IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CR for 11.22.6.3.3 | | | | |
| Date: 2020-09-10 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Dibakar Das | Intel |  |  | [Dibakar.das@intel.com](mailto:Dibakar.das@intel.com) |
| Jonathan Segev | Intel |  |  | Jonathan.segev@intel.com |
| Christian Berger | NXP |  |  | christian.berger@nxp.com |

Abstract

This submission proposes the comment resolution of following CIDs in 11.22.6.3.3: 3594, 3599, 3600, 3601, 3603, 3605, 3608, 3621, 3622, 3624, 3628, 3904, 3683, 3813, 3815, 3861.

Rev0: initial draft.

Rev1: Revised the CR for CIDs 3599, 3904 and 3601.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **3594** | 121.15 | 11.22.6.3.3 | "Otherwise it is set to 1." needs to be normative | CHange to "Otherwise it shall be set to 1." and deunderline the full stop | **Revised.**  Agreed in principle. Please see changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3599** | 121.40 | 11.22.6.3.3 | "NOTE 2--Because the FTM procedure executes at the PHY/MAC layer, an RSTA accepting a 40  ranging request despite the ISTA having set the ISTA2RSTA LMR Feedback subfield in the 41  Ranging Parameters field in the initial Fine Timing Measurement Request frame to 0 enables use 42  cases where the ISTA may share its location information at a higher layer. " not clear. I guess it's trying to say that layers above might exchange the location, even if the MAC doesn't | Change to "NOTE 2---An ISTA's location might be shared by layers above the MAC, even if the ISTA set the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field in the initial Fine Timing Measurement Request frame to 0." | **Revised.**  The group has discussed the text extensively and reached no consensus for a change. However, the text is modified per 11-20-1392.  TGaz editor make the changes identified below. |
| **3600** | 122.1 | 11.22.6.3.3 | "If the ISTA indicated for AOA feedback in the Initial Fine Timing Measurement Request frame, 1  the RSTA may set the I2R AOA Requested subfield in the corresponding Initial Fine Timing 2  Measurement frame to 1, or it is set to 0 otherwise. " bleargh | Change to "If the ISTA set the R2I AOA Requested subfield to 1 in the initial Fine Timing Measurement Request frame,  the RSTA may set the I2R AOA Requested subfield in the corresponding initial Fine Timing  Measurement frame to 1. Otherwise, the RSTA shall set the I2R AOA Requested subfield in the corresponding initial Fine Timing  Measurement frame to 1.". At 73.35 change "AOA feedback field" to "AOA Feedback field" | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3904** | 122.12 | 11.22.6.3.3 | "For Non-TB Ranging, the Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement frame is reserved." It was agreed during the LB240 (11az\_D1.0) comment resolution process that, the Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement should not be reserved, and it is set in the same way as for TB ranging. However, this agreement is not properly reflected in 11az\_D2.0. | Modify the text starting from Line 8 on page 122 from "For TB ranging, the RSTA shall indicate, in the Ranging Priority subfield of the Ranging  Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement  frame, whether it accommodates the Ranging Priority request transmitted by the ISTA according  to Table 9-281b in 9.4.2.167." to "For TB and Non-TB ranging, the RSTA shall indicate, in the Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement frame, whether it accommodates the Ranging Priority request transmitted by the ISTA accordin to Table 9-281b in 9.4.2.167." | **Revised.**  The RSTA has no control over the ISTA’s decision to initiate the Non-TB ranging measurement instance. Following the reception of a correctly received Ranging NDP-A frame addressed to the RSTA, the RSTA must respond with an R2I NDP and then an LMR. A clarification is provided in 11-20-1392.  TGaz editor make the changes identified below. |
| **3601** | 122.12 | 11.22.6.3.3 | "For Non-TB Ranging, the Ranging Priority subfield of the Ranging Parameters field of the 12  Ranging Parameters element in the initial Fine Timing Measurement frame is reserved. " should be in Clause 9 | Delete the cited text | **Revised.**  Agreed in principle. This is a duplicate text that is already present in Clause 9. See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3603** | 122.27 | 11.22.6.3.3 | "If the Secure LTF Required subfield of the Ranging Parameters field is equal to 1, the RSTA shall 27  set the Max R2I Rep subfield to a value equal to the corresponding value in the IFTMR" -- so the Mex R2I Rep subfield in the IFTM serves no purpose | Make the subfield reserved in that case instead | **Reject.**  While the information in the field is indeed redundant, the presence of the information may simplify parsing of the Ranging Parameters field in an IFTM at some ISTA implementations. |
| **3605** | 122.31 | 11.22.6.3.3 | "An ISTA and an RSTA may negotiate a phase shift feedback mode of the Non-TB Ranging and 31  TB ranging measurement exchange, for either the RSTA2ISTA LMR and/or ISTA2RSTA LMR. 32  In this case, instead of the TOA t2 of the I2R NDP, the RSTA2ISTA LMR carries the phase shift 33  tp2 of I2R NDP. For the ISTA2RSTA LMR, instead of the TOA t4 of the R2I NDP, the 34  ISTA2RSTA LMR carries phase shift tp4 of R2I NDP. The ISTA and RSTA can use Equations 35  (11-xx) and (11-yy) to derive the RTT. " -- well, for these equations to work it seems to me that tp2 and tp4 need to me measured in units of time (rather than something like angle, which is how I'd expect a phase to be measured in). But there is no specification of the units of tp2 and tp4 in the LMR | Add "NOTE---tp2 and tp4 are reported in the same units of time (not angle) as for the TOA (see 9.6.7.48 (Location Measurement Report frame format))." | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3606** | 122.39 | 11.22.6.3.3 | Why is this a bullet? | Debulletise | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3607** | 122.39 | 11.22.6.3.3 | " When an RSTA has set the Phase Shift Feedback Support field to 1 in the Extended 39  Capabilities element, an ISTA may set the R2I TOA Type subfield in the Ranging 40  Parameter field in an initial Fine Timing Measurement Request frame to 1 to activate the 41  phase shift feedback mode for the RSTA2ISTA LMR. The RSTA may set the R2I TOA 42  subfield in the Ranging Parameter field in an initial Fine Timing Measurement frame to 1 to confirm phase shift feedback in the RSTA2ISTA LMR." -- constructs of the form "may set to x to do y" are ambiguous (might mean "sets to x to do y" or "does y and might or might not choose to indicate this by setting x"). Also no "R2I TOA subfield" | Change to "To activate the  phase shift feedback mode for the RSTA2ISTA LMR when an RSTA has set the Phase Shift Feedback Support field to 1 in the Extended Capabilities element, an ISTA shall set the R2I TOA Type subfield in the Ranging Parameter field in the initial Fine Timing Measurement Request frame to 1. The RSTA shall set the R2I TOA Type subfield in the Ranging Parameter field in the initial Fine Timing Measurement frame to 1 to confirm phase shift feedback in the RSTA2ISTA LMR." | **Revised.**  Agreed in principle. See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3608** | 122.42 | 11.22.6.3.3 | "The RSTA may set the R2I TOA 42  subfield in the Ranging Parameter field in an initial Fine Timing Measurement frame to 1 to confirm phase shift feedback in the RSTA2ISTA LMR." -- as a "may" this is useless, since the ISTA then can't rely on the field. Even if "shall" was intended, it's useless, since then the ISTA will know the answer without being told (since it asked for it) | Make the R2I TOA Type subfield reserved in the IFTM frame | **Reject.**  The R2I TOA Type field being set to 1 is needed to confirm that for this particular session the RSTA will enable the phase shift feedback mode. |
| **3616** | 123.9 | 11.22.6.3.3 | Why is this a bullet? | Debulletise | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3620** | 122.39 | 11.22.6.3.3 | the Phase Shift Feedback Support field to 1 in the Extended 39  Capabilities element, an ISTA may set the R2I TOA Type subfield in the Ranging 40  Parameter field in an initial Fine Timing Measurement Request frame to 1 to activate the 41  phase shift feedback mode for the RSTA2ISTA LMR. The RSTA may set the R2I TOA 42  subfield in the Ranging Parameter field in an initial Fine Timing Measurement frame to 1 to confirm phase shift feedback in the RSTA2ISTA LMR." -- constructs of the form "may set to x to do y" are ambiguous (might mean "sets to x to do y" or "does y and might or might not choose to indicate this by setting x"). Similarly "an ISTA 29  with dot11SecureLTFImplemented equal to true may set the Secure LTF Required subfield in the 30  Ranging Parameters field in an initial Fine Timing Measurement Request frame to 1 to activate a 31  secure LTF measurement exchange mode between the ISTA and the RSTA." at 123.29 | Reword in a form like "may do X; it does so by doing Y (e.g. setting blah to 1)" | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3621** | 124.1 | 11.22.6.3.3 | "The Secure LTF Parameters field in initial Fine Timing Measurement frame contains a new LTF 1  Generation SAC and a new Secure LTF Counter" -- it's not clear how these fields can be "new". They're ither present or not (and they are not optional, so they are present) | Delete "new " (2x). Also delete "associated with the LTF Generation SAC" | **Revised.**  Agreed in principle. See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3622** | 124.9 | 11.22.6.3.3 | "Measurement result SAC in Secure LTF parameter field is reserved in this initial Fine Timing 9  Measurement frame. " -- there's no such thing as a Measurement result SAC | Delete the cited sentence | **Revised.**  Agreed in principle. The field should be Range Measurement SAC. See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3624** | 124.11 | 11.22.6.3.3 | MFP can't be negotiated on a per-frame basis. Also need to call frames frames | Change "When Management Frame Protection is negotiated for TB and Non-TB Ranging negotiation, a STA  shall use Protected Dual of Public Action frames for an initial Fine Timing Measurement Request,  an initial Fine Timing Measurement, and a Location Measurement Report. " to "When management frame protection is negotiated, a STA shall use Protected Dual of Public Action frames for initial Fine Timing Measurement Request frames, initial Fine Timing Measurement frames, and Location Measurement Report frames. " | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
| **3628** | 124.23 | 11.22.6.3.3 | " The Secure- 23  LTF-Counter is included as part of Secure LTF Counter (#2289) conveyed to the ISTA." suggests the SLC conveyed to the ISTA includes other stuff, but I can't see how that makes sense | Change to "The Secure LTF Counter is conveyed to the ISTA." | **Revised.**  Agreed in principle.  See the changes as per 11-20-1392.  TGaz editor make the changes identified below. |
|  |  |  |  |  |  |
| **3683** | 138.1 | 11.22.6.4.3.2 | The More TF subfield is only defined in the context of TWT, in the baseline | Delete " The More TF subfield is set as defined in 26.8.2 (Individual TWT agreements)  and 26.8.3.2 (Rules for TWT scheduling AP)." from the baseline (in 9.3.1.22.1 General) | **Revised.**  Instead of deleting we propose to add 11.22.6.4.3 TB Ranging measurement exchange as another instance where the use of More TF is defined. Please see 11-20-1392  TGaz editor make the changes identified below. |
| **3813** | 174.24 | 11.22.6.5.1 | There is no such thing as an "FTM frame", and a Fine Timing Measurement frame is an Action frame | Change " The FTM frame is of type Action no Ack" to " The Fine Timing Measurement frame is modified from being an Action frame to an Action No Ack frame" | **Revised.**  We clarify in Section 9.6.7.33 when the FTM frame is of type Action and when it is not. **See 11-20-1392.**  TGaz editor make the changes identified below. |
| **3815** | 175.25 | 11.22.6.6.2 | A Fine Timing Measurement frame is an Action frame | Change "a Fine Timing Measurement frame with the Dialog Token field set to zero and of type Action no  ACK" to "a Fine Timing Measurement frame with the Dialog Token field set to zero and modified from being an Action frame to an Action No Ack frame" | **Revised.**  We clarify in Section 9.6.7.33 when the FTM frame is of type Action and when it is not. **See 11-20-1392.**  TGaz editor make the changes identified below. |
| **3861** | 110.26 | 11.22.6.1.2 | F11-35a seems to suggest that FTM frames cannot be sent at times where both RSTAs are available, but there is no justification and indeed the text below suggests either RSTA would be available if addressed during those times | Show one double-ended arrow overlapping with one dotted bubble. (Note: resolution to CID 2121 was "Agree that two RSTAs may be available to initiate measurement exchange with an ISTA. However, an ISTA at any point in time can initiate measurement exchange with one (and only one) RSTA (and when two or more RSTAs become available, the ISTA will have to make a determination to choose one and send the FTMR to initiate the measurement exchange).  In addition, the referred figures in Clause 11 are exemplary illustrations and are not intended to address all possible scenarios.".  The first para is exactly agreeing with the comment. The second para is going down the wrong way because (a) F11-35a is not specified to be an "exemplary illustration" and (b) TGmd was warned off having informative material in normative clauses) | **Revised.**  We clarify that this is just an exemplerary figure. See 11-20-1392.  TGaz editor make the changes identified below. |

11.22.6.3.3 Negotiation for TB and non-TB Ranging measurement exchange

***TGaz Editor: Modify the paragraph starting in P125L9 of draft 2.3 as follows:***

If based on the policy at the ISTA, the ISTA does not share measurement results with the RSTA,  
the ISTA shall set the I2R LMR Feedback subfield in the Ranging Parameters field, in the  
IFTMR frame, to 0. Otherwise the ISTA shall set the I2R LMR Feedback subfield to 1. (#3594)

***TGaz Editor: Modify the paragraph starting in P125L35 of draft 2.3 as follows:***

NOTE 2—Because the FTM procedure executes at the PHY/MAC layer, an RSTA accepting a ranging  
request despite the ISTA having set the I2R LMR Feedback subfield in the Ranging Parameters field in the  
 IFTMR frame to 0 enables use cases where the ISTA might share its location information at a higher layer. (#3599)

If the ISTA set the I2R AOA Requested subfield to 1 in the IFTMR frame, the RSTA may set the I2R AOA Requested subfield in the corresponding initial Fine Timing Measurement frame to 1. Otherwise, the RSTA shall set the I2R AOA Requested subfield in the corresponding initial Fine Timing Measurement frame to 0. (#3600)

***TGaz Editor: Modify the paragraph starting in P75L14 of draft 2.3 as follows:***

The R2I AOA Requested subfield is set to 1 in the IFTMR frame by the ISTA when it requests the  
RSTA to include AOA measurements in the AOA Feedback field of the RSTA2ISTA LMR. The  
R2I AOA Requested subfield is set to 1 in the initial Fine Timing Measurement frame to indicate  
 that the RSTA includes the AOA measurements in the RSTA2ISTA LMR (#**1648**, **#1468, 3600**).

***TGaz Editor: Modify the paragraph starting in P150L19 of draft 2.3 and delete the next one as follows:***

An ISTA shall initiate a non-TB Ranging measurement instance by transmitting a Ranging NDP-A frame addressed to the RSTA followed by an I2R NDP PPDU SIFS after. In response to the correctly received Ranging NDP-A frame addressed to itself, the RSTA shall transmit an R2I NDP; see Figure 11-36i (Non-TB Ranging measurement exchange sequence). The Ranging NDP Announcement frame and I2R/R2I NDP refer to a Ranging NDP Announcement frame and HE Ranging NDPs respectively. The measurement-reporting phase consists of an LMR frame, which is a Location Measurement Report as defined in 9.6.7.48 (Location Measurement Report frame format). (#3904)

***TGaz Editor: Modify the paragraph starting in P76L1 of draft 2.3 as follows:***

The Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element  
in the IFTMR frame contains the ISTA’s ranging priority request which indicates the time  
sensitivity of a ranging operation, and it is set according to Table 9-280c (Definition of the EDMG Ranging Priority subfield when included in the IFTMR frame). (#3904)

***TGaz Editor: Modify the paragraph starting in P76L17 of draft 2.3 as follows:***

For TB ranging, the Ranging Priority subfield of the Ranging Parameters field of the Ranging  
Parameters element in the initial Fine Timing Measurement frame contains the RSTA’s ranging  
 priority response which indicates whether the RSTA accommodates the ranging priority request of  
 the ISTA, and it is set according to Table 9-280d (Definition of the EDMG Ranging Priority subfield when included in the initial Fine Timing Measurement frame) in 9.4.2.167 (Fine Timing Measurement Parameters element). (#3904)

***TGaz Editor: Modify the paragraph starting in P125L43 of draft 2.3 as follows:***

For TB ranging and Non-TB Ranging, the ISTA shall indicate, in the Ranging Priority subfield of  
the Ranging Parameters field of the Ranging Parameters element in the IFTMR frame, its Ranging  
Priority according to Table 9-280c (Definition of the EDMG Ranging Priority subfield when included in the IFTMR frame) in  
9.4.2.167 (Fine Timing Measurement Parameters element). (#3904)

For TB ranging, the RSTA shall indicate, in the Ranging Priority subfield of the Ranging  
Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement frame,  
whether it accommodates the ranging priority request transmitted by the ISTA according to Table  
9-280d (Definition of the EDMG Ranging Priority subfield when included in the initial Fine Timing Measurement frame) in 9.4.2.167 (Fine Timing Measurement Parameters element). (#3904)

***TGaz Editor: Delete the paragraph starting in P126L8 of draft 2.3 as follows (#3601):***

***TGaz Editor: Add a note starting in P127L11 of draft 2.3 as follows:***

NOTE--- tp2 and tp4 are reported in the same units of time (not angle) as the TOA; see 9.6.7.48 (Location Measurement Report frame format). (#3605)

***TGaz Editor: Remove the bullet under the paragraph starting in P127L11 of draft 2.3 as follows:***

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. In order to activate the phase shift feedback mode for the RSTA2ISTA LMR when an RSTA has set the Phase Shift Feedback Support field to 1 in the Extended Capabilities element, an ISTA shall set the R2I TOA Type subfield in the Ranging Parameter field in an IFTMR frame to 1. The RSTA shall set the R2I TOA subfield in the Ranging Parameter field in an initial Fine Timing Measurement frame to 1 to confirm phase shift feedback in the RSTA2ISTA LMR (#3607). 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, 3606**)

An ISTA which has set the I2R LMR feedback subfield to 1 and which is capable to send LMR  
carrying phase shift feedback shall set the I2R TOA Type subfield to 1 in the Ranging Parameter  
field in an IFTMR frame to indicate the ISTA’s capability. In order to activate the phase shift feedback mode in the I2R LMR feedback 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 an IFTMR frame, an RSTA shall set the I2R TOA Type subfield to 1 in the Ranging Parameters field in an initial Fine Timing Measurement frame. Otherwise, the RSTA shall set the I2R TOA Type subfield in the Ranging parameters field of an initial Fine Timing Measurement frame to 0. (#3620) 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, 3616**).

***TGaz Editor: Modify the paragraph starting in P128L29 of draft 2.3 as follows:***

The Secure LTF Parameters field in the initial Fine Timing Measurement frame contains an   
 LTF Generation SAC and a Secure LTF Counter (#**2289**) for the next measurement exchange in the session when any of the following conditions are met:(#3621)

***TGaz Editor: Modify the paragraph starting in P128L36 of draft 2.3 as follows:***

The Range Measurement SAC field in the Secure LTF Parameters element is reserved in this initial Fine Timing Measurement frame. (#3622)

When Management Frame Protection is negotiated for TB and Non-TB Ranging negotiation, a  
STA shall use Protected Fine Timing Action frames for FTMR frames, Fine Timing  
Measurement frames, and Location Measurement Report frames (#**TC889r3,** #3624).

***TGaz Editor: Modify the paragraph starting in P129L10 of draft 2.3 as follows:***

The Secure-LTF-Counter is included in the Secure LTF Parameters element (#**2289, #3628**) conveyed to the ISTA.

***Modify the following text in* 9.3.1.22.1** ***of 11ax document draft 7.0 starting on P120L45 as (#3683):***

The More TF subfield of the Common Info field indicates whether or not a subsequent Trigger frame is  
scheduled for transmission. The More TF subfield is set as defined in 26.8.2 (Individual TWT agreements), ~~and~~ 26.8.3.2 (Rules for TWT scheduling AP) and 11.22.6.4.3 (TB Ranging measurement exchange). (#3683)

***Modify the text in Section 9.6.7.33 in REVmd draft 4.0 Page 1558L23 as (#3813, #3815):***

The Fine Timing Measurement frame is used to support the FTM procedure described in 11.22.6 (Fine  
timing measurement (FTM) procedure). The Fine Timing Measurement frame is of type Action No Ack when aggregated along with an RSTA2ISTA LMR in an FTM session based on TB Ranging (see 11.22.6.5.1 Availability Window parameter modification) and Non-TB Ranging (see 11.22.6.6.2 TB Ranging and non-TB Ranging session termination). Otherwise, the Fine Timing Measurement frame is of type Action. (#3813, 3815)

***TGaz editor: Modify the text in Section 11.22.6.5.1 in Page 179L37 as (#3813):***

The Fine Timing Measurement frame is of type Action No Ack and shall contain a Ranging Parameters field containing an TB-Specific subelement. (#3813)

***TGaz editor: Modify the text in Section 11.22.6.6.2 in Page 180L32 as (#3815):***

— At any time during the session when the RSTA is permitted to transmit an RSTA2ISTA LMR  
frame, the RSTA transmits an A-MPDU containing an LMR frame and a Fine Timing Measurement frame with the Dialog Token field set to 0 and of type Action No ACK. (#3815)

***TGaz editor: Modify the text in Section 11.22.6.1.2 in Page 114L15 as (#3861):***

Figure 11-35a (Non-TB ranging concurrent FTM sessions) shows an example of concurrent non-TB ranging sessions. The dotted region in indicates that the Non-TB Ranging measurement exchange phase does not always (#**1999**) start at the beginning of the time window since the ISTA may have been active on another channel. (#3861)