indication primitive of the PPDU that contains the beam tracking request and of PHY-TXEND.confirm primitive of the response BRP frame is longer than

the beam tracking time limit.

The beam tracking time limit is based on the values of the DMG STA BeamTrackingTimeLimit field received from the peer STA in the DMG Capabilities element and the dot11BeamTrackignTimeLimit from the SME. The setting of the beam tracking time limit is according to table 9-xyz.

If the beam tracking responder has not included the BeamTrackingTimeLimit field in the DMG Capabilities element, then the beam tracking initiator has no method to determine if the procedure has failed and it should assume that beam tracking in not supported by the responder. STAs may set the BeamTrackingTimeLimit field in the DMG Capabilities element to zero to indicate that they do not support beam tracking and may not respond to a beam tracking request.

**Table xyz - beam tracking time limit negotiation**

|  |  |  |  |
| --- | --- | --- | --- |
| DMG STA BeamTrackingTimeLimit field from peer STA – denoted A | dot11BeamTrackingTimeLimit from SME – denoted B | A vs. B | beam tracking time limit |
| 0 | 0 | NA | Beam tracking is not supported |
| >0 | 0 | NA | Beam tracking is not supported |
| 0 | >0 | NA | Beam tracking is not supported |
| >0 and < 65535 | >0 and < 65535 | A ≥ B | A |
| >0 and < 65535 | >0 and < 65535 | A < B | B |
| 65535 | >0 and < 65535 | NA | B |
| >0 and < 65535 | 65535 | NA | A |
| 65535 | 65535 | NA | Default dot11BeamTrackingTimeLimit  value |

Note - The signaling of Beam Tracking Not Supported by setting DMG STA BeamTrackingTimeLimit to zero is deprecated and might be removed in a later revision of the standard.