IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolution LB253 Parameters | | | | |
| Date: 2021-01-08 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Christian Berger | NXP | 350 Holger Way, San Jose, CA |  | [christian.berger@nxp.com](mailto:christian.berger@nxp.com) |
| Roy Want | Google Inc. | 1600 Amphitheare Parkway, Mtn View, CA |  | [roywant@google.com](mailto:roywant@google.com) |
| Mingguang Xu | Google Inc. |  |  | mingguangxu@google.com |
| Raymond Hayes | Google Inc. |  |  | hayesr@google.com |
| Ali Raissinia | Qualcomm |  |  | alirezar@qti.qualcomm.com |
| Nehru Bhandaru | Broadcom |  |  | nehru.bhandaru@broadcom.com |
| Jonathan Segev | Intel Corp. |  |  | jonathan.segev@intel.com |
|  |  |  |  |  |

Abstract

This submission proposes the comment resolution of CIDs 5088, 5454, 5193, 5175 in LB253, changes are relative to Draft 3.0.

Revisions:

1. Updated comment resolution boxes; incorporated some feedback for clarifications
2. More updates to version text, especially secure version, add MLME, changed window bits to 1
3. More feedback during second 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.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **5088** |  | 9.4.2.298 | Need to add signaling to select TX Window for R2I & I2R NDP transmission between Square & Flat top in the Ranging Parameter Element within section 9 AND the corresponding normative text in section 11 | As per comment | **Revised**  Agree in principle.  TGaz editor: make changes depicted in  https://mentor.ieee.org/802.11/dcn/21/11-21-0307-03-00az-comment-resolution-lb253-parameters.docx |
| **5454** | 72.17 | 9.4.2.298 | Additional subfields of the Ranging Parameters field are needed to negotiate and indicate the actual use or not of TX FD window for secure LTF for the entire ranging session. | Please add additional subfields of the Ranging Parameters field to negotiate and indicate the actual use or not of TX FD window for secure LTF for the entire ranging session. | **Revised**  Agree in principle.  TGaz editor: make changes depicted in  https://mentor.ieee.org/802.11/dcn/21/11-21-0307-03-00az-comment-resolution-lb253-parameters.docx |
| **5193** | 74.05 | 9.4.2.298 | There is no way to signal the secure LTF tx window, add a subfield in the Ranging Parameter field to signal both/either I2R NDP or R2I NDP can use this featuer. | As per comment. | **Revised**  Agree in principle.  TGaz editor: make changes depicted in  https://mentor.ieee.org/802.11/dcn/21/11-21-0307-03-00az-comment-resolution-lb253-parameters.docx |
| **5175** | 74.10 | 9.4.2.298 | "The Secure LTF Required field is set to 1 to enable a secure LTF measurement exchange" - what does enable mean in this context? | Change to "The Secure LTF Required field is set to 1 in the IFTMR frame to indicate that an ISTA requires a secure LTF measurement exchange." | **Revised**  Agree in principle.  TGaz editor: make changes depicted in  https://mentor.ieee.org/802.11/dcn/21/11-21-0307-03-00az-comment-resolution-lb253-parameters.docx |
|  |  |  |  |  |  |

**TGaz Editor make the following changes to subclause 6.3.56.2**

**6.3.56.2 MLME-FINETIMINGMSMTRQ.request**

**6.3.56.2.2 Semantics of the service primitive**

***Change the primitive parameters as follows (not all existing parameters in the baseline are shown):***

**The primitive parameters are as follows:**

**MLME-FINETIMINGMSMT.request(**

**…**

**Ranging Parameters,  
Minimum Required Secure LTF Version,  
Vendor Specific  
)**

***Insert the following entry describing the “Minimum Required Secure LTF Version Number”, below the Ranging Parameters in the unnumbered table in this subclause maintaining the primitive order above:***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid Range** | **Description** |
| Ranging Parameters | As defined in [[[9.4.2.298](#H09o4o2o298)](#H09o4o2o298)](#H09o4o2o296) (Ranging Parameters element) | As defined in [[[9.4.2.298](#H09o4o2o298)](#H09o4o2o298)](#H09o4o2o296) (Ranging Parameters element) | Optional element containing the configuration for the requested Ranging session |
| Minimum Required Secure LTF Version | As defined in [9.4.2.298](#H09o4o2o298) (Ranging Parameters element) | As defined in [9.4.2.298](#H09o4o2o298) (Ranging Parameters element) | The minium version number for the Secure LTF protocol required by the user or system. |
| VendorSpecificinfo | A set of elements | As defined by [9.4.2.26](#H09o4o2o26) (Vendor Specific element) | Zero or more elements |

6.3.56.6 MLME-FINETIMINGMSMT.indication

6.3.56.6.2 Semantics of the service primitive

***Change the primitive parameters as follows (not all existing parameters in the baseline are shown):***

The primitive parameters are as follows:

MLME-FINETIMINGMSMT.indication (

…

Ranging Parameters,

VendorSpecificinfo  
)

***Insert the following entry, Ranging Parameters into the unnumbered table in this subclause maintaining the primitive order above:***

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid Range | Description |
| Ranging Parameters | As defined in [[[[9.4.2.298](#H09o4o2o298)](#H09o4o2o298)](#H09o4o2o298)](#H09o4o2o296) (Ranging Parameters element) | As defined in [[[9.4.2.298](#H09o4o2o298)](#H09o4o2o298)](#H09o4o2o296) (Ranging Parameters element) | Optional element containing the configuration for the proposed NDP sounding based ranging session |
| Minimum Required Secure LTF Version | As defined in [9.4.2.298](#H09o4o2o298) (Ranging Parameters element) | As defined in [9.4.2.298](#H09o4o2o298) (Ranging Parameters element) | Optional elemet.  If the negotiation was successful, contains the Secure LTF protocol version as assigned for the FTM session.  If the negotiation failed, contains the minimum required protocol version allowed by the RSTA (Status Indication equals 2 or 3). |
| VendorSpecificinfo | A set of elements | As defined by [9.4.2.26](#H09o4o2o26) (Vendor Specific element) | Zero or more elements |

**9.4.2.298 Ranging Parameters element**

TGaz Editor: Modify “Figure 9-788edh—Ranging Parameters field format” on page 73 (line 9) as follows

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B1 | B2 B6 | B7 | B8 | B9 | B10 B11 | B12 | B13 | B14 | B15 |
|  | Status  Indication | Value | I2R LMR Feedback | Reserved | Reserved | Ranging  Priority | R2I TOA Type | I2R TOA Type | R2I AOA Request | I2R AOA Request |
| Bits: | 2 | 5 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B16 B21 | B22 | B23 | B24 B26 | B27 B29 | B30 | B31 | B32 B34 | B35 B37 |
|  | Format  and Bandwidth | Immediate R2I  Feedback | Immediate I2R  Feedback | Max I2R Repetition | Max R2I Repetition | Device Class | Full Bandwidth UL MU-MIMO | Max R2I STS ≤ 80 MHz | Max R2I  STS > 80 MHz |
| Bits: | 6 | 1 | 1 | 3 | 3 | 1 | 1 | 3 | 3 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B38 B39 | B40 B41 | B42 B45 | B45 B47 |
|  | Max R2I LTF Total | Max I2R LTF Total | Max I2R STS ≤ 80 MHz | Max I2R STS > 80 MHz |
| Bits: | 2 | 2 | 3 | 3 |

1. Figure 9-788edh—Ranging Parameters field format (#1947, #TC707r3)

TGaz Editor: Delete the two paragraphs starting on page 74 (line 10)

TGaz Editor: Change “Table 9-322h23fd—Ranging Subelement IDs for Ranging Parameters” on page 77 (line 1) as follows

1. Table 9-322h23fd—Ranging Subelement IDs for Ranging Parameters

|  |  |  |
| --- | --- | --- |
| Subelement ID | Name | Extensible |
| 0 | Non-TB specific subelement | Yes |
| 1 | TB-specific subelement | Yes |
| 2 | Secure LTF subelement | Yes |
| 3-220 | Reserved |  |
| 221 | Vendor Specific |  |
| 222-255 | Reserved |  |

TGaz Editor: Insert a new figure and following paragraph as shown below on page 80 (line 11) the end of clause 9.4.2.298 (Ranging Parameters element) as follows

The Secure LTF subelement is included in the IFTMR frame to indicate that the initiator supports use of secure LTF and the associated parameters; it is included in the IFTM, if the initiator and the responder successfully negotiate an FTM session where secure LTF are used.

The format of the Secure LTF subelement is as shown in Figure 9-788edm1 (Secure LTF subelement format).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 | B16 B18 | B19 |  | B20 | B21 | B22 B23 |
|  | Subelement ID (2) | Length | Protocol Version | Secure LTF Req. |  | R2I Tx Window | I2R Tx Window | Reserved |
| Bits: | 8 | 8 | 3 | 1 |  | 1 | 1 | 4 |

1. Figure 9-788edm1—Secure LTF subelement format

The Subelement ID and Length fields are defined in 9.4.3 (Subelements).

The Protocol Version field in the IFTMR frame is set to the value 0 by the ISTA, with values 1 to 7 reserved for future use (see Table XXX- Secure LTF Protocol Section Identifier). In the IFTM frame the Version field is set to the value 0 and by the RSTA, with values 1 to 7 reserved for future use. The interpretation of the version field in the IFTMR frame and IFTM frame, and the possible resulting actions are described in 11.21.6.3.4 (Negotiation for Secure LTF in the TB and Non-TB Ranging measurement exchange).

The Secure LTF Required field is set to 1 by the ISTA to indicate it requires Secure LTF to be enabled and is set to 1 by the RSTA to enable a secure LTF measurement exchange between an ISTA and an RSTA. Otherwise the Secure LTF Required field is set to 0.

The R2I Tx Window field in the IFTMR frame is set to 1 to indicate the ISTA requests use of the optional frequency domain Tx Window in the R2I NDPs, and 0 to indicate the default frequency domain Tx window. In the IFTM frame, the R2I Tx Window field is set to 1 to indicate the RSTA will use the optional frequency domain Tx window in the R2I NDPs, and 0 to indicate the default frequency domain Tx window(see Table XXX- Secure LTF Protocol Section Identifier).

The I2R Tx Window field in the IFTMR frame is set to 1 to indicate that the ISTA supports use of the optional frequency domain Tx window in the I2R NDPs, and 0 to indicate the default frequency domain Tx window. In the IFTM frame, the I2R Tx Window field is set to 1 by the RSTA to request that the ISTA use the optional frequency domain Tx window in the I2R NDPs, and 0 to indicate the default frequency domain Tx window (see Table XXX- Secure LTF Protocol Section Identifier). (#5088, #5175, #5193, #5454)



9.6.7.33 Fine Timing Measurement frame format

TGaz Editor: Modify the following paragraphs starting on page 97 (line 19) as follows

The Secure LTF Parameters field is optionally present in the IFTM, if the IFTMR contained a Ranging Parameters element that included a Secure LTF subelement. If present, it contains a Secure LTF Parameters element as defined in [9.4.2.299](file:///C:\Users\nxf57284\Documents\IEEE\Draft%20P802.11az_D3.0-FOR_CB.docx#H09o4o2o299) (Secure LTF Parameters element).

11.21.6.3.4 Negotiation for Secure LTF in the TB and Non-TB Ranging measurement exchange

TGaz Editor: Modify the following paragraphs starting on page 131 (line 18) as follows

An ISTA and an RSTA may activate a secure LTF measurement exchange for Non-TB Ranging or TB Ranging that uses randomized LTF sequences in the I2R NDPs and R2I NDPs, refer to 11.21.6.4.6 (Secure Non-TB and TB Ranging Measurement Exchange Protocol). (#3618)

An RSTA in which dot11SecureLTFImplemented is true shall set the Secure LTF Support field in the RSNXE (#3940) to 1. An ISTA in which dot11SecureLTFImplemented is true shall include the Secure LTF subelement in the Ranging Parameters element in an IFTMR.

If an RSTA has set the Secure LTF Support field to 1 in the RSNXE (#3940), then to request a secure LTF measurement exchange mode with the RSTA, an ISTA with dot11SecureLTFImplemented equal to true shall include the Secure LTF subelement in the Ranging Parameters element in the IFTMR and set the value of the Secure LTF Required field in the Secure LTF subelement to 1. (#3620)

If an ISTA has included the Secure LTF subelement in the Ranging Parameters element in an IFTMR , then to assign a secure LTF measurement exchange mode with the ISTA, an RSTA with dot11SecureLTFImplemented equal to true shall include a Secure LTF subelement in the Ranging Parameters element in an IFTMand set its Secure LTF Required field to 1. (#3620)

If an ISTA has included the Secure LTF subelement in the Ranging Parameters element in the IFTMR, it shall

* indicate to the RSTA a request to use the optional frequency domain Tx window in the R2I NDPs by setting the R2I Tx Window field to 1, otherwise shall set it to 0; and indicate its support of the optional frequency domain Tx window in the I2R NDPs by setting the I2R Tx Window field to 1, otherwise shall set it to 0. (#5088, #5175, #5193, #5454)

The RSTA shall include a Secure LTF Parameters element in the IFTM frame that contains an LTF Generation SAC and a Secure LTF Counter (#2289) for the first measurement exchange in the session when any of the following conditions are met: (#3621)

— An RSTA received an IFTMR frame where the Ranging Parameters element included a Secure LTF subelement with the Secure LTF Required field equal to 1.

— An RSTA included a Secure LTF subelement in the Ranging Parameters element in the and set its Secure LTF Required field to 1.

The Secure LTF protocol supports negotiation of the Secure LTF protocol version (see Table XXX- Secure LTF Protocol Section Identifier), which allows an RSTA and ISTA to negotiate the highest mutually supported Secure LTF protocol version. The Secure LTF protocol version is indicated in the Protocol Version field within the Secure LTF subelement. If an RSTA includes a Secure LTF element in the IFTM frame, it shall set the Protocol Version subfield to either the same or a lower value than the ISTA’s Secure Protocol Version sent in the IFTMR frame with the Status Indication subfield equal to 1 (i.e. Success), or a higher value than the ISTA’s Secure Protocol Version with the Status Indication subfield equal to 2 (i.e. ‘Request Incapable. Do not send same request again’). Upon receiving an IFTM frame with Status Indication subfield set to 1 (i.e. successful) that includes a Secure LTF subelement, the ISTA shall either proceed with the RSTA’s Protocol Version assignment, or if it does not meet its required security level, shall terminate by transmitting an FTMR frame with trigger field set to 0.

NOTE -- The Secure LTF protocol version negotiation provides user, or system, feedback about the protocol version used, as reported by the MLME. If the negotiation results in termination, user feedback can also be given about the mismatch of versions, helping them understand why it has failed, and what they need to do to address the problem.

If an RSTA has included the Secure LTF subelement in the Ranging Parameters element in an IFTM frame and set the Secure LTF Required field to 1, then it shall indicate to the ISTA whether the I2R and R2I NDPs will use the optional frequency domain Tx window by setting the I2R Tx Window and R2I Tx Window fields in the Secure LTF sublement respectively (see Table XXX- Secure LTF Protocol Section Identifier).

* If the ISTA had set the I2R Tx Window field to value 1 in the IFTMR frame and the RSTA sets the corresponding I2R Tx Window field in the IFTM frame to value 1, the ISTA shall use the optional frequency domain Tx Window in the I2R NDPs; and
* If the ISTA had set the R2I Tx Window field to value 1 in the IFTMR frame and the RSTA sets the corresponding R2I Tx Window field to value 1 in the IFTM frame, the RSTA shall use the optional frequency domain Tx window in the R2I NDPs. (#5088, #5175, #5193, #5454)

11.21.6.3.9 Passive TB Ranging measurement negotiation

TGaz Editor: Modify the following paragraphs starting on page 136 (line 12) as follows

When an ISTA sets the Passive TB Ranging field in the TB specific subelement in an IFTMR to 1, the ISTA shall not include the Secure LTF subelement in the Ranging Parameters element in an IFTMR .