IEEE P802.11  
Wireless LANs

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| 11az LB249 Comment Resolution Section 11.22.6.4.3 | | | | |
| Date: 2019-04-03 | | | | |
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Abstract

This submission proposes the comment resolution of CIDs in LB240 related to section 11.22.6.4.3

CIDs:

* 11.22.6.4.3.1: 3664, 3985, 3669, 3672, 3675
* 11.22.6.4.3.3: 3688, 3689, 3692, 3693, 3695, 3697, 3698, 3699, 3470,

Revisions:

1. Adde more CIDs (3470)
2. Add document number to CID resolution 11-20/0154, modifications during presentation

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** |
| **3664** | 135.20 | 11.22.6.4.3.1 | “An RSTA and ISTA participating in TB ranging shall perform any measurement sounding and measurement results reporting activities only within the availability windows.” suggests the polling (sub)phase can be outside the window | Change to “An RSTA  and ISTA participating in TB ranging shall perform any polling, measurement sounding and measurement  results reporting activities only within the availability windows.” | **Accepted**  See 11-20/0154 |
| **3985** | 135.00 | 11.22.6.4.3.1 | It is not clear whether only HE STAs can participate in the TB Ranging Measurement exchange or a new type of STAs compliant to 11ax can also perform the exchange. | Clarify the point in the comment. | **Rejected**  Only STAs that implement 11az features can participate, this includes ceratin HE STA features, but also beyond.  Future PHY ammendments are beyond the scop of 11az and it is up to the relevant future amendment to consider 11az support. |
| **3669** | 136.17 | 11.22.6.4.3.1 | "An RSTA shall not transmit a Ranging Trigger frame as part of an A-MPDU. " -- I don't think that's what's intended, since everything in VHT and HE is transmittted as part of an A-MPDU. I think what is intended is non-A-MPDU (see definition in baseline) | Change to "An RSTA shall transmit a Ranging Trigger frame as a non-A-MPDU. " | **Accepted**  See 11-20/0154 |
| **3672** | 136.20 | 11.22.6.4.3.1 | “An ISTA shall only transmit any Fine Timing Measurement Request frame outside an Availability Window allocated to itself. (#1170, #1566)” is extremely unclear. Seems to be saying that FTMR frames must be transmitted outside AWs, but I think it's trying to say that the only kind of FTM-related frame that may be sent outside an AW is an FTMR frame" | Change to “An ISTA shall may transmit a Fine Timing Measurement Request frame outside an Availability Window allocated to it. Other frames involved in TB ranging shall not be transmitted outside this window.” | **Revised**  The reason for indicating a negation as to the possibility to transmit an FTMR within the window is due to the intent to minimize the power consumption of other ISTAs.  Change to  “An ISTA shall ~~only~~ transmit any Fine Timing Measurement Request frame outside an Availability Window allocated to itself”  See 11-20/0154 |
| **3675** | 136.22 | 11.22.6.4.3.1 | “A RSTA, in which dot11MultiBSSIDImplemented is true, that transmits a Ranging Trigger frame or a Ranging NDP Announcement frame to a set of ISTAs in which at least two ISTAs have a TB Ranging Measurement exchange with different BSSIDs in the Multiple BSSID set of the RSTA shall set the TA field of the frame to the transmitted BSSID. Otherwise, the RSTA shall set the TA field of the Ranging Trigger frame or a Ranging NDP Announcement frame to its MAC address.” -- first sentence might be duplication of 9.3.3.1 in baseline (depends on what RA is set to, which is not specified) and second definitely is | Change to “A RSTA in which dot11MultiBSSIDImplemented is true and that transmits a Ranging Trigger frame or a Ranging NDP Announcement frame to a set of ISTAs in which at least two ISTAs have a TB Ranging Measurement exchange with different BSSIDs in the Multiple BSSID set of the RSTA shall set the RA field of the frame to the broadcast address.” | **Revised**  Setting the RA field to broadcast when sending to multiple STAs is also baseline behavior. Removed “Otherwise …” sentence.  See 11-20/0154 |
| **3688** | 138.23 | 11.22.6.4.3.3 | “Each TF Ranging Sounding shall allocate uplink resources for one or more ISTA's I2R NDP multiplexed in the spatial stream domain” -- not clear if can also be multiplexed in the frequency domain | As it says in the comment | **Rejected**  “Not clear” is not an actionable comment.  Furthermore, specifying that a frame is multiplexed in spatial domain does not imply it could alternatively or additionally be multiplexed in the frequency domain.  Lastly, the TF Ranging Sounding User Info field does not have an RU allocation subfield. |
| **3689** | 138.26 | 11.22.6.4.3.3 | “the RSTA shall transmit an NDP Announcement frame followed by a R2I NDP (#2161); the NDPA is a Ranging NDP Announcement frame, see subclause 9.3.1.19 “ is a very roundabout way to say this. Also the subclause xref is not of any significant benefit" | Change to “the RSTA shall transmit an Ranging NDP Announcement frame followed by an R2I NDP (#2161)” | **Revised**  Added editor instructions to change all occurences of NDPA to Ranging NDP Announcement.  See 11-20/0154 |
| **3692** | 138.31 | 11.22.6.4.3.3 | “The NDPA is addressed to and the R2I NDP is used by all ISTA taking part in the exchange.” is not clear" | Change to "The Ranging NDP Announcement frame is broadcast and the R2I NDPs are transmitted to each of the ISTAs taking part in the exchange." | **Revised**  Chage to “The NDPA’s STA INFO fields specify all the ISTA that will use the R2I NDP, which are all the ISTA that were allocated uplink resources in this Measuerment Sounding Phase.”  See 11-20/0154 |
| **3693** | 138.26 | 11.22.6.4.3.3 | “the RSTA shall transmit an NDP Announcement frame followed by a R2I NDP” but F11-36d should multiple R2I NDPs" | Change to "... followed by concurrent transmission of an R2I NDP to each ISTA" | **Revised**  Added a caption to the figure, see 11-20/0154.  The text is correct, although the figure is maybe not clear. In the figure UL-MIMO separated in spatial domain (HE-MU format) and DL using NSS>1 (HE-SU format) are shown with different shades of grey (the former) vs. same gray (the latter). The multiple NSS of the R2! NDP are processed by all the ISTAs (so they don’t get one each). |
| **3695** | 139.12 | 11.22.6.4.3.3 | “Any ISTA that transmits an I2R NDP as a response to the TF Ranging Sounding shall set the TXVECTOR parameter CH\_BANDWIDTH to the value defined in the BW subfield of the Common Info field of the soliciting TF” is duplication of the baseline rules" | Delete the cited text | **Accepted**  See 11-20/0154 |
| **3697** | 139.7 | 11.22.6.4.3.3 | “The RSTA shall set the TXVECTOR parameter CH\_BANDWIDTH of the TF Ranging Sounding to that same bandwidth and use the same value for the BW subfield of the Common Info field of said TF.” is I think duplication of the baseline rules, and if it isn't it's unclear" | Delete the cited text | **Revised**  This is not baseline, since it describes how to use the bandwidth value negotiated between ISTA and RSTA(s), see also text right above.  To clarify, change  “This bandwidth shall be equal to or smaller than the bandwidth indicated by the RSTA in the initial Fine Timing Measurement frame. It may be different from the bandwidth used in the polling phase, but shall adhere to the rules of multiple”  See 11-20/0154 |
| **3698** | 139.7 | 11.22.6.4.3.3 | “The RSTA shall set the TXVECTOR parameter CH\_BANDWIDTH of the TF Ranging Sounding to that same bandwidth and use the same value for the BW subfield of the Common Info field of said TF.” is I think duplication of the baseline rules, and if it isn't it's unclear" | Change to “The RSTA shall set the TXVECTOR parameter CH\_BANDWIDTH of the TF Ranging Sounding to the value indicated in the BW subfield of the Common Info field.” | **Rejected**  For once, this is contradictory to CID 3697, but also the point here is that the TF is transmitted using this bandwidth \*and\* the allocation in the UL uses the same bandwidth |
| **3699** | 139.15 | 11.22.6.4.3.3 | “In the Sounding subvariant of the Ranging Trigger frame, the RSTA shall set the I2R Rep subfield of the User Info fields corresponding to each AID/RSID of the ISTAs triggered by the Trigger frame to a value in the range 0 to RSTA Assigned I2R Rep. Similarly, in the Ranging NDP Announcement frame, the RSTA shall set the R2I Rep subfield of the STA Info fields corresponding to each AID/RSID of the ISTAs, addressed by that frame, to a value in the range 0 to RSTA Assigned R2I Rep. “ -- why the references to AID/RSID? | Change to “In the Sounding subvariant of the Ranging Trigger frame, the RSTA shall set the I2R Rep subfield of the User Info fields corresponding to each of the ISTAs triggered by the Trigger frame to a value in the range 0 to RSTA Assigned I2R Rep, as indicated by each ISTA. Similarly, in the Ranging NDP Announcement frame, the RSTA shall set the R2I Rep subfield of the STA Info fields corresponding to each of the ISTAs addressed by that frame to a value in the range 0 to RSTA Assigned R2I Rep, as indicated by each ISTA.“ | **Accepted**  See 11-20/0154 |
| **3470** | 140.19 | 11.22.6.4.3.3 | This is not the RTT observed by ISTA, it's the ToF observed by ISTA | Change "The Round-Trip Time (RTT) observed by ISTA" to "The time of flight observed by ISTA" | **Rejected**  The equation as shown is the sum of two ToF (round-trip), compared to other definitions of RTT the processing delay is removed, but we stick here with previously used notation in the FTM protocol. |

TGaz Editor: Replace all occurences of “NDPA” with “Ranging NPD Announcement” throughout the draft and in figures and tables (total of 26 occurences), Note: some occurences of NDPA are “Ranging NDPA” (#3689)

11.22.6.4.3.1 General

TGaz Editor: Change the second paragraph of 11.22.6.4.1 as follows:

Each availability window of the TB ranging measurement exchange consists of one or more triplets of sequential phases: polling phase, measurement sounding phase and measurement reporting phase. Figure 11-36a shows an example of two availability windows, each composed of a single triplet of polling, measurement sounding and measurement reporting phases. An RSTA and ISTA participating in TB ranging shall perform any polling, measurement sounding and measurement results reporting activities only within the availability windows. (#3664)

TGaz Editor: Change line 17 on page 136 as follows:

* An RSTA shall transmit a Ranging Trigger frame as a non-A-MPDU. (#3669)

TGaz Editor: Change the fourth and fifth paragraphs on page 136 as follows:

An ISTA shall transmit any Fine Timing Measurement Request frame outside an Availability Window allocated to itself. (#1170, #1566, #3672)

An RSTA in which dot11MultiBSSIDImplemented is true and that transmits a Ranging Trigger frame or a Ranging NDP Announcement frame to a set of ISTAs, in which at least two ISTAs have a TB Ranging Measurement exchange with different BSSIDs in the Multiple BSSID set of the RSTA, shall set the TA field of these frames to the transmitted BSSID. An ISTA that supports TB Ranging Measurement exchange shall support the reception of a Control frame with TA equal to the transmitted BSSID and set the Rx Control Frame to MultiBSS subfield in HE MAC Capabilities Information field to 1. (#1115, #3675)

TGaz Editor: Please add a legend(key) to Fig- 11-36d—TB Ranging availability window with two ISTAs, as follows: “Figure shows two HE MU packets in spatial domain (I2R NDP) and one HE SU packet with NSSS=4 (R2I NDP) using stacked images.” (#3693)

11.22.6.4.3.3 Measurement Sounding Phase of TB Ranging

TGaz Editor: Change the first four paragraphs of 11.22.6.4.3 as follows:

The measurement-sounding phase commences SIFS time after the polling phase and is the second phase of each polling/sounding/reporting triplet (see Figure 11-36d). The measurement sounding phase consists of one or more Trigger frames of variant Ranging, subvariants Sounding (see 9.3.1.22.9 (Ranging Trigger variant)) allocating uplink resources to one or more ISTAs (see Figure 11-36a and Figure 11-36c). The Ranging Trigger frame of subvariant Sounding is called the TF Ranging Sounding (#1977). Each TF Ranging Sounding shall allocate uplink resources for one or more ISTA’s I2R NDP multiplexed in the spatial stream domain. The format (#2161) of the I2R NDP is an HE TB Ranging NDP (see subclause 27.3.17b HE Ranging NDP). SIFS time after receiving the last I2R NDP, the RSTA shall transmit an Ranging NDP Announcement frame followed by an R2I NDP (#2161, #3689); the R2I NDP is an HE Ranging NDP, see 27.3.17a (HE Ranging NDP). Figure 11-36d shows an availability window with an RSTA and two ISTAs (ISTA 1 and ISTA 4) responding to the poll. The TF Ranging Sounding allocates a separate spatial stream to each ISTA. The NDPA’s STA INFO fields specify all the ISTA that will use the R2I NDP, which shall include the ISTAs that were allocated uplink resources in this measurement sounding phase. (#3692)

The RSTA shall select a bandwidth value for the measurement sounding phase based on the Format and Bandwidth subfield of the Ranging Parameters element(s) (see 9.4.2.296 (Ranging Parameters element)) provided by each of the ISTAs during negotiation. This bandwidth shall be equal to or smaller than the bandwidth indicated by the RSTA in the initial Fine Timing Measurement frame.It may be different from the bandwidth used in the polling phase, butshall adhere to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7 (Multiple frame transmission in an EDCA TXOP)). (#1847, #1124, #3697)

* The RSTA shall set the TXVECTOR parameter CH\_BANDWIDTH of the TF Ranging Sounding to that same bandwidth and use the same value for the BW subfield of the Common Info field of said TF.
* When transmitting the Ranging NDP Announcement frame and R2I NDP frames, the RSTA shall set the TXVECTOR parameter CH\_BANDWIDTH to that same bandwidth.

In the Sounding subvariant of the Ranging Trigger frame, the RSTA shall set the I2R Rep subfield of the User Info fields corresponding to each of the ISTAs triggered by the Trigger frame to a value in the range 0 to *RSTA Assigned I2R Rep*, as indicated by each ISTA. (#3699)

Similarly, in the Ranging NDP Announcement frame, the RSTA shall set the R2I Rep subfield of the STA Info fields corresponding to each the ISTAs, addressed by that frame, to a value in the range 0 to *RSTA Assigned R2I Rep*, as indicated by each ISTA. (#3699)