IEEE P802.11
Wireless LANs

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| Comment Resolutions on HE-SIG-A Part 1 |
| Date: 2018-01-10 |
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Abstract

This submission proposes resolutions for the following comments on HE-SIG-A of TGax D2.0:

12060, 13047, 12579, 12884, 13016,

13046, 13306, 13307, 13364, 13771

13366, 13457, 14070

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: formatting changes.

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.***

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| **CID** | **Clause Number** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 12060 | 28.3.10.7.2 | 410.20 | In table 28-17, We only have 4 bits (B18-B21) in HE-SIG-A1 field to incated the total number of SIGB symbols. Howerver, the required SIG-B symbols will beyond 16 if it is modulated with low data rate, such MSC0 with DCM. So B18-B21 will bring false info to receiver. | Modify HE-SIG-A to allow the number of SIG-B can be greater than 16. | Reject—The HE-SIG-B MCSs are 0 – 5, which is a healthy range of PHY data rates and Ncbps (see Table 28-75 (HE-MCSs for 242-tone RU and non-OFDMA 20 MHz, Nss = 1). Hence 16 symbols can carry a lot of coded bits per symbol. The choice of HE-SIG-B MCS and # of OFDMA users being scheduled is up to HE AP discretion.Note that 16 HE-SIG-B symbols at MCS0 can support more than 20 STAs. The group carefully chose the field length as 4 bits are much debate. On the other hand, HE-SIG-B processing is a hardware function and at this time in 11ax life cycle (D2.0), most implementations have frozen the hardware. A change in HE MU preamble will cause huge interoperability problem at this stage in the game. |
| 13047 | 28.3.10.7.2 | 410.21 | In table 28-17, B18-B21 in HE-SIG-A1 field only provides 4 bits to indicate the number of SIGB OFDM symbols. That means the maximum of SIGB symbols is 16. However, the maximum required SIG B symbols is about 78 symbols if SIGB using MCS0 & DCM , 39 symbols if using MCS0 or MCS1 & DCM, 20 symbols if using MCS1 or MCS2 & DCM in 160MHz bandwidth. On the other hand, the maximun number STA scheduled over 80MHz or 160MHz if using lowest data rate for SIGB is only 12 under the condition of 16 the maximum SIGB symbols, significantly reducing the multi-user diversity introduced by OFDMA | Please correct the bug to allow more STAs to be be scheduled in DL OFDMA or make the receiver know the HE-SIG-B boundary when lots of STAs are scheduled. | Reject—Please refer to resolution of CID 12060. |
| 12579 | 28.3.10.7.2 | 410.17 | "Set to 7 for preamble puncturing in 160 MHz or80+80 MHz, where in the primary 80 MHz of the preamble the primary 40 MHz is present." -- huh? This is not clear. The secondary 40 MHz is entirely missed out, but the secondary 80 MHz is still there? Or the presence/absence of the secondary 40 MHz is undefined (might be present, might be 50% present, might be absent?) Why not the mode where one of the 20 MHz of the secondary 40 MHz is punctured, like in 80 MHz bw? | Change the cited text to "The value 7 is reserved." | Reject—The HE-SIG-B has 2 content channels and follows [1 2 1 2] structure. For receiver implementation simplicity (i.e., to reduce HE-SIG-B decoding variations), it is desirable to have at least one instance of the 1st SIG-B content channel and one instance of 2nd SIG-B content channel being present in the primary 80 MHz (refer to 11-16/0898r0).1. Why not a mode where one of the 20 MHz of the secondary 40 MHz is punctured, like in 80 MHz BW?

Ans: Definition of BW = 5 (preamble puncturing in 80 MHz, where in the preamble only one of the two 20 MHz sub-channels in secondary 40 MHz is punctured). The definition excludes the case of 80 MHz BW reducing to 40 MHz BW, which is already achievable without use of preamble puncturing procedure.Definition of BW = 7 (preamble puncture in 160 MHz or 80 + 80 MHz, where in the primary 80 MHz of the preamble the primary 40 MHz is present), already allows the mode where one of the 20 MHz of the secondary 40 MHz is punctured. (ii)The secondary 40 MHz is entirely missed out, but the secondary 80 MHz is still there?Ans: the presence/absence of 20 MHz sub-channels in the secondary 40 MHz is indicated in the HE-SIG-B content channel 1 and 2, that happen to be present in the primary 40 MHz in this case. |
| 12884 | 28.3.10.7.2 | 408.04 | "Set to 1 if space time block coding is used. NeitherDCM nor STBC shall be applied when both the DCMand STBC are set to 1." -- the second sentence contradicts the first | Change to "Set to 1 if space time block coding is used, if DCM is set to 0. NeitherDCM nor STBC shall be applied when both the DCMand STBC are set to 1." At 406.6 change "Set to 1 to indicate that DCM is applied to the Datafield." to "Set to 1 to indicate that DCM is applied to the Datafield, if STBC is set to 0." | Accept— |
| 13016 | 28.3.10.7 | 408.25 | In Table 28-18, it should be clarified for the first condition (number of OFDM symbol greater than the signaled periodicity) that the Doppler bit B15 is set to 1 when the channel Doppler is high (high to be determined or at least to be stated that how high is determined is beyond the scope of this amendment). Otherwise, there may be a circular dependency: the Nts And Midamble Periodicity subfield signaled the midamble periodicity only if the Doppler subfield is 1, and the Doppler subfield is 1 if the number of OFDM symbols is greater than the signaled midamble periodicity. | Replace B15 description of table 28-18 and Table 28-19 with something like:Set to 1 if the channel Doppler is determined to be high (how high is determined is beyond the scope of this specification). The midamble is present if the number of OFDM symbols in the HE Data field is larger than the signaled midamble periodicity plus 1, otherwise the midamble is not present. It is recommended to use midamble for the PPDUs of the reverse link.Set to 0 otherwise. | Reject—The description of B15 in Table 28-18 is clear. The B15 is set to 1 if one of the following applies:— The number of OFDM symbols in the HE Data field is larger than the signaled midamble periodicity plus 1 and the midamble is present— The number of OFDM symbols in the HE Data field is less than or equal to the signaled Midamble periodicity plus 1 (see 28.3.11.16 Midamble),the midamble is not present, but thechannel Doppler is high. It recommends that midamble may be used for the PPDUs of the reverse link.Set to 0 otherwise.The proposed resolution is not sufficient to replace the existing text since second bullet above is not indicated through it. |
| 13046 | 28.3.10.7.2 | 409.13 | In table 28-17, B1-B3, B4 B22 in HE-SIG-A1 field use SIGB, however, B18-B21 use HE-SIG-B | Please correct SIGB to HE-SIG-B | Reject—Field name uses “SIGB” while description uses “HE-SIG-B”. B18-21 uses “HE-SIG-B” in lieu of “SIG-B” since it refers to # of HE-SIG-B field symbols. In my opinion, the current definition of field names is fine. |
| 13306 | 28.3.10.7.2 | 406.16 | This field is set by the MAC. The description should link to to TXVECTOR/RXVECTOR parameter BSS\_COLOR. | Change the desciption so that it references TX/RXVECTOR parameter BSS\_COLOR. | Revised—TGax Editor to make the changes for CID13306 as suggested here in IEEE 802.11-18/0038r1.In Table 28-18, 28-19, and 28-20, edit the description of BSS Color field as follows.“The BSS Color field is an identifier of the BSS. <para break>Set to the value of the BSS\_COLOR parameter of the TXVECTOR.” |
| 13307 | 28.3.10.7.2 | 407.31 | This is a poorly named field. See 10.22.1 for a definition of TXOP. The entry in this field has little to do with the TXOP. At best it is a duration value related to NAV. Ideally, the name should be similar to the name of the TXVECTOR parameter. | Change the field name to more accurately reflect its purpose. | Reject—There is a reason this field doesn’t use the same name “TXOP\_Duration” as in TXVECTOR. They have different binary representations and following text describes the conversion b/w these two variables.“Set to a value less than 127 to indicate duration information for NAV setting and protection of the TXOP as follows: If TXVECTOR parameter TXOP\_DURATION is less than 512, then B0 is set to 0 and B1-B6 is set to floor(TXOP\_DURATION/8) where B1 is the LSB. Otherwise, B0 is set to 1 and B1-B6 is set to floor ((TXOP\_DURATION - 512) / 128) where B1 is the LSB. Where B0 indicates the TXOP length granularity. Set to 0 for 8 μs; otherwise set to 1 for 128 μs. B1-B6 indicates the scaled value of the TXOP\_DURATION” |
| 13364 | 28.3.10.7.2 | 411.00 | Typo: Must be "is set to 1" instead of "set to 0". Both the decription suggest B10 to be set to 0. | correct the text | Revised—CID 13771 resolves the CID13364. |
| 13771 | 28.3.10.7 | 411.43 | "B10 is set to 0 if the TXVECTOR parameter MIDAMBLE\_PERIODICITY is 10 and set to 0 if the TXVECTOR parameter PREAMBLE\_PERIODICITY is 20."should be "B10 is set to 0 if the TXVECTOR parameter MIDAMBLE\_PERIODICITY is 10 and set to 1 if the TXVECTOR parameter MIDAMBLE\_PERIODICITY is 20."" | As in comment | Accept— |
| 13366 | 28.3.10.7.2 | 416.00 | Better to give reference from the fields in trigger frame for the reserved bit setting | As in comment | Revised—TGax Editor to make the changes for CID13366 as suggested here in IEEE 802.11-18/0038r1.“Reserved and set to value indicated in the HE-SIG-A Reserved subfield in Trigger frame” |
| 13457 | 28.3.10.7.2 | 408.25 | "Doppler" field should be renamed to "Midamble". | See comment | Reject—Midamble is a procedure adopted in 11ax D2.0 to address the situations where wireless medium experiences Doppler. Replacing “Doppler” with “Midamble” does not offer any benefit with respect to the D2.0. |
| 14070 | 28.3.10.7.2 | 411.57 | There are multiple lines saying the same thing. | Change "STBC is not applied in MU-MIMO RUs. STBC does not apply to HE-SIG-B. STBC is not applied in RUs that are used for MUMIMO allocation." to "STBC is not used if any of the RUs use MU-MIMO. STBC does not apply to HE-SIG-B." | Revised—TGax Editor to make the changes as in CID11406 in doc 11-18/0006r3. |
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**TGax Editor: Please edit description column corresponding to “BSS Color” in Tables 28-18, 28-19, and 28-20.(#13306)**

**“**BSS Color field is an identifier of the BSS.

<Para break>

Set to the value of the BSS\_COLOR parameter of the TXVECTOR.**”**

**TGax Editor: Please edit description column corresponding to “Reserved” in Tables 28-20 pg 416/ln23.(#13366)**

“Reserved and set to value indicated in the HE-SIG-A Reserved subfield in Trigger frame”

**References:**

1. **IEEE P802.11axTM/D2.0, Oct 2017.**