IEEE P802.11
Wireless LANs

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| CR for Misc CIDs on 9.4.2.279 |
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Abstract

This document resolves following CIDs: 1123 1125 1127 1386 1462 1468 1475 1709 2437 2434 1710

 1581 1648 1651 1658 1711, 1333, 1334.

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| 1123 | 49.0 | 9.4.2.279 | Remove "Secure LTF Support" from the Ranging Parameter field as it creates confusion during the secure negotiation. The addition of Secure LTF Required and Secure LTF supported in the Extended capability field satisfy all use cases. | As per comment | **Rejected.**As per the resolution of CID 1119 in document 11-19-0704r5, the addition of the bit ‘Secure LTF Required’ was rejected. Hence, we need the existing bits in Ranging Parameters for signalling.  |
| 1125 | 50.26 | 9.4.2.279 | Non-TB Specific parameter should also be added as part of IFTM frame and not just IFTMR | Edit the text to include inclusion of the subelement in IFTMR as well. | **Revised.**Agreed in principle. However, this has already been resolved in 1.2 as: below:“The Non-TB Specific Parameters subelement is included in the initial Fine Timing MeasurementRequest to describe the requested set of parameters that the initiator proposes to use and in theinitial Fine Timing Measurement, if the initiator and the responder successfully negotiate andFTM session where the negotiated ranging protocol is Non-TB.” |
| 1127 | 51.22 | 9.4.2.279 | TB Specific parameter should be also added as part of IFTM frame and not IFTMR frame. | Edit the text to include inclusion of the subelement in IFTMR as well. | **Revised.**Agreed in principle. However, this has already been resolved in 1.2 as: below:“The TB Specific Parameters subelement is included in the initial Fine Timing Measurement Request to describe the requested set of parameters that the initiator proposes to use and in theinitial Fine Timing Measurement, if the initiator and the responder successfully negotiate andFine Timing Measurement session where the negotiated ranging protocol is TB.” |
| 1386 | 48.16 | 9.4.2.279 | "...when included in the Initial Fine Timing Measurement frame indicates that the RSTA requires a LMR report from the ISTA at the end of each ranging exchange..." The RSTA should not be able to require an ISTA to share privacy sensitive information. | Change "the RSTA requires a LMR report" to "the RSTA requests a LMR report" | **Rejected** The intention of setting the bit in the IFTM is to signal explicit requirement. Therefore, the word "request" does not capture the requirement.  |
| 1462 | 47.16 | 9.4.2.279 | The ranging protocol should support to not include the LMR at the end of the measurement phase. This option can be used to do bidirectional implicit beamforming with a smaller airtime overhead. When a STA includes the "only sounding mode supported" flag in its ranging capabilities, RSTA shall not send the LMR to this ISTA. | Add "Sounding mode supported" and "only sounding mode supported" to the Ranging parameters subfield inside the Ranging Parameters element. | **Rejected.**The 11az spec is primarily for ranging operations and not for data. As such RSTA to ISTA LMR is required to enable this behaviour. Enabling the behaviour as requested by the commenter is out of scope of this amendment.  |
| 1468 | 49.26 | 9.4.2.279 | What is the value of R2I AOA Requested subfield in IFTM ? | Clarify | **Revised.**We clarified by adding the following text: “The R2I AoA Requested subfield is set to one in the initial Fine Timing Measurement frame by the RSTA when it requests the ISTA to include AoA measurements in the ISTA2RSTA LMR in the AoA feedback field.” See document 11-19-1461.  |

***TGaz Editor: Modify the text in P571L32 of draft 1.3 as:***

The R2I AoA Requested subfield is set to 1 in the initial Fine Timing Measurement Request
frame by the ISTA when it requests the RSTA to include AoA measurements in the RSTA2ISTA LMR in the AoA feedback field. The R2I AoA Requested subfield is set to one in the initial Fine Timing Measurement frame by the RSTA when it requests the ISTA to include AoA measurements in the ISTA2RSTA LMR in the AoA feedback field (#1468).

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| 1475 | 56.4 | 9.4.2.279 | How is th value of MaxToAAvailable Exp associated with TB specific session when in IFTM or IFTMR in TB specific element ? Clarify its value. | Clarify | **Rejected.** The clarification is already present in draft 1.2 P53L30 as: “The MaxToAAvailableExp field is the same as described under Non-TB Specific subelement.” |
| 1709 | 61.00 | 9.4.2.279 | Please clarify the following text:"and is similar to AID and is assigned by the responder to identify the unassociated initiator. The Ranging ID and the AID are derived the same space and are non-conflicting. The RID/AID field is set to the value of the Ranging ID or the AID of the ISTA. " | Please clarify what similar means in the text.What is intended seems to be- For an Associated STA: RID is nothing but the AID of the STA- For un-Associated STA: RID is assigned by the Responder and it is the same length as AID field. A Responder will not assign an RID to a STA, if that RID is already assigned to another un-associated STA, or if the same value of RID is assigned as an AID to an Associated STA. | **Revised.** We clarify by modifying the text as below:“The Ranging ID is the AID if the initiator is associated with the responder; and has the same length as the AID field and is assigned by the responder to identify the unassociated initiator. The Ranging ID and the AID are derived the same space and are non-conflicting. The AID/RID fieldis set to the value of the Ranging ID or the AID of the ISTA.” See document 11-19-1461.  |
| 2437 | 53.01 | 9.4.2.279 | Is there any case that the AP becomes ISTA? I think there isn't. Then the description should be devided into cases when an AP is RSTA and ISTA is associated with that AP and when ISTA is not associated with that AP.Also, delete the part that the Randing ID is similar to AID, as it doesn't give useful info. | As in comment. | **Revised.**In the typical scenario where RID is relevant, an ISTA is either associated to an RSTA or is not. However, in 11az we avoid explicitly referring to an RSTA as an AP. We clarified this behaviour in the following way: “The Ranging ID is the AID if the initiator is associated with the responder; and has the same length as the AID field and is assigned by the responder to identify the unassociated initiator. The Ranging ID and the AID are derived the same space and are non-conflicting. The AID/RID fieldis set to the value of the Ranging ID or the AID of the ISTA.” |

***TGaz Editor: Modify the text in P61L18of draft 1.3 as:***

The Ranging ID is the AID if the initiator is associated with the responder; and has the same length as the AID field and is assigned by the responder to identify the unassociated initiator. The Ranging ID and the AID are derived the same space and are non-conflicting. The AID/RID field
is set to the value of the Ranging ID or the AID of the ISTA (#1709, 2437).

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| 2434 | 51.22 | 9.4.2.279 | "The TB Specific Parameters subelement is included in ... to describe the requested set of parameters that the initiator proposes to use and in the initial FTM, if the initiator and the responder successfully negotiate and FTM session where .. is TB". Change it to read "The TB Specific Parameters subelement is included in ... to describe the requested set of parameters that the initiator proposes to use in the initial FTM, if the initiator and the responder successfully negotiate an FTM session where .. is TB mode." | As in comment. | **Rejected.** The existing text specifies the behaviour as intended as the proposed parameters are not just for initial FTM but for the entire ranging session.  |
| 1710 | 61.00 | 9.4.2.279 | "The BSS Color field is an unsigned integer in the range 1 to 63 whose value is set to the same 20 BSS Color value contained in the HE Operation element that an RSTA transmit."What is the BSS/Responder has disabled BSS Color ? | Please clarify ? | **Revised.** **Agreed in principle with the commenter. Added a bit to cover the case where BSS Color can be temporarily disabled as in 11ax. Modified the text as below to reflect the change:****“**The BSS Color Disabled subfield value is set to the sameBSS Color Disabled subfield value contained in the HE Operation element that an RSTA transmit.” See document 11-19-1461 |

***TGaz Editor: Added the text in P621L4 of draft 1.3 as:***

The BSS Color Disabled subfield value is set to the same
BSS Color Disabled subfield value contained in the HE Operation element that an RSTA transmit (#1710).

***TGaz Editor: Modify Figure 9-1008 in P60L10 as:***

B0 B7 B8 B15

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| Subelement ID (1) | Length | Availability Window | AID/RID | Response | Trigger Frame Padding Duration | Passive Location Ranging | MaxToA-Available Exp | BSS Color |

Bits: 8 8 Variable 16 1 2 1 4 8

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| BSS Color Disabled | Reserved |

Bits: 1 7 (#1710)

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| 1581 | 53.14 | 9.4.2.279 | In Figure 9-610d, the field RSTA-to-ISTA Phase Shift Feedback and the field ISTA-to-RSTA Phase Shift Feedback serve the same purpose as the fields R2I ToA Type and I2R ToA Type. The fields RSTA-to-ISTA Phase Shift Feedback and the field ISTA-to-RSTA Phase Shift Feedback are redundant and should be deleted. | as proposed in comment | **Revised.** Agreed in principle with the reviewer. The RSTA-to-ISTA Phase Shift Feedback and the field ISTA-to-RSTA Phase Shift Feedback fields are not in the Figure but are refered elsewhere in the spec. We replace them with R2I ToA Type and I2R ToA Type subfield respectively everywhere as per document 11-19-1461.  |

***TGaz Editor: Modify the text starting at P101L13 as:***

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 an initial Fine Timing Measurement Request frame to 1 to
activate an RSTA2ISTA phase shift feedback mode between the ISTA and the RSTA.
The RSTA may set the R2I ToA Type subfield in the Ranging
Parameter field in an initial Fine Timing Measurement frame to 1 to confirm an
RSTA2ISTA phase shift feedback. 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 UL NDP in the RSTA2ISTA LMR (#1581).

An ISTA which has set the ISTA2RSTA LMR feedback field to 1 and which is capable to send
LMR carrying phase shift feedback shall set the I2R ToA Type field to 1 in the Ranging Parameter field in an initial Fine Timing Measurement Request frame to indicate the
ISTA’s capability.
 — When an ISTA has set the ISTA2RSTA LMR feedback field to 1 and has set the
I2R ToA Type subfield to 1 in the Ranging Parameter field in an
initial Fine Timing Measurement Request frame, an RSTA may set the I2R ToA Type subfield to 1 in the Ranging Parameter field in an initial Fine
Timing Measurement frame to activate a ISTA2RSTA phase shift feedback mode
between the ISTA and the RSTA. Otherwise, RSTA shall set I2R ToA Type subfield in the ranging parameter field of an initial Fine Timing Measurement frame to 0. When RSTA sets I2R ToA Type subfield in the ranging
parameter field of an initial Fine Timing Measurement frame to 1, the ISTA shall carry
the phase shift tp4 of DL NDP in the ISTA2RSTA LMR (#1581).

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1648 | 49 | 9.4.2.279 | R2I ToA Type and R2I AoA Requested subfields are set (based on the RSTA advertizing support for Phase Shift Feedback and AoA Measurements) by the ISTA in IFTMR to request how ToA is estimated and if AoA measurement should be performed at the RSTA. How are these set by the RSTA in IFTM?Also I2R ToA Type and I2R AoA Requested in IFTMR should be set in IFTMR by the ISTA to indicate if it supports Phase Shift Feedback and AoA Measurements respectively. The RSTA would then use these values to determine what it requires from the ISTA in ISTA2RSTA LMR. This is not clear in the description of these subfields. | At the end of P49L19 add the following: "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; and set to 0 to indicate that the RSTA estimates ToA using first path reporting."At the end of P49L28 add the following: "The R2I AoA Requested subfield is set to 1 in the initial Fine Timing Measurement frame to indicate that the RSTA requires AoA estimates to be included in ISTA-to-RSTA LMR." | **Accept**See document 11-19-1461.  |

***TGaz Editor: Add text starting at end of P57L21 as:***

The R2I ToA Type subfield is set to 1 in the initial Fine Timing Measurement Request frame to
set the ToA feedback type in the RSTA2ISTA LMR to phase shift which corresponds to the
average linear phase across the subcarriers. Otherwise, the R2I ToA Type is set to 0 and the
RSTA2ISTA LMR ToA feedback type will be 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; and set to 0 to indicate that the RSTA estimates ToA using first path reporting (#1648).

***TGaz Editor: Add text starting at end of P57L32 as:***

 The R2I AoA Requested subfield is set to 1 in the initial Fine Timing Measurement Request
frame by the ISTA when it requests the RSTA to include AoA measurements in the RSTA2ISTA LMR in the AoA feedback field. The R2I AoA Requested subfield is set to 1 in the initial Fine Timing Measurement frame to indicate that the RSTA requires AoA estimates to be included in ISTA2RSTA LMR (#1648).

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1651 | 49 | 9.4.2.279 | With non-TB Ranging, if the ISTA sends a request for Ranging Priority in IFTMR and the corresponfing IFTM has nothing in response, what does it mean? Is the RSTA required to use the proposed Ranging Priority, do anything or ignore it? | If there is no response from the RSTA corresponding to the proposed Ranging Priority in the IFTMR, there is no point in sending the Ranging Priority in IFTMR in the first place. Either render the Ranging Priority as exclusive to TB Ranging; or add Ranging Priority response to IFTM (instead of it being reserved) for non-TB ranging. | **Rejected.**The Ranging Priority field is always included in the Ranging Parameters element. This field is used for NTB Ranging in IFTMR to convey ISTA requirements to RSTA. The field may be used by the RSTA, along with other fields in Ranging Parameters element in IFTMR, to decide whether to setup a ranging session with that ISTA. The spec already clarifies that the field is reserved for IFTM in NTB Ranging.  |
| 1658 | 53 | 9.4.2.279 | "One or more of the Non-TB specific or the TB specific subelements are included in the initial FTM Request. Only one of the Non-TB specific or the TB specific subelement shall be included in the Ranging Parameters element contained in the initial FTM ". Can the IFTMR include two or more non-TB Specific; and/or two or more TB Specific subelements? I think not. The intent is that in IFTMR the ISTA could include a non-TB Specific subelement and/or a TB Specific subelement. | Replace with "The initial FTM Request may include a non-TB specific sublement and a TB specific subelement; and the corresponding intitial FTM shall include a non-TB specific subelement or a TB specific subelement in the Ranging Parameters element, if the Status Indication subfield in the Ranging Parameters field is set to Success" | **Revised.** Modified the text mostly as suggested by the commenter. See document 11-19-1461.  |

***TGaz Editor: Modify text starting at end of P62L5 as:***

The initial FTM Request may include a non-TB specific sublement and a TB specific subelement; and the corresponding intitial FTM shall include a non-TB specific subelement or a TB specific subelement in the Ranging Parameters element, if the Status Indication subfield in the Ranging Parameters field is set to Success to indicate the range measurement protocol selected by the responder for the negotiated FTM session (#1658).

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| 1711 | 56.14 | 9.4.2.279 | Remove this text "when included in the initial fine timing measurement frame indicates that the RSTA requires a LMR report from the iSTA at the end of each ranging exchange" It makes meaning more confusing | Remove this text "when included in the initial fine timing measurement frame indicates that the RSTA requires a LMR report from the iSTA at the end of each ranging exchange". | **Rejected.**The text is needed to provide a overview of the usage of this field in IFTM.  |

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| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1333 | 58.14 | 9.4.2.279 | Shouldn't allow too many choices of max DL STS. Just like max # of STS support in sounding NDP, maybe either 4 or 8 | As in the comment | **Revised:** Agree with the commenter. TGaz Editor to make the changes depicted below.  |
| 1334 | 58.14 | 9.4.2.279 | Shouldn't allow too many choices in max UL STS supported. Just like in UL MUMIO, all STAs shall support 8 LTFs. | As in the comment | **Revised:** Agree with the commenter. TGaz Editor to make the changes depicted above. |

**Discussion:**

The commenter is correct by identifying the MAX UL STS < 80 MHz, MAX UL STS > 80 MHz, MAX DL STS <80 MHz and MAX DL STS > 80MHz encoding are not specified in clause 9.4.2.279, in addition the encoding does not require a 3bit field, but should follow the 11ax 2bit field as the P matrix and allowed STS are identical.

Also, need to fix figure 9-1005 to reflect the ranging parameters is a 5 byte long subfield.

***TGaz Editor: change clause 9.4.2.279 as follows:***

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| Element ID | Length | Element ID Extension  | Ranging Parameters | Ranging Subelements |

Octets 1 1 1 5 variable

 **Figure 9-1005 Ranging Parameters element format (#1333)**

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|  | B0    B1 | B2-B6 | B7 | B8 | B9 | B10   B11 | B12 | B13 | B14 | B15 |
|  | Status Indi-cation | Value | ISTA-to-RSTA LMR Feedback | Secure LTF Req. | Secure LTF Support | Ranging Priority | R2I ToA Type | I2R ToA Type | R2I AOA Req. | I2R AOA Req. |
| Bits: | 2 | 5 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
|  | B16     B21 | B22     B23 | B24   B26 | B27   B29 | B30   | B31 | B32   B33 | B34  B35 |   |
|  | Format and Bandwidth | Reserved | Max UL Rep | Max DL Rep | Device Class | Full Bandwidth UL MU-MIMO | Max DL STS ≤ 80MHz | Max DL STS > 80MHz |   |
| Bits: | 6 | 2 | 3 | 3 | 1 | 1 | 2 | 2 |   |
|  | B36       B37   | B38    B39 |   |  |   |
|  | Max UL STS ≤ 80 MHz | Max UL STS > 80 MHz  |   |  |   |
| Bits: | 2 | 2 |  |  |   |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Figure 9-1006 Ranging Parameters field format (#1333, 1334)**.

***TGaz Editor: change clause 9.4.2.279 as follows: (fix field range)***

The Device Class and Full Bandwidth UL MU-MIMO subfields are defined in Table 9-322b, Subfields of the HE PHY Capabilities Information field. For associated STAs they should match the value exchanged during association.

The Max DL STS ≤ 80 MHz subfield indicates for bandwidths less than or equal to 80 MHz the maximum number of space-time streams to be used in DL NDP frames in the session.

The Max DL STS > 80 MHz subfield indicates for bandwidths greater than 80 MHz the maximum number of space-time streams to be used in DL NDP frames in the session.

The Max UL STS ≤ 80 MHz subfield indicates for bandwidths less than or equal to 80 MHz the maximum number of space-time streams to be used in UL NDP frames in the session.

The Max UL STS > 80 MHz subfield indicates for bandwidths greater than 80 MHz the maximum number of space-time streams to be used in UL NDP frames in the session.

The Ranging subelements field contains one or more subelements. The subelement format and ordering of the subelements are defined in 9.4.3 (Subelments). The Subelement ID field values for the defined subelements are shown in Table 9-1000 (Ranging subelement IDs for Ranging Parameters).