IEEE P802.11  
Wireless LANs

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| 11az LB249 Comment Resolution Section 11.22.6.4.4 | | | | |
| Date: 2020-02-04 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Niranjan Grandhe | NXP semiconductors | 350 Holger way, San Jose, CA |  |  |
| Christian Berger | NXP semiconductors | 350 Holger way, San Jose, CA |  |  |
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Abstract

This submission proposes the comment resolution of CIDs (3722, 3727, 3728, 3730, 3731, 3732, 3733, 3735, 3738, 3739, 3908, 3255, 3256, 3257, 3258, 3742, 3743, 3745, 3746, 3467, 3259, 3747, 3260) in LB249 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** |
| 3722 | 145.09 | 11.22.6.4.4.2 | The concept of "this round" has not been defined | Change to "the immediately preceding measurement sounding phase". In next entence previous round -> "the measurement sounding phase before the immediately preceding one" | **Revised**  **Agreed in principle**  Change “this round” to “current measurement exchange” |

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

The measurement sounding phase of the measurement exchange sequence in non-TB ranging shall follow the sequence illustrated in Figure 11-36I. The NDPA and I2R/R2I NDP frames refer to a Ranging NDP Announcement frame and HE Ranging NDPs respectively, whose frame formats are defined in 9.3.1.20 and 27.3.17a, respectively. The measurement-reporting phase consists of an LMR frame, which is a Location Measurement Report as defined in 9.6.7.37.

For immediate feedback the LMR carries measurement results of the current measurement exchange(#3722), while for delayed feedback the LMR carries measurement results of the previous measurement exchange(#3722) (see 11.22.6.4.4.3 Non-TB Ranging measurement reporting phase).

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3727 | 145.29 | 11.22.6.4.4.2 | "The value in the counter is filled in the Sounding Dialog Token 29 Number subfield in its transmitted Ranging NDP Announcement frame." -- weird wording | Change to "The Sounding Dialog Token Number subfield in Ranging NDP Announcement frames sent by the ISTA is set to the value of this counter." | **Revised**  **Agreed in principle**  Change current paragraph to “ The ISTA maintains a sounding dialog token counter modulo 64 for each RSTA corresponding to a Non-TB Ranging session. When transmitting a Ranging NPD announcement frame to an RSTA, the the Sounding Dialog Token Number subfield in the Sounding Dialog field is set to the value of the corresponding counter; after which the counter is incremented by 1” |
| 3728 | 145.31 | 11.22.6.4.4.2 | "after each new transmitted Ranging NDP Announcement" -- what does "new" mean here? Is this something about retransmissions? But an NDPA isn't retransmitted, is it? | Change to "after each transmission of a Ranging NDP Announcement frame" | **Revised**  **Agreed in principle**  Change current paragraph to “The ISTA maintains a sounding dialog token counter modulo 64 for each RSTA corresponding to a Non-TB Ranging session. When transmitting a Ranging NPD announcement frame to an RSTA, the the Sounding Dialog Token Number subfield in the Sounding Dialog field is set to the value of the corresponding counter; after which the counter is incremented by 1.” |

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

The ISTA maintains a sounding dialog token counter modulo 64 for each RSTA corresponding to a Non-TB Ranging session. When transmitting a Ranging NDP announcement frame to an RSTA, the Sounding Dialog Token Number subfield in the Sounding Dialog field is set to the value of the corresponding counter; after which the counter is incremented by 1.(#3727, #3728)

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3730 | 146.03 | 11.22.6.4.4.2 | "the ISTA shall 4 conclude that the transmission of the Ranging NDP Announcement frame + I2R NDP has failed" ... and what does it do in that case? | Append "and shall halt and catch fire" | **Revised**  Add a sentence saying current measurement exchange shall be aborted |
| 3731 | 146.06 | 11.22.6.4.4.2 | "If a PHY-RXSTART.indication primitive occurred during the time interval, the ISTA tries to 6 receive the I2R NDP and the LMR frame from the RSTA addressed by the Ranging NDP 7 Announcement frame. If the LMR is received from the RSTA, the frame exchange initiated by 8 the Ranging NDP Announcement is complete. " ... and what if the LMR is not received? | Append "Otherwise, the ISTA shall halt and catch fire." | **Revised**  Add a sentence saying current measurement exchange has failed from ISTA perspective |

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

After transmitting the Ranging NDP Announcement frame and I2R NDP frame, the ISTA shall wait for a time interval with a value of aSIFSTime + aSlotTime + aRxPHYStartDelay. This interval begins when the MAC receives a PHY-TXEND.confirm primitive of I2R NDP frame. If a PHY-RXSTART.indication primitive does not occur during the time interval, the ISTA shall conclude that the transmission of the Ranging NDP Announcement frame + I2R NDP has failed and abort the current measurement exchange (#3730). If a PHY-RXSTART.indication primitive occurred during the time interval, the ISTA tries to receive the R2I NDP and the LMR frame from the RSTA addressed by the Ranging NDP Announcement frame. If the LMR is received from the RSTA, the frame exchange initiated by the Ranging NDP Announcement is complete, otherwise the ISTA shall conclude that the current measurement exchange has failed (#3731).

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3732 | 146.14 | 11.22.6.4.4.2 | "according to 14 the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7), i.e., not exceeding 15 the bandwidth of the NDPA, I2R NDP and R2I NDP." -- the i.e. bit is liable to spec rot | Delete from ", i.e." onwards | **Accepted**  Deleted the sentence as it looks like duplication |
| 3733 | 146.14 | 11.22.6.4.4.2 | This smells like duplication (at least the last sentence of the first bullet does) | Delete duplication | **Reject**  First sentence talks about bandwidth for I2R NDPA and NDP and next sentence talks about bandwidth for R2I NDP and R2I LMR hence there is no duplication in the text |
| 3735 | 146.40 | 11.22.6.4.4.2 |  | "The timestamp values t2 and t3 shall be measured according to the RSTA's clock (i.e., 40 without applying any frequency offset correction to the time basis). " but that's obviously the case for the RSTA, and inapplicable to the ISTA since it doesn't measure t2 and t3 | **Reject**  This sentence was added as a note, not to adjust timestamps based on cfo  Similar statement exists even in 11md Draft 3.0 (refer 11.22.6.4) |

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

In the non-TB measurement exchange sequence, the ISTA shall transmit the NDPA frame with the same bandwidth as the I2R NDP to reserve the medium (#1829), set I2R Rep, and R2I Rep subfields of the STA Info field to a value in the range of 0 to RSTA assigned I2R rep, and 0 to RSTA assigned R2I rep respectively; the RSTA shall transmit the R2I NDP with the same bandwidth as the NDPA, while the LMR can be transmitted at a different bandwidth, according to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7)(#3732). The allowed bandwidths for the NDPA I2R NDP and R2I NDP frames are specified in the Format and Bandwidth subfield of the Ranging Parameters field (see 9.4.2.296).

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3738 | 148.01 | 11.22.6.4.4.2 | "The TOA field is" -- the TOA field of what? Nothing discussed above in this subclause has a TOA field | Prefix "In an LMR," | **Accepted** |
| 3739 | 148.01 | 11.22.6.4.4.2 | "The TOA field is a timestamp that represents the time, with respect to a time base, at which the 1 start of the preamble of the corresponding NDP frame (#2774) arrived at the receive antenna 2 connector. The TOD field contains a timestamp that represents the time, with respect to the same 3 time base, at which the start of the preamble of the corresponding NDP frame appeared at the 4 transmit antenna connector. (#1160, #1161) ". Does it contain a timestamp or is it a timestamp? Does a timestamp represent a time or indicate one? | Change to "The TOA field indicates the time, with respect to a time base, at which the start of the preamble of the corresponding NDP arrived at the receive antenna connector. The TOD field indicates the time, with respect to the same time base, at which the start of the preamble of the corresponding NDP frame appeared at the transmit antenna connector. (#1160, #1161) " | **Revised**  Changed the sentence to  “TOA field contains timestamp” |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.2 Non-TB Measurement Sounding phase as follows:

In an LMR, t(#3738)he TOA field contains(#3739) a timestamp that represents the time, with respect to a time base, at which the start of the preamble of the corresponding NDP frame (#2774) arrived at the receive antenna connector. The TOD field contains a timestamp that represents the time, with respect to the same time base, at which the start of the preamble of the corresponding NDP frame appeared at the transmit antenna connector. (#1160, #1161)

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3908 | 147.16 | 11.22.6.4.4.2 | "The Round-Trip Time (RTTRSTA) based on first path reporting is defined as:" The RSTA can compute the RTT only when the ISTA2RSTA LMR Feedback is negotiated. | Replace "The Round-Trip Time (RTTRSTA) based on first path reporting is defined as:" with "When the ISTA2RSTA LMR Feedback is negotiated, the RSTA can compute the RTT based on first path reporting as:" | **Reject**  This part just defines the RTT equation at RSTA and there is no need to add anything about ISTA2RSTA LMR feedback and it is obvious that timestamps t1, t4 won’t be available at RSTA if I2R LMR feedback is not negotitated. If we take in proposed change then we also need to add what happens to RTT when feedback is not negotiated, which results in unnecessary spec text addition |
| 3255 | 148.07 | 11.22.6.4.4.3 | "If the Range Reporting is performed in the context of a Secure Fine Timing Measurement Session ..." this is not the right subclause for this text, either delete or move to subclause 11.22.6.4.6.1 | As per comment | **Revised**  **Agreed in principle**  Added a sentence in 11.22.6.4.6.1 |

TGaz Editor: Remove the sentence in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

**11.22.6.4.4.3 Non-TB Ranging Measurement Reporting phase**

(#3255)In non-TB ranging, the ranging protocol supports both immediate and delayed reporting.

TGaz Editor: change the paragraph in section 11.22.6.4.6.1 Secure Non-TB ranging mode as follows:

11.22.6.4.6.1 Secure Non-TB ranging mode

When a Location Measurement Report frame contains range measurement results measured from an I2R NDP and a R2I NDP, an RSTA shall include the Secure LTF Parameters field in the Location Measurement Report frame and set 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 STA Info SAC field in the Ranging NDP Announcement frame that solicited the I2R NDP and the R2I NDP. Location measurement report frames shall be transmitted using the Protected Dual of Public Action frames (See 9.6.10 Protected Dual of Public Action frames).(#3255)

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3256 | 148.11 | 11.22.6.4.4.3 | "An RSTA indicates immediate reporting by setting the Immediate LMR parameter in the non-TB specific subelement in the Ranging Parameters field to 1." The immediate LMR parameter has been moved to the Ranging Parameters | Change to "An RSTA or ISTA indicates immediate reporting by setting the Immediate R2I or I2R feedback subfield in the Ranging Parameters field to 1." | **Accepted** |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

An RSTA or ISTA indicates immediate reporting by setting the immediate R2I or I2R feedback subfield in the Ranging Parameters field to 1(#3256). In immediate reporting, the TOA feedback corresponding to the current measurement exchange sequence is reported in the current measurement exchange, see Figure 11-36j.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3257 | 148.19 | 11.22.6.4.4.3 | "An RSTA indicates delayed reporting by setting the Immediate LMR parameter in the non-TB specific subelement in the Ranging Parameters field to 0." The immediate LMR parameter has been moved to the Ranging Parameters | Change to "An RSTA or ISTA indicates delayed reporting by setting the Immediate R2I or I2R feedback subfield in the Ranging Parameters field to 0" | **Accepted** |
| 3258 | 148.26 | 11.22.6.4.4.3 | "The Immediate LMR parameter in the non-TB specific subelement in the Ranging Parameters field is reserved in the initial FTM Request frame." Out of date and also unnecessary here. | Remove pragraph | **Accepted** |
| 3742 | 148.23 | 11.22.6.4.4.3 | It is not clear what an "Empty LMR" contains | Specify that the TOA is all-zeroes, or that the Invalid Measurement field is set to 1 | **Revised**  Add sentence to “The invalid measurement bit in an empty LMR is set to 1 indicating that it doesn’t contain valid TOA/TOD fields.” |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

An RSTA or ISTA indicates delayed reporting by setting the Immediate R2I or I2R feedback subfield in the Ranging Parameters field to 0.(#3257) (#2276, #1654, #1220, #2431) In delayed feedback, the TOA and TOD values in the current LMR carries the measurement results of the previous round, see Figure 11-36k. In this case, the LMR following the very first sounding sequence has no valid TOA to include, which in Figure 11-36j is termed an “Empty LMR” for illustrative purposes. The invalid measurement bit in an empty LMR is set to 1 indicating that it doesn’t contain valid TOA/TOD fields.(#3742)

(#3258)

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3743 | 148.33 | 11.22.6.4.4.3 | "An RSTA that indicated delayed reporting shall provide TOA feedback to the ISTA, when the 33 ISTA initiates another measurement sequence after MinTimeBetweenMeasurements, (#2276, 34 #2278) and completes the measurement sequence but before MaxTimeBetweenMeasurements" -- hm, so what does the RSTA do outside this window | Add "If the ISTA initiates the measurement sequence outside this window, the RSTA shall halt and catch fire." | **Revised**  Added a statement in the end saying “If the ISTA initiates the measurement sequence after MaxTimeBetweenMeasurements then the contents of TOA/TOD field are invalid and RSTA sets invalid measurement bit in LMR to 1.” |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

An RSTA that indicated delayed reporting shall provide TOA feedback to the ISTA, when the ISTA initiates another measurement sequence after MinTimeBetweenMeasurements, (#2276, 34 #2278) and completes the measurement sequence but before MaxTimeBetweenMeasurements, see Figure 11-36l. This TOA feedback is carried in the LMR frame of this new measurement sequence and can be either valid or invalid as indicated by the invalid Measurement field in the LMR frame. If the ISTA initiates the measurement sequence after MaxTimeBetweenMeasurements then the contents of TOA/TOD fields are invalid and the RSTA shall set the invalid measurement bit in the LMR frame to 1.(#3743)

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3745 | 149.04 | 11.22.6.4.4.3 | "The Dialog Token field of the LMR frame shall be copied from the Sounding Dialog Token 4 subfield in the Ranging NDP Announcement frame" -- surely it's the number subfield? | Change to "The Dialog Token field of the LMR frame shall be copied from the Sounding Dialog Token Number subfield in the Ranging NDP Announcement frame" | **Accepted** |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

The Dialog Token field of the LMR frame shall be copied from the Sounding Dialog Token Number (#3745) subfield in the Ranging NDP Announcement frame that preceded the NDP which is used for the reported measurement

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3746 | 149.17 | 11.22.6.4.4.3 | "The feedback type of ISTA2RSTA LMR could be either immediate or delayed. " -- can the type differ from the R2I type? | Change to "The I2R feedback type, immediate or delayed, shall be the same as the R2I feedback type." | **Reject**  I2R feedback type can be different from R2I feedback type |
| 3467 | 149.18 | 11.22.6.4.4.3 | "LMR feedback is carried in Action No Ack frames (see 9.6.7.37) and are therefore neither acknowledged nor retransmitted. " -- grammar, and also this should be a NOTE since it's just duplication of normative material | Change to "NOTE---LMR feedback is carried in Action No Ack frames (see 9.6.7.37) and is therefore neither acknowledged nor retransmitted. " | **Accepted** |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

Note-- (#3467)LMR feedback is carried in Action No Ack frames (see 9.6.7.37) and are therefore neither acknowledged nor retransmitted.

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3259 | 149.26 | 11.22.6.4.4.3 | "The data rate or MCS used for transmitting the LMR frame", that seems double, is there a difference between data rate and MCS? | Change to "The format and MCS used for transmitting the LMR frame" or "The MCS used for transmitting the LMR frame" depending which one is meant. | **Revised**  Changing to “The format and MCS used for transmitting the LMR frame” |
| 3747 | 149.26 | 11.22.6.4.4.3 | " of 26 the corresponding LMR frame" -- what corresponding frame? | Delete the cited text | **Revised**  Removed the word corresponding |
| 3260 | 149.27 | 11.22.6.4.4.3 | "The bandwidth used to transmit the LMR frame shall not be wider than the bandwidth of the soliciting NDPA", according to this, technically the NDPA could be 80 MHz, the R2I LMR 40 MHz and the I2R again 80 MHz. | Change to "The bandwidth used to transmit either of the LMR frames can be chosen by its transmitter according to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7)." | **Accepted** |

TGaz Editor: Change the paragraph in section 11.22.6.4.4.3 Non-TB Measurement Reporting phase as follows:

The format and(#3259) MCS used for transmitting the LMR frame is solely decided by the transmitter of the (#3747) LMR frame. The bandwidth used to transmit either of the LMR frames can be chosen by its transmitter according to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7)(#3260).