IEEE P802.11
Wireless LANs

|  |
| --- |
| Tx Power Control for Non-TB Ranging |
| Date: 2020-08-13 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Christian Berger | NXP | 350 Holger Way, San Jose, USA |  | Christian.berger@nxp.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes the comment resolution of CID 3883 in LB249 related to Tx power control and pathloss measurements

Revisions:

1. Added a support bit in Ranging Parameters
2. Adjusted to Draft 2.3, removed RSSI feedback type subfield
3. Minor fix
4. Added Target RSSI feedback, changed LRM from RSSI feedback to Tx Power, changed NDP-A by moving subfields to a new STA Info, updated to Draft 2.5

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGaz Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGaz Editor: Editing instructions preceded by “TGaz Editor” are instructions to the TGaz editor to modify existing material in the TGaz draft. As a result of adopting the changes, the TGaz editor will execute the instructions rather than copy them to the TGaz Draft.***

**The text preceded by “Discussion” is not part of the adopted changes.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **3883** | 43.3 | 9.3.1.19 | Similar to AP\_TX\_POWER in Trigger frame NDP TX power will be useful for pathloss computation and power control | Add NDP TX power in STA Info field in NDPA | **Revised**See changes in DCN 11-20/1245 |
|  |  |  |  |  |  |

**9.3.1.19 VHT/HE/Ranging NDP Announcement frame format**

TGaz Editor: Add the following text and Figure 9-61dd on page 46 line 1 (end of subclause 9.3.1.19):

The format of the STA Info field in a Ranging NDP Announcement frame if the AID11 subfield is set to 2045 is shown in Figure 9-61dd (STA Info field format in a Ranging NDP Announcement frame if the AID subfield is 2045). (#**3883**)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 B10 | B11 B18 | B19 B26 | B27 | B28 B31 |
|  | AID11 | Tx Power | Target RSSI | Disambiguation | Reserved |
| Bits: |  11 | 8 | 8 | 1 | 4 |

1. Figure 9-61dd— STA Info field format in a Ranging NDP Announcement frame if the AID11 subfield is 2045 (#3883)

The STA Info field, with AID11 subfield equal to 2045, is optionally present in Ranging NDP Announcement frames when part of the Non-TB ranging measurement exchange, [11.22.6.4.4](#H11o22o6o4o4) (Non-TB Ranging measurement exchange). It is used to carry the Tx Power and Targer RSSI subfields. (#3883)

The Tx Power subfield indicates the combined average power per 20 MHz bandwidth referenced to the antenna connector, of all antennas used to transmit the following I2R NDP. The transmit power is reported with a resolution of 1 dB, with values in the range 0 to 60 representing –20 dBm to 40 dBm, respectively. Values above 60 are reserved. (#3883)

The Target RSSI subfield indicates the preferred receive signal power, averaged over the ISTA's antenna connectors, for future R2I NDPs to be transmitted by the RSTA. The resolution for the Target RSSI subfield is 2 dB and is calculated as TargetRSSI = –110 + 2×FVal, where FVal is the value of the Target RSSI subfield, except that values above 62 indicate that the ISTA has no Target RSSI preference and the RSTA should select a transmit power value independently (#3883).

9.4.2.296 Ranging Parameters element

TGaz Editor: Change Figure 9-1007—Non-TB specific subelement format as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 |  B16 | B17 B39 | B40 B59 | B60 B63 |
|  | Subelement ID (0) | Length |  Pathloss Measurements(#**3231,#3883**) | Min Time Between Measurements | Max Time Between Measurements | Reserved |
| Bits: | 8 | 8 | 1 | 23 | 20 | 4 |

1. Figure 9-1007—Non-TB specific subelement format

(#**2275,** #**2276,** #**2278,** #**1654,** #**1220**)

The Subelement ID and Length fields are defined in 9.4.3 (Subelements). (#**2081**)

TGaz Editor: Add the following paragraphs to 9.4.2.296:

The Pathloss Measurements field in the IFTMR frame is set to 1 to indicate that the ISTA supports announcing the tx power of its I2R NDP frames in the Tx Power subfield in the STA Info field with the AID11 subfield set to 2045 of the preceeding NDP Announcement frame. The Pathlosss Measurement field in the initial Fine Timing Masurement frame is set to 1 to indicate that the RSTA supports reporting the tx power of its R2I NDP frames in the Tx Power subfield in the LMR frames. (#**3883**)

9.6.7.48 Location Measurement Report frame format

TGaz Editor: Change Figure 9-909aa as follows:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Category | Public Action | Dialog Token | ToD | ToA | ToD Error | ToA Error |
| Octets: | 1 | 1 | 1 | 6 | 6 |  1 | 1 |
|  | CFO Parameter  | Tx Power | Target RSSI | Secure LTF Parameter (optional) | AoA Feedback (optional) |
| Octets: | 2 | 1 | 1 | 13 | 9 |

Figure 9-909aa—Location Measurement Report frame Action field format

TGaz Editor: Add the following paragraphs to 9.6.7.48 starting on page 98 line 26 after the cited paragraph:

The CFO parameter field in I2R LMR indicates the clock rate difference between ISTA and RSTA in units of 0.01 ppm. The CFO parameter field is a signed value of length 2 octets. In RSTA2ISTA LMR, the value of the CFO parameter field is reserved.

The Tx Power field indicates the combined average power per 20 MHz bandwidth referenced to the antenna connector, of all antennas used to transmit the preceding R2I NDP. The transmit power is reported with a resolution of 1 dB, with values in the range 0 to 60 representing –20 dBm to 40 dBm, respectively. Values above 60 are reserved. (#3883)

The Target RSSI field indicates the preferred receive signal power, averaged over the RSTA's antenna connectors, for future I2R NDPs transmitted by the ISTA. The resolution for the Target RSSI field is 2 dB and is calculated as TargetRSSI = –110 + 2×FVal, where FVal is the value of the Target RSSI field, except that values above 62 indicate that the RSTA has no Target RSSI preference and the ISTA should select a transmit power value independently (#3883).

11.21.6.4.6 Transmission of a ranging NDP

TGaz Editor: Add the following bullet point to 11.21.6.4.6 (on page 168, line 8):

An RSTA transmitting an HE Ranging NDP to one or more peer ISTAs shall set the TXVECTOR parameter as follows:

* The FORMAT parameter is set to HE\_SU
* The UPLINK\_FLAG parameter is set to 0
* The APEP\_LENGTH parameter is set to 0
* The NUM\_USER parameter is set to the number of ISTAs that the HE Ranging NDP is transmitted to.
* In the Non-TB Ranging measurement exchange ([11.21.6.4.4](#H11o22o6o4o4)), the TXPWR\_LEVEL\_INDEX parameter is set to a value that matches the Tx Power value indicated in the Tx Power subfield in the following LMR frame, except if the value in the TxPower subfield was set to a reserved value. (#3883)

TGaz Editor: Add the following bullet point to 11.21.6.4.6 (on page 170, line 1):

An ISTA transmitting an HE Ranging NDP PPDU shall set the TXVECTOR parameter as follows:

* The FORMAT parameter is set to HE\_SU
* The UPLINK\_FLAG parameter is set to 1
* The APEP\_LENGTH parameter is set to 0
* The NUM\_STS parameter is set to the same value as the I2R N\_STS subfield in the STA Info field in the preceding Ranging NDP Announcement frame
* The LTF\_REP parameter is set to the same value as the I2R Rep subfield in the STA Info field in the preceding Ranging NDP Announcement frame
* The TXPWR\_LEVEL\_INDEX parameter is set to a value that matches the Tx Power value indicated in the Tx Power subfield in the STA Info field with the AID11 subfield set to 2045 in the preceeding Ranging NPD Announcement frame, except if the value in the TxPower subfield was set to a reserved value. (#3883)