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 |
| Roy Want | Google Inc. | 1600 Amphitheare Parkway, Mtn View, CA |  | 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

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.https://mentor.ieee.org/802.11/dcn/21/11-21-0307-01-00az-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.https://mentor.ieee.org/802.11/dcn/21/11-21-0307-01-00az-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.https://mentor.ieee.org/802.11/dcn/21/11-21-0307-01-00az-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.https://mentor.ieee.org/802.11/dcn/21/11-21-0307-01-00az-comment-resolution-lb253-parameters.docx |
|  |  |  |  |  |  |

**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 |
|  | StatusIndication | Value | I2R LMR Feedback | Reserved | Reserved | RangingPriority | 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 |
|  | Formatand Bandwidth | Immediate R2IFeedback | Immediate I2RFeedback | 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 I2RSTS ≤ 80 MHz | Max I2RSTS > 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 initial Fine Timing Measurement frame, 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 | B17 B19 |  | B20 B23 | B24 B25 | B26 B27 | B28 B31 |
|  | Subelement ID (2) | Length | Secure LTF Req. | Reserved |  | Protocol Version | R2I Tx Window | I2R Tx Window | Reserved |
| Bits: | 8 | 8 | 1 | 3 |  | 4 | 2 | 2 | 4 |

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

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

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 Protocol Version field in the IFTMR frame is set to a value between 0 and 15 by the ISTA. In the initial Fine Timing Measurement frame the version is set to a value between 0 and 15 by the RSTA. The interpretation of the version field in the IFTMR frame and initial Fine Timing Measurement 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 R2I Tx Window field in the IFTMR frame is set to 1 to indicate that the ISTA requests the RSTA to include the frequency domain Tx Window in the R2I NDPs, and 0 otherwise. In the initial Fine Timing Measurement frame, the R2I Tx Window field is set to 1 by the RSTA to indicate that it will include the frequency domain Tx window in the R2I NDPs, and 0 otherwise.

The I2R Tx Window field in the IFTMR frame is set to 1 to indicate that the ISTA supports including the frequency domain Tx Window in the I2R NDPs, and 0 otherwise. In the initial Fine Timing Measurement frame, the I2R Tx Window field is set to 1 by the RSTA to request the ISTA to include the frequency domain Tx Window in the I2R NDPs, and 0 otherwise. (#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 initial Fine Timing Measurement frame if the IFTMR frame 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%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%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 frame.

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 frame 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 frame, 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 initial Fine Timing Measurement frame and 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 frame, it shall

* indicate to the RSTA a request to include the 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 to include the 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 initial Fine Timing Measurement frame which 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 initial Fine Timing Measurement frame and set its Secure LTF Required field to 1.

If an RSTA has included the Secure LTF subelement in the Ranging Parameters element in an initial Fine Timing Measurement frame and set the Secure LTF Required field to 1, then it shall indicate to the ISTA whether the I2R and R2I NDPs will include the frequency domain Tx Window by setting the I2R Tx Window and R2I Tx Window fields in the Secure LTF sublement respectively.

* 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 initial Fine Timing Measurement frame to value 1, the ISTA shall include the 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 initial Fine Timing Measurement frame, the RSTA shall include the frequency domain Tx Window in the R2I NDPs. (#5088, #5175, #5193, #5454)

***TGaz Editor: Insert the following paragraphs starting on page 132 (line 23) at the end of 11.21.6.3.4 as follows:***

The Protocol version field in the IFTMR shall have a value in the range of 0 and the maximum defined by the standard to indicate the version number of the Secure LTF protocol the ISTA is requesting to use. The ISTA should always request the maximum protocol version number that it implements. In the initial Fine Timing Measurement frame, the Protocol Version field shall be set to a value in the range of 0 and the maximum value defined by the standard, indicating the version number that the RSTA is proposing to use, given the ISTA’s request. The version number returned by the RSTA could be equal to, less than or greater than the version number provided by the ISTA (within the range of 0-15).

As a result of the IFTMR frame and initial Fine Timing Measurement frame negotiation between an ISTA and RSTA that support the Secure LTF capability, and include a Secure LTF Subelement, each STA shall obtain a version number of the Secure LTF protocol proposed. Based on the relative values of these versions each STA shall then decide if it wishes to proceed with, or terminate, the ranging request. If the version number at the ISTA or the RSTA is less than that required by its security policy (or simply not available) either STA may terminate after the negotiation has completed.

NOTE --The decision to proceed should be made based on a security policy established a priori by the user, or system, at the application level. The policy at the RSTA can choose to accept the requested version from the ISTA, downgrade it, or terminate after sending its version response. Likewise, the policy at the ISTA can choose to accept the RSTA’s version response if it matches; or if downgraded, use the proposed lower value; or if the proposed value did not match its own policy rules, then terminate. An important consequence of the Secure LTF protocol version negotiation is that an implementation is able to provide user, or system, feedback about the protocol version used. 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 may need to do to address the problem.

NOTE -- The initial Secure LTF version number supported by the standard is 0. If vulnerabilities are found in this version in the future, an improved protocol will be defined, and the version number incremented by one. Further, improvements will result in further increments of the version number up to a maximum of 15.

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 frame to 1, the ISTA shall not include the Secure LTF subelement in the Ranging Parameters element in an IFTMR frame.