IEEE P802.11
Wireless LANs

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| Comment Resolution LB249 – Additional CIDs Clause 11.21.6.4.3 |
| Date: 2020-08-06 |
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Abstract

This submission proposes a resolution to CIDs 3118, 3717, 3718 in clause 11.21.6.4.3; also noticed some wrong figure references.

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 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.**

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **3118** | 141.16 | 11.22.6.4.3.3 | Add text to describe when ISTA receives multiple subsequent sounding trigger frame in exception conditions (secure or non-secure) it records & delivers the TOD measurement corresponding to the last I2R NDP frame in its LMR report (if optionally transmitted). | As per comment |  |
| **3717** | 143.23 | 11.22.6.4.3.4 | "In response to the TF, each addressed ISTA shall respond by transmitting an ISTA2RSTA LMR frame. If an ISTA negotiated delayed ISTA2RSTA LMR reporting, and if the TOA measurement for the previous availability window is not ready, then the ISTA shall not respond to the TF Ranging Poll in the polling phase of any availability window until the ISTA2RSTA LMR is ready. " seems self-contradictory" | Modify to say send QoS Null if TOA not available | **Reject**The proposed protocol allows for immediate or delayed reporting. In case of delayed reporting, for simplicity, there is no provision to keep track of which measurements have been reported. To ensure that there is only at most one stored measurement to report, while the last measurement is not ready for reporting, no new measurement shall be generated. This is indicated by the ISTA by not replying to the TF Ranging Poll. A reply of QoS Null is not supported. |
| **3718** | 143.30f | 11.22.6.4.3.4 | "Figure 11-36h--TB Ranging measurement reporting phase with Bidirectional LMR" implies only OFDMA can be used, but presumably MU-MIMO can be too | In the figure change Frequency to Frequency and/or spatial stream. Ditto in Figure 11-36u--Passive TB Ranging measurement reporting phase (#1578) | **Revised**Editor make the changes depicted in 11-20/XXXX |

TGaz Editor: Modify the paragraphs starting on page 149, line 16 of 11.22.6.4.3.4 as follows:

**11.22.6.4.3.4 Reporting phase of TB Ranging measurement (#2158)**

The last phase of each polling/sounding/reporting triplet is the measurement reporting phase, which is transmitted a SIFS time after the measurement sounding phase; see Figure [11-36c](#F11o36c) (TB Ranging availability window with two instances of polling/sounding/reporting triplets in separate TXOPs). The measurement results shall be carried in LMR frames; see [9.6.7.48](#H09o6o7o48) (Location Measurement Report frame format). LMR frames shall carry measurement results from the RSTA to the ISTA, and if negotiated also from the ISTA to the RSTA; see Figure 11-37h (TB Ranging measurement reporting phase with Bidirectional LMR Feedback for n ISTAs). (#**2523**, #**2524,** #**TC889r3**) The feedback type of the ISTA2RSTA and RSTA2ISTA LMRs can (#3713) be either immediate (i.e., from the current availability window) or delayed (i.e., from the last availability window in which the ISTA responded to the TF Ranging Poll frame and the RSTA allocated resources to that ISTA during the measurement sounding phase). The LMR feedback (immediate/delayed) is indicated by the RSTA during the negotiation (see [11.22.6.3.3](#H11o22o6o3o3) Negotiation for TB and Non-TB Ranging measurement exchange).

The Dialog Token field in the LMR frame shall be identical to the Sounding Dialog Token field in the corresponding Ranging NDP Announcement frame in the Measurement Sounding phase from which the reported TOA and TOD values were measured; see [11.22.6.4.3.3](#H11o22o6o4o3o3) (Measurement sounding phase of TB Ranging). (#**1474**)

NOTE—LMR feedback is carried in Action No-Ack frames and is therefore neither acknowledged nor retransmitted; see [9.6.7.48](#H09o6o7o48) (Location Measurement Report frame format). (#**3657**)

The RSTA shall transmit an RSTA2ISTA LMR to all (#**1157**) ISTAs that were allocated resources in the preceding measurement sounding phase. All the RSTA2ISTA LMR frames shall be (#3714) carried in one HE MU PPDU, where each RU contains only one user; if there is only one RSTA2ISTA LMR it may be carried in an HE SU PPDU.

If I2R LMR was negotiated, the RSTA shall assign uplink (#3715) resources to the ISTAs using a Ranging Trigger frame, subvariant Report; see [9.3.1.22.10](#H09o3o1o22o10) (Ranging Trigger variant). The Ranging Trigger frame of subvariant Report is called the TF Ranging LMR (#**1977**).

A TB Ranging measurement reporting phase including the optional I2R LMR is illustrated in Figure [11-36h](#F11o36h) (TB Ranging measurement reporting phase with Bidirectional LMR Feedback for n ISTAs). If the I2R LMR was negotiated by one or more ISTAs, then SIFS time after transmitting out the RSTA2ISTA LMR, the RSTA transmits a TF Ranging LMR to solicit the I2R LMR frame(s). This TF shall allocate uplink resources to ISTAs that negotiated I2R LMR and were allocated resources in the preceding measurement sounding phase. The RSTA shall allocate each RU in the TF Ranging LMR to only one ISTA **(#3679)**. In response to the TF, each addressed ISTA shall respond by transmitting an I2R LMR frame. If an ISTA negotiated delayed I2R LMR reporting, and if the TOA measurement for the previous availability window is not ready, then the ISTA shall not respond to the TF Ranging Poll frame in the polling phase of any availability window until the I2R LMR is ready.

(**#1343**)

For delayed reporting, the first instance of the R2I LMR and the optional I2R LMR do not have valid TOA/TOD timestamps to include, in this case the RSTA and the ISTA shall set the Invalid Measurement subfield in the TOA Error field of the corresponding LMR to 1. (#**TC1208r1**)



**Figure 11-36h—TB Ranging measurement reporting phase with Bidirectional LMR Feedback for n ISTAs**

In TB ranging, the PHY shall issue the PHY-RXEND.indication primitive with error condition IntegrityCheckError, if the PHY detects the integrity check error in the reception of the corresponding HE Ranging NDP or HE TB Ranging NDP. If the PHY of an RSTA issues a PHY-RXEND.indication primitive with error condition IntegrityCheckError, the RSTA shall set the Invalid Measurement field in the RSTA2ISTA LMR frame carrying the TOA measured from the I2R NDP to 1. Correspondingly, if I2R LMR was negotiated between the ISTA and RSTA and the PHY of the ISTA issues a PHY-RXEND.indication primitive with error condition IntegrityCheckError, the ISTA shall set the Invalid Measurement field in the I2R LMR carrying the TOA measured from the R2I NDP to 1. (#**2501**, #**2500**)

NOTE—A STA should discard ranging measurements when it detects that the transmit center frequency offset (CFO) between the ISTA and the RSTA exceeds the allowed tolerance from the values specified in 27.3.19.3 and 27.3.15.3. (#**3247**)

If I2R LMR reporting was negotiated, then the ISTA shall include a CFO parameter in the I2R LMR; see [9.6.7.48](#H09o6o7o48) (Location Measurement Report frame format). The ISTA shall estimate the CFO parameter based on the PPDU carrying the TF Ranging Sounding frame that solicits the I2R NDP from the ISTA. The RSTA may account for clock rate differences between ISTA and RSTA based on the CFO parameter included in the received ISTA2RSTA LMR. The mechanism by which t4 and t1 are adjusted by the RSTA is implementation specific. The CFO parameter refers to the t1 and t4 indicated in the same ISTA2RSTA LMR.

If the Invalid Measurement field in an RSTA2ISTA LMR or I2R LMR is set to 1, the RSTA or ISTA receiving the LMR should discard the TOA carried in the LMR.

In TB ranging measurement reporting phase, if RSTA2ISTA LMR reporting or I2R LMR reporting carries phase shift feedback, then the RSTA2ISTA LMR reporting or the I2R LMR reporting shall be immediate feedback.