IEEE P802.11
Wireless LANs

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| 802.11Resolutions to a few LB249 comments – Part 4(relative to IEEE 802.11 REVmd D3.2 and P802.11az D2.2) |
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**Abstract**

This submission proposes resolutions to the following LB249 CIDs: 3134, 3611, 3442.

History:

R0: Initial Version

R1: changes during the June 10th, 2020 .11az teleconference

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| 3134 | 73.00 | 27 | 9.4.2.296 | "set to 0 to indicate that the first path reporting in the ISTA2RSTA LMR" - what about first path Reproting - something is missing in this sentence. | May be change "first path reporting" to "first path reported" | Revise. Incorporate the editor instructions corresponding to CID #3134 in submission 11-20/0799. |
| 3611 | 73.00 | 26 | 9.4.2.296 | "The I2R TOA Type subfield in the initial Fine Timing Measurement Request frame is set to 1 to 26indicate that the ISTA supports phase shift type TOA feedback and is set to 0 to indicate that the 27first path reporting in the ISTA2RSTA LMR. The I2R TOA type in the initial Fine Timing 28Measurement frame is set to 1 to indicate that the TOA feedback type in the ISTA2RSTA LMR 29to be phase shift type of TOA, corresponding to the average linear phase across the subcarriers 30and is set to 0 to indicate that, and the ISTA2RSTA LMR TOA feedback type to be the first path 31reporting. " -- as far as I can tell in the IFTMR it's a capability indication and in the IFTM it's the request | Change to "The I2R TOA Type subfield in the initial Fine Timing Measurement Request frame is set to 1 toindicate that the ISTA supports phase shift type TOA feedback in the ISTA2RSTA LMR and is set to 0 to indicate that it does not. The I2R TOA type in the initial Fine TimingMeasurement frame is set to 1 to request that the TOA feedback in the ISTA2RSTA LMRbe the phase shift type TOA feedback, corresponding to the average linear phase across the subcarriers,and is set to 0 to request that the ISTA2RSTA LMR TOA feedback type be first pathreporting. " | Revise. Incorporate the editor instructions corresponding to CID #3134 in submission 11-20/0799. |

Discussion:

The type of ToA estimation can either be first path based or phase shift based. This is common to both R2I and I2R. Describe the estimation types in common. Following that description describe the R2I ToA Type and I2R ToA Type subfields.

Resolution:

***TGaz Editor: Change the following paragraphs (P73 L21-33) as shown below:***

The time of arrival timestamp is reported using first path estimation or phase shift estimation. The first path reporting estimates time of arrival timestamp by determining the propagation path between TX and RX which is estimated to have the shortest time of flight. Phase shift reporting refers to the estimation of average linear phase across the subcarriers. The R2I ToA Type and the I2R TOA Type subfields indicate which of the two estimation methods, namely first path reporting or phase shift reporting, the RSTA and the ISTA use to estimate and report the time of arrival timestamp respectively.

The R2I TOA subfield is set to 1 in the initial Fine Timing Measurement Request frame to indicate the the ISTA requests the RSTA to provide a TOA value in the RSTA2ISTA LMR that is estimated using phase shift reporting; and is set to 0 to indicate that the TOA value in the RSTA2ISTA LMR is estimated using first path reporting. The R2I TOA Type subfield is set to 1 in the initial Fine Timing Measurement frame to indicate that the RSTA estimates TOA using phase shift reporting; and set to 0 to indicate that the RSTA estimates TOA using first path reporting(#**1648**).

The I2R TOA Type subfield is set to 1 in the initial Fine Timing Measurement Request frame to indicate that the ISTA supports phase shift reporting and is set to 0 to indicate that the first path reporting in the ISTA2RSTA LMR. The I2R TOA Type subfield in the initial Fine Timing Measurement frame is set to 1 to indicate that the RSTA requires the ISTA to provide TOA values in the ISTA2RSTA LMR estimated using phase shift reporting and is set to 0 to indicate that the RSTA requires the ISTA to provide TOA values in the ISTA2RSTA LMRestimated using the first path reporting

***TGaz Editor: Change the following paragraphs in Cl. 11.22.6.3.3 (P122 L25-42, P123L1-8) as shown below:***

An ISTA and an RSTA may negotiate to include TOA values estimated using phase shift reporting in the Non-TB Ranging and TB ranging measurement exchange, for either the RSTA2ISTA LMR and/or ISTA2RSTA LMR. In this case, instead of the TOA t2 of the I2R NDP, the RSTA2ISTA LMR carries the phase shift tp2 of I2R NDP and instead of the TOA t4 of the R2I NDP, the I2R LMR carries phase shift tp4 of R2I NDP. The ISTA and RSTA can use Equations (11-xx) and (11-yy) to derive the RTT.

An RSTA in which dot11PhaseShiftFeedbackImplemented is true shall set the Phase Shift Feedback Support field in the Extended Capabilities element to 1 to indicate RSTA’s capability.

* When an RSTA has set the Phase Shift Feedback Support field to 1 in the Extended Capabilities element, an ISTA may set the R2I TOA Type subfield in the Ranging Parameter field in the initial Fine Timing Measurement Request frame to 1 to request that the TOA value in the RSTA2ISTA LMRs of the corresponding FTM session to be estimated using phase shift reporting. The RSTA may set the R2I TOA Type subfield in the Ranging Parameter field in the corresponding initial Fine Timing Measurement frame to 1 to confirm that the TOA value in the RSTA2ISTA LMRs of the FTM session would be estimated using phase shift reporting. When the RSTA sets the R2I TOA Type subfield in the Ranging Parameter field in an initial Fine Timing Measurement frame to 1, the RSTA shall carry the phase shift tp2 of I2R NDP in the RSTA2ISTA LMR.(#**1581**)

An ISTA which has set the I2R LMR feedback subfield to 1 and is capable estimating TOA using phase shift reporting shall set the I2R TOA Type subfield to 1 in the Ranging Parameter field in the initial Fine Timing Measurement Request frame to indicate the ISTA’s capability.

* When an ISTA has set the I2R LMR feedback field to 1 and the I2R TOA Type subfield to 1 in the Ranging Parameters field in the initial Fine Timing Measurement Request frame, an RSTA may set the I2R TOA Type subfield to 1 in the Ranging Parameters field of the corresponding initial Fine Timing Measurement frame to indicate that the value of TOA included in the ISTA2RSTA LMRs be estimated using phase shift reporting. Otherwise the RSTA shall set the I2R TOA Type subfield in the Ranging parameters field of the initial Fine Timing Measurement frame to 0. When an RSTA sets the I2R TOA Type subfield in the Ranging parameters field of an initial Fine Timing Measurement frame to 1, the ISTA shall carry the phase shift tp4 of R2I NDP in the I2R LMR (#**1581**).

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| 3442 | 74.26 | 26 | 9.4.2.296 | In the initial Fine Timing Measurement frame the Immediate I2R Feedback should be reserved. | change the text per the comment. | Reject.The Immediate I2R subfield in the initial Fine Timing Measurement Request frame is used to indicate ISTA’s capability to report ISTA2RSTA LMR: delayed or Immediate. This could be used by the RSTA to determine if the ISTA2RSTA LMR is reported by the ISAT immediately or delayed. |