IEEE P802.11
Wireless LANs

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| CR for Misc CIDs |
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Abstract

This document proposes resolutions to LB240 CIDs: 1104 1366 1729 1847 1124 2310 2281 2303 1560 1545 1536 1537 1538 1539 1540 2156 2204 2256 1984.

R0: initial version.

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| 1104 | 35.01 | 9.3.1.29 | The subclause seem to define multiple subvariants of a variant of the Trigger frame for ranging with no apparent benefit since many of the subfields of each of these variants are essentially the same (or sometimes simply missing). | Simply use a variant of Trigger frame and encode the different functionalities with separate bits. There seem to be plenty of them reserved. | **Rejected.**Each of the subvariants of the Ranging TF solicit different types of frames and hence have differences in frame format. For example, the User Info of Poll TF contains MCS, RU allocation information required by ISTA to transmit poll response in a particular RU but no Trigger Dependent User Info. On the other hand, the User Info field for Secured Sounding sub-variant contains a 16 bit Trigger Dependent User Info field that contains the SAC which cannot be signaled by reusing the Reserved bits elsewhere. Furthermore, the encoding of different functionalities is already achieved in draft 1.2 by the Ranging Trigger Subtype field in Trigger Dependent Common Info subfield.  |
| 1366 | 146.6 | 27.5.3.5 | We need to be careful about the interference caused by an UL MU transmission. The sentence "A RSTA may transmit any Sub-variant of the Ranging Trigger Frame with the CS Required subfield set to 0 or 1 regardless of the length of the responding HE TB PPDU" should be removed or modified. | Either remove sentence as stated in comment or change it to the following: "A RSTA may transmit any Sub-variant of the Ranging Trigger Frame with the CS Required subfield set to 1 regardless of the length of the responding HE TB PPDU | **Revised.** We retain the CS Required behaviour for all Ranging TF subvariants except for Report subvariant as this behaviour is in line with 11ax behaviour for TB PPDUs of small size and NFRP TFs. For the Ranging TF of Report subvariant, we have revised the text as per document 11-19-1454 to reflect that its CS Required bit is set in the same way as for MU-BAR Trigger frames:“An RSTA that transmits a Ranging Trigger frame shall set the CS Required subfield to 1 unless one of the following conditions is met:* The Ranging Trigger frame is of subvariant Poll, Sounding, Secure Sounding or Passive Location Ranging.
* The Ranging Trigger frame is of subvariant Report and the UL Length subfield in the Common Info field of the Trigger frame is less than or equal to 418.”
 |

**Discussion:**

The 11ax spec allows CS Required to be set to 0 by an AP for the following cases:

1. The Trigger frame is either an MU-BAR or GCR MU-BAR Trigger frame soliciting less than 584us long HE TB PPDU. The motivation being that not transmitting the BA may cause higher congestion.
2. NFRP Trigger frame.

11az follows the above principle for Ranging TF subvariants except “Report” in the following way:

1. The Sounding and Secured Sounding TF solicits NDPs similar to NFRP.

2. Since the ISTAs arrive on channel to perform ranging with the RTSA not very frequently and the size of the response frame (CTS) is small, it is more efficient for system performance to relax the CS Required for Poll TFs.

For Ranging TF of subvariant “Report” we clarify that its behaviour is same as that followed by MU-BAR Trigger frames in 11ax.

***TGaz Editor: Modify the text in P163L6 as:***

An RSTA that transmits a Ranging Trigger frame shall set the CS Required subfield to 1 unless one of the following conditions is met:

* The Ranging Trigger frame is of subvariant Poll, Sounding, Secure Sounding or Passive Location Sounding.
* The Ranging Trigger frame is of subvariant Report and the UL Length subfield in the Common Info field of the Trigger frame is less than or equal to 418 (#1366).

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| 1729 | 69.36 | 9.6.7.48 | The range of the Padding bits should be B(n+16) to B[ceiling((Count+16)/8)\*8-1] rather than B(n+16) to B(count-1)\*8. | As in comment | **Revised.** Agreed in principle with the reviewer. However, for clarity modified the text by (1)replacing ‘n’ with ‘Count’ in Figure 9-1001 and (2) creating a separate figure to clarify that there are no Padding bits when the value in Count is a multiple of 8. See document 11-19-1454 |

***TGaz Editor: Modify the text in P54L4 as:***

The ISTA Availability Information field format is shown in Figure 9-1001 and Figure 9-1002 respectively (#1729).

***TGaz Editor: Modify the Figure in P54L6 as:***

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| --- | --- | --- | --- | --- | --- |
| Count | Reserved | Availability bit B0 | … | Availability bit BCount-1 | Padding bits |

 B0-B8 B9-B15 B16 B(Count+15) B(Count+16)- B[ceiling((Count+16)/8)\*8 -1]

Bits: 9 7 1 1 Variable

 **Figure 9-1001 – ISTA Availability Information field format if the value of Count is not a multiple of 8** (#1729)**.**

***TGaz Editor: Add the following Figure in P54L7 as:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Count | Reserved | Availability bit B0 | … | Availability bit BCount-1 |

 B0-B8 B9-B15 B16 B(Count+15)

Bits: 9 7 1 1

 **Figure 9-1002 – ISTA Availability Information field format if the value of Count is a multiple of 8** (#1729)**.**

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| 1847 | 98.28 | 11.22.6.4.3.3 | The RSTA shall select one bandwidth value for the measurement sounding part based on theFormat and Bandwidth subfield of the Ranging Parameters field(s) | Clarify that a partial BW may be used e.g. if the secondary channel is busy. | **Revised.** Modified the text as follows to calrify the BW selected for sounding :“The RSTA shall select a bandwidth value for the measurement sounding part based on theFormat and Bandwidth subfield of the Ranging Parameters field(s) (see 9.4.2.279) provided byeach of the ISTAs during negotiation. This bandwidth shall be equal to or smaller than the negotiated bandwidth and may be different from the bandwidth used in the polling part and shall adhere to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7).” See document 11-19-1454.Note that document 326r1 also clarifies the behaviour for secure Non-TB and TB ranging.  |
| 1124 | 49.34 | 9.4.2.279 | Bandwidth for NDP should be tagged as nominal (or Max) BW to be used for both the requested (IFTMR) and allocated (IFTM) behavior. | Add the refinement/tag to the BW and also add a note to indicate 'smaller BW maybe used depending on channel condition'. | **Revised.** Agreed in principle. However, this behaviour is already clarified in 11.22.6.4.4.2 of draft 1.2 for NTB Ranging**: “**An ISTA transmitting a Ranging NDP Announcement frame shall not use a bandwidthwider than that indicated by an RSTA in the Ranging Parameters element, in the initialFine Timing Measurement frame.”For TB Ranging we clarify this behaviour by modifying the text in 11.22.6.4.3.3 as follows:“The RSTA shall select a bandwidth value for the measurement sounding part based on theFormat and Bandwidth subfield of the Ranging Parameters field(s) (see 9.4.2.279) provided byeach of the ISTAs during negotiation. This bandwidth shall be equal to or smaller than the negotiated bandwidth and may be different from the bandwidth used in the polling part and shall adhere to the rules of multiple frame transmission in an EDCA TXOP (see 10.22.2.7).” See document 11-19-1454 |

***TGaz Editor: Modify the text in P109L8 as:***

The RSTA shall select a bandwidth value for the measurement sounding phase based on the
Format and Bandwidth subfield of the Ranging Parameters field(s) (see 9.4.2.279) provided by
each of the ISTAs during negotiation. This bandwidth shall be equal to or smaller than the negotiated bandwidth, may be different from the bandwidth used
in the polling phase and shall adhere to the rules of multiple frame transmission in an EDCA
TXOP (see 10.22.2.7) (#1847, 1124).

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| 2310 | 103.09 |  | Using both MinToAReady and MinTimeBetweenMeasurements to indicate the same quantity is unnecessary. Use one octet (MinToAReady) to indicate whether a delayed report or immediate report is sent is inefficient. | Modify the spec so that for NTB ranging, only two parameters (i.e., the beginning of the time for the next round of measurement, the end of the time for the next round of measurement) need to be indicated. In addition, use a 1-bit field in the NTB Specific subelement to indicate whether an immediate or a delayed report is transmitted. | **Revised.** Resolved as per document: 11-19-659r7.The field MinToAReady no longer exist.  |
| 2281 | 103.26 |  | "An RSTA indicates delayed reporting by setting the MinToAReady parameter in the non-TB Ranging Specific subelement in the Ranging Parameters field to a non-zero value. " Is the immediate reporting indicated by setting MinToAReady to 0? Using a 1-octet field to indicate an immediate or a delayed report is inefficient. | Modify the spec so that for NTB ranging, only two parameters (i.e., the beginning of the time for the next round of measurement, the end of the time for the next round of measurement) need to be indicated. In addition, use a 1-bit field in the NTB Specific subelement to indicate whether an immediate or a delayed report is transmitted. | **Revised.** Resolved as per document: 11-19-659r7.The field MinToAReady no longer exist.  |
| 2303 | 103.10 |  | There is a recommendation in the section for secured TB ranging that a device discards 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 28.3.18.3 and 28.3.14.3. A similar recommendation should be added to the section for secured NTB ranging. | Add the following text in 11.22.6.4.4.3: "In the secured mode of NTB ranging, it is recommended that a device discards 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 28.3.18.3 and 28.3.14.3." | **Revised.** Added the following text to clarify the behaviour:“In the secured mode of NTB Ranging, a device should discard ranging measurements when itdetects that the transmit center frequency offset (CFO) between the ISTA and the RSTA exceedsthe allowed tolerance from the values specified in 27.3.18.3 and 27.3.14.3” See document 11-19-1454  |

***TGaz Editor: Add the following paragraph before the text starting in P119L4 as:***

In the secured mode of NTB Ranging, a device 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 27.3.18.3 and 27.3.14.3 (#2303).

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| 1560 | 93.15 | 11.22.6.4.3.1 | The measurement exchange for the TB Ranging mode also applies to the Passive Location Ranging mode, except where explicitly desribed to be different. The mentioning of this is missing. | Add text stating that the measurement exchamge for the TB Ranging mode also applies to the Passive Location Ranging mode, except where explicitly desribed to be different. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.”  |
| 1545 | 69.36 | 9.6.7.48 | The Location Measurement Report frame is used to support also the Passive Location Ranging mechanisms of the FTM procedure. Add the description for this. | Add missing description for Passive Location Ranging as per the comment. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 1536 | 48.14 | 9.4.2.279 | The ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field also applies to the Passive Location Ranging case. | Add text covering the behavior for the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field for the Passive Location Ranging case. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 1537 | 49.34 | 9.4.2.279 | The 'Format and Bandwidth subfield' also applies to the Passive Location Ranging case. | Add text for the behavior of the 'Format and Bandwidth subfield' for the Passive Location Ranging case. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 1538 | 49.39 | 9.4.2.279 | The 'Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame' also applies to the ISTA in the Passive Location Ranging case. | Add text for the behavior of the 'Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame' for the ISTA in Passive Location Ranging case. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 1539 | 50.01 | 9.4.2.279 | The 'Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame' also applies to the RSTA in the Passive Location Ranging case. | Add text for the behavior of the 'Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame' for the RSTA in Passive Location Ranging case. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 1540 | 51.22 | 9.4.2.279 | The TB Specific Parameters subelement is also used when the negotiated ranging protocol is Passive Location Ranging.  | Add text indicating that the TB Speficif Parameters subelement is also used when the negotiated ranging protocol is Passive Location Ranging. | **Revised.** Resolved as per document: 11-19-1041r2 that contains the following line: “Passive Location Ranging is a variant of the TB ranging mode referred to in Subclause 11.22.6 (Fine timing measurement (FTM) procedure). In all aspects, except where explicitly stated differently, the Passive Location Ranging mode, its protocols, procedures, componenets, and defenitions follow the rules for TB ranging.” |
| 2156 | 54.07 | 11.22.6.4.3z.1 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]"Measurement resources and results are made available" -- what are measurement resources? If answer is "For normative behaviour please refer to section 11.22.6.4.3.3 and 11.22.6.4.3.4." then give a xref in the standard | Clarify | **Revised.**Agreed in principle with the commenter. The statement here is simply an overview with the normative behaviour described in Section 11.22.6.4.3.3 and 11.22.6.4.3.4. We have revised the text as below to add cross-reference: “ During the availability window, measurement resources and results are made available to eachISTA whose poll response was received at the RSTA (see subclause 11.22.6.4..3.3 and 11.22.6.4..3.4 for normative behaviour).” See document 11-19-1454 |

***TGaz Editor: Revise the text starting in P106L14 as:***

During the availability window, measurement resources and results are made available to each
ISTA whose poll response was received at the RSTA (see subclause 11.22.6.4.3.3 and 11.22.6.4.3.4 for normative behaviour) (#2156).

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| 2204 | 63.8 | 11.22.6.4.4.5 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]"provides the LTF sequence generation information associated with the LTF Generation SAC subfield" is a bit vague? What exactly is passed in the LTFVECTOR parameter? The contents of the field? | Clarify | **Revised.** This sentence is no longer present in Draft 1.2. However, the content of the LTFVECTOR in this particular case is described in P114L37 and P118L10 for NTB and TB Ranging respectively in draft 1.2.  |
| 2256 | 101.13 | 11.22.6.4.3.4 | It seems when LMR reports for TB randing carry phase shift feedback, the feedback is either immediate or delayed. Thus it does not seem possible to have immediate feedback in one direction but not in the other - is that so? | Carify | **Revised.** In draft 1.2 this is already clarified via the following sentence in P105L25 of the same section:“In TB ranging measurement reporting phase, if RSTA-to-ISTA LMR reporting or ISTA-to-RSTA LMR reporting carries phase shift feedback, then the RSTA-to-ISTA LMR reporting or the ISTA-to-RSTA LMR reporting shall be immediate feedback.” |
| 1984 | 106 | 11.22.6.4.3.3 | The round-trip time is the time for the round trip. What is shown here is not the round-trip time but the total time of flight | At 106.10 change "The Round-Trip Time (RTT) is defined asRTT " to "The total time-of-flight (TToF) is defined asTToF ". Change "RTT" to "TToF" at 88.35, 117.5/7/8, 126.13/15/16/19/20, 130.15/19/25 | **Rejected.**The term RTT as used for TB Ranging is similar in principle to the term RTT as defined for legacy FTM in the sense that both use round trip time for over the air PPDUs to perform ranging. Replacing this term here with a similar sounding term will likely create more confusion.  |