IEEE P802.11
Wireless LANs

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| **CRs on LDPC** 62,63,64,182,210,272,549,951,963,1080,1125,1126,1334,2065,2066,2266,2267,2268, 2350,2439,2700, 2756,2757,2758,2759,2760,2761,3298,3299,3540, 3547 |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11bn D0.1. The changes are based on P802.11bn D0.1.

The submission provides resolutions to the following CIDs

* 62,63,64,182,210,272,549,951,963,1080,1125,1126,1334,2065,2066,2266,2267,2268, 2350,2439,2700, 2756,2757,2758,2759,2760,2761,3298,3299,3540, 3547

Revisions:

* Rev 0: Initial version of the document.

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1334 | 111.49 | 38.3.6 | missing "? " in the 2nd column | Add equation number (38-10) | REVISEDNote to editor: The change is absorbed with CR#2066  |
| 2065 | 111.24 | 38.3.6.1 | typo in the existing LDPC codeword lengths. | Replace "1294" with "1296". | ACCEPTEDNote to Editor: CR#2065 |
| 2066 | 111.52 | 38.36.1 | A mistake in description of "LDPC codeword length" in Table 38-11."1994, otherwise" should be "1944, otherwise". | Replace "1994, otherwise" with "1944, otherwise". | ACCEPTEDNote to Editor: CR#2066 |
| 2266 | 111.49 | 38.3.6.1 | In table 38-11, number of LDPC codewords column, last row the ceiling symbol is not missing on the left side. | Please fix the ceiling symbol. | ACCEPTEDNote to Editor: CR#2066 |
| 2267 | 111.56 | 38.3.6.1 | Note that the 2xLDPC subfield is defined in the trigger frame, please add User info field of the trigger frame to be accurate |  | ACCEPTED |
| 2268 | 112.36 | 38.3.6.2 | In Matrix E(H), it is better to add that bi,j in the range of [-1 Z-1]. Note that, when d>=0, the first row of the matrix C(d) will have 0 at all entries, except at the position d, where it is set to 1. For a matrix, it is better to use row and column instead of position. If d is 0, position 0 is not clear. Please change to column d+1 to be accurate. | For a matrix, it is better to use row and column instead of position. If d is 0, position 0 is not clear. Please change to column d+1 to be accurate. | REVISED |
| 2350 |  | 38.3.6.2 | LDPC code matrix definition should follow 11n defined in Annex F |  | REJECTED. Note: The structure of the 2x1944 code in UHR has this product lifting structure which is better explained in an all inclusive section as in draft 0.1 |
| 2439 | 111.13 | 38.3.6.2 | There is an issue with the first ceiling operator |  | ACCEPTEDNote to Editor: CR#2066 |
| 2700 | 111.19 | 38.3.6.2 | LDPC encoding should be consolidated to 38.3.16.1.3. While this is editorial comment, marking it as technical as I presume people would want to debate this. | Move 38.3.6 under 38.3.16.1.3. | OPEN |
| 951 | 111.19 | 38.3.6.2 | Fix the ceiling function |  | ACCEPTEDNote to Editor: CR#2066 |
| 963 | 111.61 | 38.3.6.1 | Further clarify that LDPC codeword length of 648, 1296 or 1944 shall not be used when 2xLDPC subfield is set to 0. | Add "Nominal LDPC codeword length of 648, 1296 or 1944 shall not be used if the 2xLDPC subfield in the Trigger frame or the User field of UHR-SIG field is set to 1." | REJECTEDNote: The text and the table look clean. Open to hear further comments and make appropriate changes if needed.  |
| 2756 | 111.24 | 38.3.6.2 | Change from "1294" to "1296" |  | ACCEPTEDNote to Editor: CR#2065 |
| 2757 | 111.57 | 38.3.6.2 | Remove "it is" |  | ACCEPTED |
| 2758 | 111.57 | 38.3.6.2 | Change from "648, 1296 or 1944 is" to "3888 is not" |  | REJECTEDNote: The existing statement reflects the possible situation in a better way. Excluding 3888 could mean several other possibilities  |
| 2759 | 111.57 | 38.3.6.2 | Change from "parity matrix" to "parity check matrix" |  | ACCEPTED |
| 2760 | 112.43 | 38.3.6.2 | Change from "parity matrix" to "parity check matrix" |  | ACCEPTED |
| 2761 | 112.46 | 38.3.6.2 | Make "Exponent matrix size" and "Parity check matrix size" all capital |  | ACCEPTED |
| 3298 | 111.33 | 38.3.6.1 | The math expressions in Table 38-11 is not displayed in correct format. | Correct the math expressions in table 38-11. | ACCEPTED |
| 3299 | 112.12 | 38.3.6.2 | The equations in this page did not display in correct format. Also equation indices need to be assigned to these equations. | Correct the equations and assign equation indices. | ACCEPTED |
| 3540 | 111.24 | 38.3.6 | typo | 1294 ---> 1296 | ACCEPTED |
| 3547 | 112.44 | 38.3.6.2 | missing "check" after "parity" | "Table 38-12- Exponent matrix and parity check matrix size"; similarly on line 39 | ACCEPTED |
| 62 | 111.24 | 38.3.6 | Change "1294, 1944" to "1294 and 1944". |  | ACCEPTED |
| 63 | 111.49 | 38.3.6 | In the 2nd column of Table 38-11, the ceiling function is incomplete. |  | ACCEPTED |
| 64 | 111.55 | 38.3.6 | The description of the 2xLDPC subfield is duplicated since it has already been described in the trigger frame and UHR-SIG. Remove the paragraph. |  | REJECTEDThis content is being reasserted as a note, and the purpose of this note is solely to provide clarity regarding a table being discussed. |
| 182 | 111.52 | 38.3.6 | typo in Table 38-11, the '1994' should be '1944' | change to '1944' | ACCEPTED |
| 210 | 111.49 | 38.3.6.1 | Number of LDPC codewords for 3888<Navbits is not shown correctly | make the formula clearly shown | REVISED |
| 272 | 111.52 | 38.3.6.1 | In Table 38-11--PPDU encoding parameters, when the Range of Navbits (bits) is 3888 < Navbits and the 2xLDPC subfield in the User Info field of the trigger frame or in the User field of the UHR-SIG field is set to 0, the LDPC codeword length LLDPC should not be 1994. |  | REVISED |
| 549 | 111.52 | 38.3.6.1 | a typo in section 38.3.6.1 Table 38-11 line 52, the 1994 should be 1944 | 1994-->1944 | ACCEPTED |
| 1080 | 111.52 | 38.3.6.1 | "1994, otherwise" should be "1944, otherwise" | change to 1944 | ACCEPTED |
| 1125 | 111.19 | 38.3.6 | It is better to move this clause into 38.3.16 Data field because it is related to the data field. |  | OPEN |
| 1126 | 111.50 | 38.3.6 | There is a typo in the second column of the last row of Table 38-11. | Fix it | ACCEPTED |

**Proposed Changes**

**CR#2066**

# PPDU Encoding Parameters

Table PPDU Encoding parameters table

|  |  |  |
| --- | --- | --- |
| **Range of Navbits(bits)** | **Number of LDPC codewords(NCW)** | **LDPC codeword length LLDPC(bits)** |
|  | 1 | 1296, if 648, otherwise |
|  | 1 | 1944, if 1296, otherwise |
|  | 1 | 1944 |
|  | 2 | 1944, if 1296, otherwise |
|  | 2 | 1944 |
|  |   | 3888, if 2xLDPC subfield in User (Info) field of the trigger frame or in the per-user field of the UHR-SIG is set to 11944, Otherwise |

Note that the 2xLDPC subfield is defined in the User Info field of the trigger frame and in the User field of UHR-SIG field. The subfield indicates whether the nominal LDPC codeword length of 3888 is used in the PPDU, i.e., it is:

— Set to 0 to indicate that the nominal LDPC codeword length of 648, 1296 or 1944 is being used.

— Set to 1 to indicate that the nominal LDPC codeword length of 3888 is being used.

**CR#2065**

# 38.3.5 LDPC Encoding

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In addition to the codeword lengths of 648, 1296, 1944, the UHR STA may also support codeword length of 3888 bits. The specifications for the length 3888 LDPC codes are defined in Table 38-11 **(PPDU encoding parameters).**

**CR #2759**

For , is the matrix obtained by cyclically shifting the identity matrix , to the right by positions. is the NULL matrix of size , which has all its entries set to 0. Note that, when , the first row of the matrix will have 0 at all entries, except at the column position , where it is set to 1.

For the code rate , the size of the matrix is . The parity matrix is a binary matrix of size .

Table 38-12 **(Exponent Matrix and Parity Check Matrix sizes).**

|  |  |  |  |
| --- | --- | --- | --- |
| **CODE RATE**  | **EXPONENT MATRIX** | **EXPONENT MATRIX SIZE** | **PARITY CHECK MATRIX SIZE** |
| 1/2 | E(H)\_R\_12 |  |  |
| 2/3 | E(H)\_R\_23 |  |  |
| 3/4 | E(H)\_R\_34 |  |  |
| 5/6 | E(H)\_R\_56 |  |  |