IEEE P802.11  
Wireless LANs

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| 11az LB240 Comment Resolution Section 11.22.6.4.4 | | | | |
| Date: 2019-06-26 | | | | |
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Abstract

This submission proposes the comment resolution of CIDs (1161, 1805) in LB240 related to section 11.22.6.4.4

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** |
| 1161 | 105.00 | 11.22.6.4.4.2 | Add a flow diagram to highlight t1, t2, t3 and t4 in Non-TB case similar to TB case and also add RTT equation for both ToA & Phase Shift type feedback. | As per comment | **Revised**  **Agreed in principle**  Added timing diagram and associated RTT equations |

TGaz Editor: Insert the following paragrapsh and figures at end of section 11.22.6.4.4.2 Non-TB Measurement Sounding Part:

Both RSTA and ISTA perform TOF measurements by capturing the timestamps of the NDP frames. The ISTA records the time at which the UL NDP is transmitted (t1). The RSTA then captures the time at which the UL NDP arrives (t2) and records the time at which the DL NDP is transmitted (t3). The ISTA finally captures the time at which the DL NDP arrives (t4). See Figure 11-xxx. The timestamp values t2 and t3 shall be measured according to the RSTA’s clock (i.e., without applying any frequency offset correction to the time basis).



**Figure 11 -xxx Timing diagram of a Measurement Sounding part in non-TB Ranging**

The Round-Trip Time (RTT) based on first path reporting is defined as

RTT = [(t4-t1) – (t3’-t2’)]

where t3’ and t2’ are the time at which the DL NDP was transmitted and the time at which the UL NDP was received, respectively, as converted by the ISTA from the RSTA’s time basis to its own time basis.

The Round-Trip Time (RTT) based on phase-shift based reporting is defined as

RTT = [(t4-t1) – (t3’-t2’’)], with t2’’ = tp2 – (tp4 – t4)

where t3’ and t2’ are the time at which the DL NDP was transmitted and the time at which the UL NDP was received, respectively, as converted by the ISTA from the RSTA’s time basis to its own time basis, tp2 and tp4 are phase shift calculated by RSTA and ISTA respectively.

The mechanism by which the ISTA derives t3’ and t2’ from the TOD and TOA fields of the relevant LMR are implementation dependent.

The TOA field’s value contains a timestamp that represents the time, with respect to a time base, at which the start of the first HE-LTF of the associated NDP frame arrived at the receive antenna connector. The TOD field’s value contains a timestamp that represents the time, with respect to the same time base, at which the start of the first HE-LTF of the associated NDP frame appeared at the transmit antenna connector.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1805 | 102.00 | 11.22.6.4.4.2 | ACs are used to distinguish traffic types of different levels of priority. Allowing any AC to be used for randing NDP announcement is only meaningful if tehre are various possible levels of priority needed for such ranging exchange. Otherwise, high density of regular ranging exchanges may interfere with voice calls for example, thus making this standard a source of interference for delay-sensitive traffic, including in scenarios where ranging is not urgent. | Integrate the concept of priority (e.g. e911) and associate reasonable AC recommendations associated to the use case, thus using BE for standard exchanges and higher Acs based on the urgency of the exchange. | **Revised**  Similar to VHT, ranging NDPA can be sent using any AC (Refer to REVmd 2.1 10.2.3.2 HCF contention based channel access (EDCA)) |

TGaz Editor: change the paragraph in section 11.22.6.4.4.2 Non-TB Measurement Sounding Part as follows:

An ISTA shall not initiate a new measurement exchange sequence until the minimum time interval between subsequent range measurements, specified in the MinTimeBetweenMeasurements field in the non-TB Ranging Specific subelement subfield in the Ranging Parameters field in an initial Fine Timing Measurement frame, has elapsed (see Figure 11-36j).

An ISTA may use any access category to transmit Ranging NDP Announcement frame without being restricted by admission control procedures.

The ISTA maintains a sounding dialog token counter modulo 64 for each RSTA corresponding to a non-TB Ranging session. The value in the counter is filled in the Sounding Dialog Token Number subfield in its transmitted Ranging NDP Announcement frame. The sounding dialog token counter shall be increased by 1 after each new transmitted Ranging NDP Announcement frame.

Additional material for discussion:

Table 9-154—ACI-to-AC coding

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| ACI | AC | Description |
| 0 | AC\_BE | Best effort |
| 1 | AC\_BK | Background |
| 2 | AC\_VI | Video |
| 3 | AC\_VO | Voice |