IEEE P802.11
Wireless LANs

|  |
| --- |
| Beam tracking clarification CID 5010 |
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Abstract

Clarifications to sub clause 9.38.7 Beam tracking to resolve CID 5010

*Discussion:*

*9.38.7 Beam tracking*

*P1515L48*

*Current definition does not address specifically a BRP response sent by separate link access. This case is different from the BRP response inside a channel access sequence in that the time of the BRP response is unpredictable due to separate link access. Late BRP response may be inadequate due to link conditions, thus leading to wrong antenna configuration and performance loss.*

**9.38.7 Beam tracking**

*Editor add new paragraph at end of the sub clause*

A beam tracking initiator may transmit to the beam tracking responder a PPDU requesting transmit beam tracking if at least one of the following conditions is met:

* the time duration since the last PPDU it transmitted to the beam tracking responder that requested transmit beam tracking is greater than dot11BeamTrackingTimeLimit plus BRPIFS,
* a BRP frame with the channel measurement feedback from the beam tracking responder has been recieved.

If the beam tracking initiator does not receive the expected feedback from the beam tracking responder within a time period that is less than dot11BeamTrackingTimeLimit of the last request, the beam tracking initiator may consider the beam tracking request as failed. If the initiator receives the expected feedback from the responder within time that is greater than or equal to dot11BeamTrackingTimeLimit 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 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 PHY-TXEND.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 dot11BeamTrackingTimeLimit*.*

P1516L14

*Editor modify the text as follows:*

If the responder has never received a BRP frame from the initiator with TX-TRN-REQ equal to 1, the responder shall respond with all subfields of the FBCK-TYPE field equal to 0 and set the BS-FBCK field to the index of the TRN-T subfield that was received with the best quality.

**8.4.2.127.1 General**

P1001L1

*Editor modify the figure 8-499 DMG Capabilities element format adding new field as follows*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | STA address | AID | DMG STA Capabilty information | DMG AP or PCP Capability Information | DMG STA BeamTrackingTimeLimit |
| Octets | 1 | 1 | 6 | 1 | 8 | 2 | 2 |

Figure 8-499 DMG Capabilities element format

*P1005L39*

*Editor add new subclause*

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

The BeamTrackingTimeLimit subfield contains the value of dot11BeamTrackingTimeLimit. The resulting value of dot11BeamTrackingTimeLimit of beam link established between peer STA’s is negotiated following rules presented in Table xyz (Beam Tracking Time Limit negotiation).

**Table xyz - Beam Tracking Time Limit negotiation**

|  |  |  |  |
| --- | --- | --- | --- |
| DMG STA BeamTrackingTimeLimit(STA-A) | DMG STA BeamTrackingTimeLimit(STA-B) | dot11BeamTrackingTimeLimit(STA-A) vs.dot11BeamTrackingTimeLimit(STA-B) | Result  |
| 0 | 0 | NA | Beam tracking is not supported |
| >0 | 0 | NA |
| 0 | >0 | NA |
| >0 and < 65535 | >0 and < 65535 | >, = | dot11BeamTrackingTimeLimit(STA-A) |
| >0 and < 65535 | >0 and < 65535 | < | dot11BeamTrackingTimeLimit(STA-B) |
| 65535 | >0 and < 65535 | NA | dot11BeamTrackingTimeLimit(STA-B) |
| >0 and < 65535 | 65535 | NA | dot11BeamTrackingTimeLimit(STA-A) |
| 65535 | 65535 | NA | Default dot11BeamTrackingTimeLimitvalue |

NOTE—In Table xyz (Beam Tracking Time Limit negotiation).STA-A and STA-B refer to any of the STAs performing the Beam Tracking Time Limit negotiation procedure in no particular order.

*Editor, in the dot11DMGBeamformingConfig TABLE make following changes:*

Dot11DMGBeamformingConfigEntry ::=

SEQUENCE {

dot11MaxBFTime Unsigned32,

dot11BFTXSSTime Unsigned32,

dot11MaximalSectorScan Unsigned32,

dot11ABFTRTXSSSwitch Unsigned32,

dot11RSSRetryLimit Unsigned32,

dot11RSSBackoff Unsigned32,

dot11BFRetryLimit Unsigned32,

dot11BeamLinkMaintenanceTime Unsigned32,

dot11AntennaSwitchingTime Unsigned32,

dot11ChanMeasFBCKNtaps Unsigned32,

dot11BeamTrackingTimeLimit Unsigned 32

}

*Editor, add new elelmemt after dot11ChanMeasFBCKNtaps*

dot11BeamTrackingTimeLimit OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

UNITS 1us

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This is a control variable.

It is written by the MAC or SME.

Changes take effect as soon as practical in the implementation.

BRP tracking Initiator Time Limit (in units of 1us)."

DEFVAL { 10000 }

::= { dot11DMGBeamformingConfigEntry 11 }

*Editor, add new element in* dot11DMGBeamformingComplianceGroup *as follows:*

dot11DMGBeamformingComplianceGroup OBJECT-GROUP

OBJECTS {dot11MaxBFTime, dot11BFTXSSTime, dot11MaximalSectorScan,

dot11ABFTRTXSSSwitch, dot11RSSRetryLimit, dot11RSSBackoff,

dot11BFRetryLimit, dot11BFTXSSTime, dot11BeamLinkMaintenanceTime*,* dot11BeamTrackingTimeLimit

}

**References:**

1. IEEE P802.11-REVmc/D4.0