IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | SIGA Comment Resolution | | | | | | Date: 2017-05-10 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Ron Porat | Broadcom |  |  | [Ron.porat@broadcom.com](mailto:Ron.porat@broadcom.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for comments:

4889,6121,8923,8924,10046,4996,8910, 4912, 4913, 8919, 8921, 7242, 7243, 7829, 8903, 8904, 8905, 8906, 8911, 8913, 8915, 8916, 8917, 9551, 8926, 9177, 9178, 9179, 10211, 10212, 8918,

From the letter ballot of TGax D1.0.

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

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

**CIDs, by group**

**CRC Value**

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| **CID** | **Commenter** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** |
| 4889 | Bin Tian | 282.51 | 28.3.10.7.3 | HE SIG-B user specifi code block may content one or two user information so the the value of L should be 20 or 41. | as in comment | Revised,  Editor: implement the changes as shown for CID 4889 in document 648r3 |
| 6121 | Jian Yu | 282.51 | 28.3.10.7.3 | "L = 20" should be "L = 41 for the HE-SIG-B User Block field that contains information for two STAs, L=20 when the last User Block field contains information for one STA." | Modify as in comment | Revised  Editor: same changes as resolution to CID 4889 |
| 8923 | Sigurd Schelstraete | 282.50 | 28.3.10.7.3 | "x = N +∙ 8 when the Center 26-tone RU subfield is present, and x = N +∙ 8 - 1 otherwise" should be "x = N +∙ 8 + 1 when the Center 26-tone RU subfield is present, and x = N +∙ 8 otherwise". See Table 28-20. | See comment | Rejected  Correct in principle but commenter is off by 1 |
| 8924 | Sigurd Schelstraete | 282.51 | 28.3.10.7.3 | "L = 20 for the HE-SIG-B user specific fields" should be "L = 21 or 42 for the HE-SIG-B user specific fields", since the CRC is calculated over two consecutive user specific fields, except for the last one. | See comment | Rejected  Correct in principle but commenter is off by 1 |
| 10046 | yujin noh | 282.51 | 28.3.10.7.3 | value of L for the HE-SIG-B User block field should be different depending on assigned number of users which could be odd or even. | As in the comment. | Revised  Editor: same changes as resolution to CID 4889 |

**Proposed changes for CID 4889**

**TGax Editor: *replace the following part of row 282.51***

“and *L* = 20 for the HE-SIG-B user specific fields”

***with***

“, *L* = 20 for a HE-SIG-B user specific block that contains information for one STA, *L* = 41 for a HE-SIG-B user specific block that contains information for two STA”

**End of proposed changes.**

**DCM/STBC**

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| **CID** | **Commenter** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** |
| 4996 | Brian Hart | 273.54 | 28.3.10.7.2 | DCM/STBC field descriptions are inconsistent with GI+LTF Size field | "Set to 1 to indicate that DCM is applied" but DCM=1 & STBC=1 means 4x HE-LTF from P274L36. Correct descriptions of DCM and STBC at P275L17 accounting forf this exceptional encoding | Revised  Editor: implement the changes as shown for CID 4996 in document 648r3 |
| 8910 | Sigurd Schelstraete | 274.34 | 28.3.10.7.2 | "Neither DCM nor STBC shall be applied when both the DCM and STBC are set to 1.". Add this clarification to the DCM and sTBC fields as well. | See comment | Revised  Editor: same changes as resolution to CID 4996 |

**Proposed changes for CID 4996**

**TGax Editor: *add the following part to line 273.55 in draft D1.0***

Set to 1 to indicate that DCM is applied to the Data field. Neither DCM nor STBC shall be applied when both the DCM and STBC are set to 1.

**TGax Editor: *add the following part to line 275.17 in draft D1.0***

Set to 1 if space time block coding is used. Neither DCM nor STBC shall be applied when both the DCM and STBC are set to 1.

**End of proposed changes.**

**Spatial Reuse**

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| **CID** | **Clause** | **P** | **L** | **Comment** | **Proposed Change** | **Resolution** |
| 4912 | 28.3.10.7.2 | 280 | 6 | NOTE 1 looks pretty darn normative to me | Rewrite ot avoid a note. Perhaps add a section elsewhere and a xref to it from here | Revised.  Editor: make the following changes in table 28-17 in D1.2:   1. Remove all instances of “see Note 1” 2. Move all the text at the bottom of the table after NOTE 1 to outside the table and position it below it, removing the words NOTE 1. 3. Rename NOTE 2 to NOTE 1   Editor: during review also noticed an error in table 28-18:  **TGax Editor: *make the following changes above table 28-18***  Replace “spatial reuse 1, spatial reuse 2, spatial reuse 3, spatial reuse 4” with “the Spatial Reuse subfield” in “Table 28-18 (Spatial Reuse subfield encoding for an HE SU PPDU, HE ER SU PPDU, and HE MU PPDU) defines the encoding for Spatial Reuse 1, Spatial Reuse 2, Spatial Reuse 3, Spatial Reuse 4,for an HE SU PPDU, HE ER SU PPDU, and HE MU PPDU” |
| 4913 | 28.3.10.7.2 | 281 | 27 | 40M .. other 2 fields indicate identical values ... is ambiguous. Assume we have ab for P40 and cd need ot be defined . Is c=a, d=b,? OR c=b, d=a, or what? | Define what is identical to what | Revised.  Editor: revise the sentence D1.2 as follows:  For 40 MHz two Spatial Reuse fields whereby spatial reuse field 3 has identical value to spatial reuse field 1 and spatial reuse field 4 has identical value to spatial reuse field 2 |
| 8919 | 28.3.10.7.2 | 279 | 4 | A 20 MHz PPDU only occupies one of the four 20 MHz subbands. Why do all four 20 MHz subbands have the same value? Shouldn't only the primary 20 do SR. The other subbands should be open for use anyway. | Clarify the requirements and NOTE 1 of Table 28-18 | Revised.  Editor revise the current text in D1.2 as follows:   1. “(other 3 fields indicate identical values.” The spatial reuse fields only apply to 20MHz used in the transmission. ) 2. (other 2 fields indicate identical values The spatial reuse fields only apply to 20MHz used in the transmission.. ) |
| 8921 | 28.3.10.7.2 | 282 | 29 | There is virtually no explanation or context on the SRP parameter or "Acceptable Receiver Interference level\_AP". Notation and statements on lines 29 to 40 are far too dense to be informative. | Either clarify or relegate feature to future amendment | Rejected.  Draft 1.2 incorporate explanation and context for SRP parameter in 27.9.3 SRP-based spatial reuse operation. |

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**Misc**

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| **CID** | **Commenter** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** |
| 7242 | KE YAO | 273.48 | 28.3.10.7.2 | rename right 106-tone RU to high 106-tone RU | refer to comment | Revised  Editor:  rename right 106-tone RU to upper frequency 106-tone RU |
| 7243 | KE YAO | 274.26 | 28.3.10.7.2 | rename right 106-tone RU to high 106-tone RU | refer to comment | Revised  Editor:  rename right 106-tone RU to upper frequency 106-tone RU |
| 7679 | Lochan Verma | 274.17 | 28.3.10.7 | Specify that values 2-3 are reserved (Table 281-16) | For an HE extended range SU PPDU "Values 2 and 3 are reserved" | Revised.  Editor:  Add "Values 2 and 3 are reserved" at the end of the Description for the Bandwidth field |
| 7829 | Mark Hamilton | 273.11 | 28.3.10.7.2 | Why list the bits explicitly, and also the "Number of bits" column? | Delete the Number of bits column from Table 28-16. Same thing for Tables 28-17, 28-18, 28-22, and 28-23. | Rejected.  Similar description as in 11ac. This structure adds clarity to the SIGA field structure. |
| 8903 | Sigurd Schelstraete | 273.23 | 28.3.10.7.2 | Change "Set to 1 indicates" to "Set to 1 to indicate" | See comment | Accepted |
| 8904 | Sigurd Schelstraete | 273.23 | 28.3.10.7.2 | "pre-HE-STF portion" is not terminology used before. | Change to "pre-HE modulated fields" | Accepted |
| 8905 | Sigurd Schelstraete | 273.25 | 28.3.10.7.2 | Change "Set to 0 indicates" to "Set to 0 to indicate" | See comment | Accepted |
| 8906 | Sigurd Schelstraete | 273.33 | 28.3.10.7.2 | "This fields indicates"should be a requirement | Change to "This field shall be set to DL for ..." | Accepted |
| 8911 | Sigurd Schelstraete | 275.08 | 28.3.10.7.2 | Replace "extra OFDM Symbol" with "extra OFDM Symbol Segment" (3 occurences in third column) | See comment | Accepted |
| 8913 | Sigurd Schelstraete | 276.16 | 28.3.10.7.2 | "This fields indicates"should be a requirement | Change to "This field shall be set to DL for ..." | Revised.  Editor : revise description to:  Set to 0 for DL, TDLS, Mesh and IBSS  Set to 1 for UL  NOTE—The TDLS peer can identify the TDLS frame by To DS and From DS fields in the MAC header of the MPDU. |
| 8915 | Sigurd Schelstraete | 277.04 | 28.3.10.7.2 | Replace "full" with "contiguous" (4 occurences in third column) | See comment | Revised.  Editor:   1. Remove the word full in all 4 occurences 2. Add after the words 80 MHz “non preamble puncturing mode” 3. Add after the words 80+80 MHz “non preamble puncturing mode” |
| 8916 | Sigurd Schelstraete | 277.59 | 28.3.10.7.2 | Replace "extra OFDM Symbol" with "extra OFDM Symbol Segment" (1 occurences in first column and 1 in third column) | See comment | Accepted |
| 8917 | Sigurd Schelstraete | 277.59 | 28.3.10.7.2 | "extra OFDM Symbol" does not explain how value should be set. | Add:"Set to 1 if an extra OFDM symbol segment for LDPC is present Set to 0 if an extra OFDM symbol segment for LDPC is present" | Revised  Editor: add  "Set to 1 if an extra OFDM symbol segment for LDPC is present Set to 0 otherwise |
| 9551 | Yasuhiko Inoue | 275.08 | 28.3.10.7.2 | Table 28-16 B8 of HE-SIG-A2 (HE SU PPDU) or HE-SIG-A3 (HE extended range SU PPDU):  "Indicates the presence of the extra OFDM symbol for LDPC.  Set to 1 if an extra OFDM symbol for LDPC is present  Set to 0 if an extra OFDM symbol for LDPC is present ..."  Value 1 or 0 should indicate that an extra OFDM symbol for LDPC is not present. | As in the comment. | Revised  See resolution to comment 8917 |
| 8926 | Sigurd Schelstraete | 283.12 | 28.3.10.7.3 | "the output is stopped at c4" is potentially confusing. Line 8 already makes it clear which bits are needed. | Remove "the output is stopped at c4" | Revised  See description at the end of the document |
| 9177 | SUNGEUN LEE | 273.23 | 28.3.10.7.2 | HE-LTF1 is not clearly defined in the specification, so detailed description for the first symbol of HE-LTF is required to be added | Change HE-LTF1 into the first symbol of HE-LTF | Revised  Editor:  Replace HE-LTF1 with “the first symbol of HE-LTF”.    Editor: make the same replacement in the description of BEAM\_CHANGE in Table 28-1in D1.2 |
| 9178 | SUNGEUN LEE | 273.25 | 28.3.10.7.2 | HE-LTF1 is not clearly defined in the specification, so detailed description for the first symbol of HE-LTF is required to be added | Change HE-LTF1 into the first symbol of HE-LTF | Revised  Editor:  Replace HE-LTF1 with “the first symbol of HE-LTF”. |
| 9179 | SUNGEUN LEE | 273.46 | 28.3.10.7.2 | It would be required to clarify what P20 is (primary 20MHz) and to be consistent further with Eq (28-18) and (28-19) in P802.11ax D1.0 for P20 | Clarify P20 description in MCS field of HE SU and HE extended range PPDU Table | Revised  Editor:  1.Remove “in P20” in the SIG field description  2.Add below formula 28-18 and before the word “where” the following: “where  and “  3. Add below formula 28-18 and before the word “where” the following: “where  and “ |
| 10211 | Yusuke Asai | 275.36 | 28.3.10.7.2 | "bits 0 to 41 of the HE-SIG-A field" should be "bits 0-25 of HE-SIG-A1 and bits 0-15 of HE-SIG-A2" Ditto in P278L18, P281L15 and P282L48. | As in comment. | Revised  Editor: add the following sentence in the four places mentioned in the comment: (bits 0 to 41 of the HE-SIG-A field correspond to bits 0-25 of HE-SIG-A1 followed by bits 0-15 of HE-SIG-A2) |
| 10212 | Yusuke Asai | 277.16 | 28.3.10.7.2 | As well as other values, the case for value of 7 should be defined as which channel is punctured. Current definition is not clear whether secondary 40 MHz in the primary 80 MHz exists or not. | Change "the primary 40 MHz is present." to "only the secondary 40 MHz is punctured." | Rejected.  This sentence is specifically crafted like that to include ANY combination of punctured 20MHz in the secondary 40MHz |
| 8918 | Sigurd Schelstraete | 278.08 | 28.3.10.7.2 | Add definition of MU-MIMO RU's to definition section (see third column) | See comment | Revised.  Editor: revise the text in D1.2 as shown below:  STBC is not applied in RUs that are used for MU-MIMO allocation. |
| 5262 | Dorothy Stanley | 278.30 | 28.3.10.7.2 | Regarding, "When the Bandwidth field is set to 5 or 7, the HE-SIG-B field may indicate which 20 MHz sub-channel(s) in the preamble of secondary 40 MHz channel are punctured by its RU allocation signaling; when the Bandwidth field is set to 6 or 7, the HE-SIG-B field may indicate which 20 MHz sub-channel(s) in the preamble of secondary 80 MHz channel are punctured by its RU allocation signaling." if the HE-SIG-B does not indicate which 20 MHz sub-channel is punctured then how is it determined? In other words, it seems like the "may" needs to be a shall. | as in comment | Revised  HE-SIGB only indicates payload allocations and not preamble.  Editor: delete this paragraph:  ~~When the Bandwidth field is set to 5 or 7, the HE-SIG-B field may indicate which 20 MHz sub-channel(s) in the preamble of secondary 40 MHz channel are punctured by its RU allocation signaling; when the Bandwidth field is set to 6 or 7, the HE-SIG-B field may indicate which 20 MHz sub-channel(s) in the preamble of secondary 80 MHz channel are punctured by its RU allocation signaling. See 28.3.10.8 (HE-SIG-B) for the RU allocation signalling~~ |

**Comment 8926.**

**Editor please re-write the entire section as below and then implement CID resolution 4889 on top of it and then implement CID 10045 in 17/690r1 on top of it**

* **CRC computation**

The CRC computation defined in this subclause applies to HE-SIG-A, the Common field of HE-SIG-B and the User Specific field of HE-SIG-B.

The CRC is calculated over bits 0 to 41 of the HE-SIG-A field and over bits 0 to *L* of the HE-SIG-B field (*L*= *x* for each HE-SIG-B common block field where *x* = *N* × 8 when the Center 26-tone RU subfield is present, and x = *N* × 8 1 otherwise, and *L*= 20 for the HE-SIG-B user specific fields). Refer to Table 28-20 (Common Block field) for *N* and the conditions under which the Center 26-tone RU subfield is present.

The value of the CRC field shall be the 1s complement of



where



where



*G*(*D*) is defined in 19.3.9.4.4.



The CRC field is transmitted from *c4* to *c7* with *c7* first.

Figure 28-x1 shows the operation of the CRC. First, the shift register is reset to all 1s. The bits are then passed through the XOR operation at the input. When the last bit has entered, the output is generated by shifting the bits out of the shift register, C7 first, through an inverter.

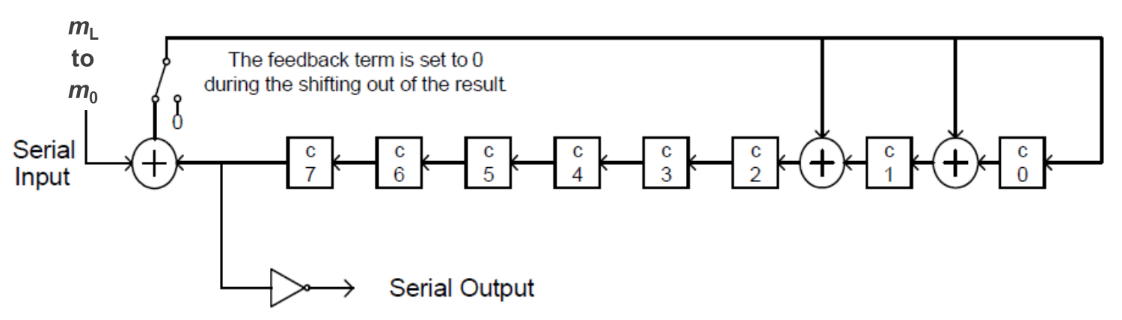


Figure 28-x1 – CRC calculation

As an example, if bits {*m*0…*m*41} are given by {1 1 0 1 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1 0 1 0}, the output bits {*B*7…*B*4}, where *B*7 is output first, are {0 1 1 1}.