IEEE P802.11
Wireless LANs

|  |
| --- |
| LB279 Comment Resolution EHT MAC/PHY Part 2 |
| Date: 2024-01-08 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Christian Berger | NXP | 350 Holger Way, San Jose, CA |  | christian.berger@nxp.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes to address the following CIDs 1341 and 1161, changes are relative to Draft P802.11be\_D4.0, Draft P802.11REVme\_D4.2, and Draft P802.11bk D1.0.

Revisions:

1. Added link to resolution box, include a figure as example

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 TGbk Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbk Editor: Editing instructions preceded by “TGbk Editor” are instructions to the TGbk editor to modify existing material in the TGaz draft. As a result of adopting the changes, the TGbk editor will execute the instructions rather than copy them to the TGbk Draft.***

**The text preceded by “Discussion” is not part of the adopted changes.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **1341** | 91.24 | 36.3.12.10a.2 | "between the four sequences for each of the 80 MHz subblocks" is ambiguous: 4 sequences for each subblock, or 4 sequences for the 4 subblocks? | Change to "between four sequences, one for each of the four 80 MHz subblocks" | **Accept** |
| **1161** | 94.22 | 36.3.12.10a.4 | Need to include the behavior 'subcarrier/tone deletion" for punctured BW in this clause | As per comment | **Revised**TGbk editor, make the changes identified in document<https://mentor.ieee.org/802.11/dcn/24/11-24-0182-01-00bk-lb279-comment-resolution-eht-mac-phy-part-2.docx> |

1. ***CID Discussion:***
2. ***CID (1341/1161) TGbk Editor: Change Clause 36.3.22 (p.95 in 11bk) as follows:***

**36.3.12.10a.2 Generation of a randomized secure EHT-LTF sequence for the 320 MHz secure NDP**

1. The secure EHT-LTF sequence is constructed using pseudorandom 64-QAM modulation. Pseudorandom octets defined in [11.21.6.4.5.4](file:///C%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%20P802.11bk_D1.0.docx#H11o21o6o4o5o4) (Overview of secure LTF octet stream generation) are used in the construction of the pseudorandom 64-QAM values.
2. The first seven pseudorandom octets ($Octet\_{0}$-$Octet\_{6}$) in the secure NDP are used for per stream phase rotations see [27.3.18b.3](file:///C%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%20P802.11bk_D1.0.docx#H27o3o18bo3) (Pseudorandom and deterministic per spatial stream phase rotations). Starting with $Octet\_{7},$ these pseudorandom octets are used for construction of pseudorandom 64-QAM values in the secure EHT-LTF sequences.

This subclause describes the mapping of pseudorandom octets to the nonzero entries of the 320 MHz secure 2x EHT-LTF sequence, and then the construction of the 64-QAM values for each nonzero entry of the secure EHT-LTF sequence.

The construction of the 320 MHz secure LTF sequence uses a segment parser to divide the pseudorandom octets between four sequences, one for each of the four 80 MHz subblocks. The subblocks are enumerated first to last starting at the lowest frequencies to the highest. Figure [36-28a](file:///C%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%20P802.11bk_D1.0.docx#F36o28a) (Segment parser distributing pseudorandom octets to the sequences for each of the four 80 MHz subblocks in the 320 MHz secure EHT-LTF) illustrates the segment parser distribution of pseudorandom octets between the sequences for each of the 80 MHz subblocks.



**Figure 36-28a—Segment parser distributing pseudorandom octets to the sequences for each of the four 80 MHz subblocks in the 320 MHz secure EHT-LTF.**

The indices of the nonzero entries of each 80 MHz subblock’s secure 2x EHT-LTF sequence are given by the nonzero entries of the 2x EHT-LTF seqeuence in Equation (36-39).



Figure 36-28ax-Segment parser example with one 40 MHz subband punctured.

Puncturing is applied directly on the subcarriers of the punctured 20 MHz subchannels indicated in the TXVECTOR parameter INACTIVE\_SUBCHANNELS and does not affect the 64-QAM values mapped to other 20 MHz subchannels. See Figure 36-28ax (Segment parser example with one 40 MHz subband punctured) for an illustration of the mapping of values to subcarriers when the first two 20 MHz subbands are punctured.

There are up to sixty four secure EHT-LTF sequences in an NDP. For notational convenience we indicate the EHT-LTF sequence number with the integer $n$, which is an integer between one and sixty four. Since each secure EHT-LTF sequence is used to generate each of the EHT-LTF symbols,$ n$ also indicates the EHT-LTF symbol number. Table [36-23a](file:///C%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%20P802.11bk_D1.0.docx#T36o23a) (Pseudorandom octet index for each nonzero subcarrier index in the $n$-th quadruplet of 80 MHz subblocks) provides the pseudorandom octet index for each nonzero subcarrier index for the $n$-th quadruplet of 80 MHz subblocks.

**Table 36-23a—Pseudorandom octet index for each nonzero subcarrier index in the n-th quadruplet of 80 MHz segments**

|  |  |  |
| --- | --- | --- |
| **80 MHz subblocks** | **Secure EHT-LTF tone index** | **Pseudorandom octet index** |
| First | -500 | $$7 + \left(n-1\right)×1992$$ |
| Second | -500 | $$8 + \left(n-1\right)×1992$$ |
| Third | -500 | $$9 + \left(n-1\right)×1992$$ |
| Fourth | -500 | $$10 + \left(n-1\right)×1992$$ |
| First | -498 | $$11 + \left(n-1\right)×1992$$ |
| Second | -498 | $$12 + \left(n-1\right)×1992$$ |
| $$\vdots $$ | $$\vdots $$ | $$\vdots $$ |
| First | -4 | $$999 + \left(n-1\right)×1992$$ |
| Second | -4 | $$1000 + \left(n-1\right)×1992$$ |
| Third | -4 | $$1001 + \left(n-1\right)×1992$$ |
| Fourth | -4 | $$1002 + \left(n-1\right)×1992$$ |
| First | 4 | $$1003 + \left(n-1\right)×1992$$ |
| Second | 4 | $$1004 + \left(n-1\right)×1992$$ |
| Third | 4 | $$1005 + \left(n-1\right)×1992$$ |
| Fourth | 4 | $$1006 + \left(n-1\right)×1992$$ |
| $$\vdots $$ | $$\vdots $$ | $$\vdots $$ |
| Third | 498 | $$1993 + \left(n-1\right)×1992$$ |
| Fourth | 498 | $$1994 + \left(n-1\right)×1992$$ |
| First | 500 | $$1995 + \left(n-1\right)×1992$$ |
| Second | 500 | $$1996 + \left(n-1\right)×1992$$ |
| Third | 500 | $$1997+ \left(n-1\right)×1992$$ |
| Fourth | 500 | $$1998 + \left(n-1\right)×1992$$ |

All entries in the 320 MHz secure EHT-LTF sequence corresponding to indices of values set to 0 in Equation (36-39) shall be set to 0.

The six least significant bits ($B\_{0},B\_{1},B\_{2},B\_{3},B\_{4},B\_{5}$) of an octet are used in the construction of the 64-QAM value, as specified in Table 17-15 (64-QAM Encoding Table).