IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment Resolution LB249 - CID 3772 |
| Date: 2020-08-06 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Christian Berger | NXP | 350 Holger Way, San Jose, CA |  | Christian.berger@nxp.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes a resolution to CID 3772 and 3882

Revisions:

1. Changes made during call and discussion
2. Added CID 3882 and a fix specifying the AID and RA address for Ranging NDP-A
3. Feedback during presentation and add HTML for document

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** |
| **3772** | 158.41 | 11.22.6.4.6.2 | This equation is fairly incomprehensible. OK, so k goes over each member of the MaxOffset set. But it's not clear how i or j relate to k, nor is it clear which j is used to pick a particular member of the MinOffset set. Can I just pick one j, or does the equation need to hold for all possible js? | As it says in the comment | **Revised**TGaz editor, make the changes as depicted below in[https://mentor.ieee.org/802.11/dcn/20/11-20-1684-03-00az-comment-resolution-lb249-cid-3772.docx document](https://mentor.ieee.org/802.11/dcn/20/11-20-1684-03-00az-comment-resolution-lb249-cid-3772.docx%20document)  |
| **3882** | 43.3 | 9.3.1.19 | In figure 9-61b change the name to LTF offset for more clarity | as in comment | **Revised**Agree in principle with the commenter.In addition fixed several wrong mentions of I2R NDP and User Info instead of R2I NDP and STA Info.TGaz editor, make the changes as depicted below in document [https://mentor.ieee.org/802.11/dcn/20/11-20-1684-03-00az-comment-resolution-lb249-cid-3772.docx document](https://mentor.ieee.org/802.11/dcn/20/11-20-1684-03-00az-comment-resolution-lb249-cid-3772.docx%20document) |

**Discussion and Examples**:

Discussion of AID and RA for Non-TB Ranging

11mc spec:

“AID12  - Contains the 12 least significant bits of the AID of a STA expected to process the following VHT NDP and prepare the sounding feedback. Equal to 0 if  the STA is an AP, mesh STA, or STA that is a member of an IBSS.”

“The VHT NDP Announcement frame contains at least one STA Info field. If the VHT NDP Announcement frame contains only one STA Info field, then the RA field is set to the address of the STA that can provide feedback (see 10.34.5.2 (Rules for VHT sounding protocol sequences)). If the VHT NDP Announcement

frame contains more than one STA Info field, then the RA field is set to the broadcast address.”

This means that we need to specify how to set AID in Non-TB mode, and since there are STA Info elements not addressing other STA, we should clarify when RA is set to broadcast or not.

Example of how to calculate the LTF Offset:

Let’s say there are three STAs, with 2 LTF each (N\_LTF=2, Rep=1)

1. For i=1 (first STA), Offset=0, sum off all other LTF is 4 (MaxOffset = {2,3}), and there are no other STA with lower Offset (MinOffset = {})
2. For i=2 (second STA), Offset=2, sum off all other LTF is 4 (MaxOffset = {1,3}), and STA with lower Offset are (MinOffset = {1}), so 2>= 0+2 (j=1)
3. For i=3 (third STA), Offset=4, sum off all other LTF is 4 (MaxOffset = {1,2}), and STA with lower Offset are (MinOffset = {1,2}), so 4>= 0+2 (j=1), 4>=2+2 (j=2)

9.3.1.19 VHT/HE/Ranging NDP Announcement frame format

TGaz Editor: Modify the following figure 9-61b and paragraphs starting on page 44, line 1 of 9.3.1.91 as follows:

The format of the STA Info field in a Ranging NDP Announcement frame when the AID11 less than 2008 is defined in Figure [9-61b](#F09o61b) (STA Info field format in a Ranging NDP Announcement frame when the AID11 subfield is less than 2008) when the AID11 subfield is less than 2008. (#**3222**).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B10 | B11 B16 | B17 B19 | B20 B22 | B23 B25 | B26 | B27 | B28 B30 | B31 |
|  | AID11 | LTF Offset | R2I N\_STS | R2I Rep | I2R N\_STS | Reserved | Disambig-uation | I2R Rep | Reserved |
|  | Bits: 11 | 6 | 3 | 3 | 3 | 1 | 1 | 3 | 1 |

1.
2. Figure 9-61b—STA Info field format in a Ranging NDP Announcement frame when the AID11 subfield is less than 2008 (#3222, #3010)

A Ranging NDP Announcement frame contains one STA Info field with AID11 subfield less than 2008 per STA that is intended to receive this frame.

In the case of the Non-TB Ranging measurement exchange, see [11.22.6.4.4](#H11o22o6o4o4) (Non-TB Ranging measurement exchange) there is always only one intended receiver and the RA field is set to the address of that STA.

In the case of the TB Ranging measurement exchange, see [11.22.6.4.3](#H11o22o6o4o3) (TB Ranging measurement exchange), the RA field is set to the broadcast address if more than one STA is indended to receive this frame; otherwise the RA field is set to the address of the STA that is intended to receive this frame.

If the AID11 subfield is less than 2008 (#**3222**), it identifies a STA that is intended to receive this frame and assigns the parameters within this STA Info field to this STA. In case of the TB Ranging measurement exchange, see [11.22.6.4.3](#H11o22o6o4o3) (TB Ranging measurement exchange), the AID11 subfield contains the 11 least significant Bits of the AID or RSID of an associated STA or an unassociated STA respectively (#**1194**, #**1608**, #**1771**, #**1785**), expected to process the following NDP. In case of the Non-TB Ranging measurement exchange, see [11.22.6.4.4](#H11o22o6o4o4) (Non-TB Ranging measurement exchange), the intended receiver is identified by the RA field and the AID11 subfield is set to zero.

When used as part of the TB Ranging measurement exchange ([11.22.6.4.3](#H11o22o6o4o3)), the LTF Offset, R2I N\_STS and R2I Rep subfields are used to indicate the following R2I NDP’s HE-LTF configuration; see [27.3.18b](#H27o3o18b) (HE TB Ranging NDP).

When used as part of the Non-TB Ranging measurement exchange, the I2R N\_STS and I2R Rep subfields are used to indicate the following I2R NDP’s HE-LTF configuration, [27.3.18b](#H27o3o18b) (HE TB Ranging NDP), while the R2I N\_STS and R2I Rep subfields indicate the HE-LTF configuration of the R2I NDP sent in response by the RSTA, see [11.22.6.4.4](#H11o22o6o4o4) (Non-TB Ranging measurement exchange).

The LTF Offset subfield is used in the TB ranging measurement exchange protocol with Secure LTF see 11.22.6.4.5.2 (TB Ranging Measurement Exchange with Secure LTF); it takes values between 0 and 63 which indicates the number of HE-LTF to skip when processing the following NDP. The LTF Offset subfield is set to 0 in all cases. (#**3193**, #**3009**, #**3101**, #**3266**)

9.4.2.297 Secure LTF Parameters element

TGaz Editor: Modify the following paragraph starting on page 81, line 23 of 9.4.2.297 as follows:

The Measurement Results LTF Offset field is used to verify that the measurement results of the Location Measurement Report frame in TB Ranging are calculated using the same LTF Offset for the HE R2I NDP between RSTA and ISTA. The Measurement Result LTF Offset field has the same value as the LTF Offset subfield in the corresponding STA Info field of Ranging NDP Announcement frame preceding the R2I NDP, which is used for estimating the measurement results in the Location Measurement Report frame. The Measurement Result LTF Offset field is structured as shown in Figure [9-1012a](#F09o1012a) (Measurement Result LTF Offset field format). This field is not present in the initial Fine Timing Measurement Frame and in the Location Measurement Report Frame in non-TB ranging measurement exchange. (#**1580**, #**2283**, #**1163**)

11.21.6.4.5.2 TB Ranging Measurement Exchange with Secure LTF

TGaz Editor: Modify the following paragraphs starting on page 160, line 1 as follows:

The RSTA that sends the Ranging NDP Announcement frame shall set the LTF Offset subfield in the STA Info field corresponding to the ISTA in the Ranging NDP Announcement frame to values meeting the Equations (11-aa) and (11-ab):

(11-aa)

 (11-ab)

where

Offset*n* : represents the LTF Offset subfield value of *nth* STA Info field in the Ranging NDP Announcement frame.

N\_LTF*n* : represents the number of HE-LTF symbols, the R2I N\_STS subfield value plus 1 of *nth* STA Info field in the Ranging NDP Announcement frame.

Rep*n* : represents the R2I Rep subfield value plus 1 of *nth* STA Info field in the Ranging NDP Announcement frame.

MinOffset*i* : represents the set of indexes of the STA Info fields of which the LTF Offset subfield values are less than the LTF Offset subfield value of *ith* STA Info field in the Ranging NDP Announcement frame.

MaxOffset*i* : represents the set of indexes of all STA Info fields excluding *ith* STA Info field.

**11.22.6.4.5.2 TB Ranging Measurement Exchange with Secure LTF**

TGaz Editor: Modify the following paragraphs starting on page 161, line 5 as follows:

When an ISTA receives a Ranging NDP Announcement frame from an RSTA in which the AID11/RSID11 subfield in the STA Info field contains the 11 least significant bits of the AID or RSID of the ISTA, the ISTA shall:

1. Issue a PHY-RXLTFSEQUENCE.request primitive with a LTFVECTOR parameter LTF\_OFFSET that is set to the LTF Offset subfield value in the STA Info field;
2. Issue a PHY-RXLTFSEQUENCE.request primitive with a LTFVECTOR parameter LTF\_N\_STS that is set to the R2I N\_STS subfield value in the STA Info field;
3. Issue a PHY-RXLTFSEQUENCE.request primitive with a LTFVECTOR parameter LTF\_REP that is set to the R2I Rep subfield value in the STA Info field;

When a Location Measurement Report frame contains range measurement results measured from an I2R NDP and a R2I NDP, an RSTA or ISTA that transmits the RSTA2ISTA or ISTA2RSTA Location Measurement Report frame shall include the Secure LTF Parameters field in the Location Measurement Report frame and the Range Measurement SAC subfield in the Secure LTF Parameters field in the Location Measurement Report frame to the same value as in the SAC subfield in the Trigger Dependent User Info field in the Ranging Secure Sounding Trigger frame that solicited the I2R NDP and the R2I NDP. The Measurement Result LTF Offset field in the Secure LTF Parameter element in the Location Measurement Report frame shall set to the same value as in the LTF Offset subfield of the STA Info field in the Ranging NDP Announcement frame that precedes the R2I NDP. When an ISTA or RSTA receives RSTA2ISTA or ISTA2RSTA Location Measurement Report frame, the ISTA or RSTA shall compare the value of Measurement Result LTF Offset field with the value of the LTF Offset subfield in the corresponding STA Info field of Ranging NDP Announcement frame, and if these two values don’t match, the ISTA or RSTA shall discard the measurement results carried in the Location Measurement Report frame. (**#1580, #2283, #1163**)