IEEE P802.11
Wireless LANs

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| Immediate and Delayed Feedback in LMR |
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Abstract

This submission proposes to clarify the negotiation of delayed and immediate feedback and addresses comments 1470 and 1585.

Revisions:

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 TGax 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.**

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| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1470 | 53.11 | 9.4.2.279  | Is Response field defined for IFTMR or IFTM or both? What is the LMR being refered here? | Clarify: add "RSTA 2 ISTA LMR". | **Revised**Added text and moved to different element. |
| 1585 | 58.18 | 9.4.2.279 | The Response field in TB Specific Parameters subelement is used to indicate the feedback type of LMR, but the name of this parameter field doesn't reflect the feedback type. Can we change the Response field to a different name, for example, LMR feedback type? Also, the definition of immediate LMR and delayed LMR for the TB ranging doesn't align with the definition in 11.22.6.4.3.4 TB Ranging Measurement Reporting Part. It's better to change "from the current range measurement" to "from the measurement in the current availability window", and change "from the previous measurement" to "from the measurement in the last availability window in which the ISTA responded to the TF Ranging Poll and the RSTA allocated resources to that ISTA during the measurement sounding part". | as suggested in the comment | **Revised**Added text and moved to different element. |

**9.4.2.279 Ranging Parameters element**

***TGaz editor: change 9.4.2.279 as follows (there is no change to the text that is not shown):***

……

The format of the Ranging Parameters field is shown in 9-1006 (Ranging Parameters field)

TGaz Editor: Change Figure 9-1006 as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B1 | B2-B6 | B7 | B8 | B9 | B10 B11 | B12 | B13 | B14 | B15 |
|  | Status Indi-cation | Value | ISTA-2-RSTA LMR Feedback | Secure LTF Req. | Secure LTF Support | Ranging Priority | R2I ToA Type | I2R ToA Type | R2I AOA Req. | I2R AOA Req. |
| Bits: | 2 | 5 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
|  | B16 B21 | B22 B23 | B24 B26 | B27 B29 | B30 | B31 | B32 B34 | B35 B37 |
|  | Format and Bandwidth | Reserved | Max UL Rep | Max DL Rep | Device Class | Full Bandwidth UL MU-MIMO | Max DL STS $\leq $80 MHz | Max DL STS >80 MHz |
| Bits: | 6 | 2 | 3 | 3 | 1 | 1 | 3 | 3 |
|  | B38  | B39 | B40 B42 | B43 B45 | B46 B47 |
|  | Immediate R2I Feedback | Immediate I2R Feedback | Max UL STS$ \leq $ 80 MHz | Max UL STS > 80 MHz | Reserved |
| Bits: | 1 | 1 | 3 | 3 | 2 |

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| **Figure 9-1006 - Ranging Parameters field format** |

The Status Indication field indicates the responding STA’s response to the Fine Timing Request. The encoding of the Status Indication field is shown in Table 9-281 (Status Indication field values).

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The Max UL Rep subfield indicates the maximum number of LTF repetitions that the FTM 35 session uses in the preamble of UL NDP frames. 36

The Max DL Rep subfield indicates the maximum number of LTF repetitions that the FTM 37 session uses in the preamble of DL NDP frames. 38

TGaz Editor: Add the following paragraphs to 9.4.2.279:

The Immediate R2I Feedback and Immediate I2R Feedback subfields are each one bit wide. The value of 0 indicates a delayed feedback, in which case the measurement results included in the current Location Measurement Report (LMR) frame are from the previous measurement; the value of 1 indicates an immediate feedback, in which case the measurement results included in the current LMR frame are from the current measurement. The Immediate R2I Feedback and Immediate I2R Feedback subfields correspond to the RSTA-to-ISTA LMR or ISTA-to-RSTA LMR respectively.

The Immediate R2I Feedback subfield is reserved in the initial Fine Timing Measurement Request frame. In the initial Fine Timing Measurement frame the Immediate R2I Feedback field is set to one to indicate that the RSTA-to-ISTA LMR will be immediate feedback and to zero to indicate delayed feedback.

The Immediate I2R Feedback field in the initial Fine Timing Measurement Request frame is set to one to indicate that the ISTA supports immediate feedback in the ISTA-to-RSTA LMR and is set to zero to indicate support of delayed feedback only. In the initial Fine Timing Measurement frame the Immediate I2R Feedback field is set to one to indicate to the ISTA to use immediate feedback in the ISTA-to-RSTA LMR and is set to zero to indicate delayed feedback.

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The Non-TB Specific Parameters subelement is included in the initial FTM Request to describe the requested set of parameters that the initiator proposes to use and in the initial FTM, if the initiator and the responder successfully negotiate and FTM session where the negotiated ranging protocol is Non-TB.

The format of the Non-TB Specific subelement is as shown in Figure 9-1007 (Non-TB Specific subelement format)

TGaz Editor: Change Figure 9-1007 as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 | B16 | B17 B39 | B40 B59 | B60 B63 |
|  | Subelement ID (0) | Length | Reserved | Min Time Between Measurement | Max Time Between Measurements | Reserved |
| Bits | 8 | 8 | 1 | 23 | 20 | 2 |

Figure 9-1007 Non-TB Specific subelement format

The Element ID and Length fields are defined in 9.4.3 (Subelements).

TGaz Editor: Remove the following paragraphs from 9.4.2.279:

~~The Immediate LMR Feedback field is one bit wide. The field value of 0 indicates a delayed feedback, in which case the measurement results included in the current Location Measurement Report (LMR) frame are from the previous measurement; the field value of 1 indicates an immediate feedback, in which case the measurement results included in the current LMR frame are from the current measurement.~~

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The TB Specific ~~Parameters~~ subelement is included in the initial Fine Timing Measurement Request to describe the requested set of parameters that the initiator proposes to use and in the initial Fine Timing Measurement, if the initiator and the responder successfully negotiate and Fine Timing Measurement session where the negotiated ranging protocol is TB.

The format of the TB Specific subelement is as shown in Figure 9-1008 (TB Specific subelement format)

TGaz Editor: Change Figure 9-1008 as follows:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 | B16 B31 | B32 B35 | B36 B37 | B38 | B39 | B40 B47 |  |
|  | Subelement ID (0) | Length | AID/RID | Max ToA Available Exp | Trigger Frame Padding Duration | Passive Location Ranging | Reserved | BSS Color | Availability Window |
| Bits | 8 | 8 | 16 | 4 | 2 | 1 | 1 | 8 | variable |

Figure 9-1008 TB Specific ~~Parameters~~ subelement format

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TGaz Editor: Remove the following paragraphs from 9.4.2.279:

~~The Response Response field is either set to zero or 1, indicating Immediate or Delayed response. If the Response field is set to Immediate, then the ToD and ToA values included in the corresponding Location Measurement Report (LMR) frame are from the current range measurement; and if the Response field is set to Delayed then the ToD and ToA values in the corresponding LMR frame are from the previous range measurement.~~