IEEE P802.11  
Wireless LANs

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| 11ax D4.0 comment and resolution for Trigger frame MAC padding | | | | |
| Date: 2019-05-12 | | | | |
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Abstract

This document proposes comment resolutions to the following CIDs (12 CIDs) for TGax D4.1:

20184 20214 20215 20216 20538 20587 20818 21191 21364 21473 21550 21595

Revisions:

* Rev 0: Initial version of the document. Use 11ax D4.1 as baseline spec text.

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.***

**CID 20184, 20538, 21364, 21473 and 21595**

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 20184 | 328.28 | 4 if MinTrigProcTime is 8 us | 8 us --> 16 us | **Revised.**  Agree with commenter. Already resolved by CID 20173 and changed in D4.1. No further text change needed. |
| 20538 | 328.27 | "4 if MinTrigProcTime is 8 <micro>s" -- previous line says 2 not 4 | Change "8" to "16" in the cited text at the referenced location | **Revised.**    Agree with commenter. Already resolved by CID 20173 and changed in D4.1. No further text change needed. |
| 21364 | 328.27 | "4 if MinTrigProcTime is 8 us" Is this a typo? This should be 16 uS, correct? | Is this a typo? This should be 16 uS, correct? | **Revised.**  Agree with commenter. Already resolved by CID 20173 and changed in D4.1. No further text change needed. |
| 21473 | 328.15 | mpad value is inconsistent | Replace 8 us with 16 us in the third line | **Revised.**  Agree with commenter. Already resolved by CID 20173 and changed in D4.1. No further text change needed. |
| 21595 | 328.28 | 4 if MinTrigProcTime is 8 us | 8 us --> 16 us | **Revised.**  Agree with commenter. Already resolved by CID 20173 and changed in D4.1. No further text change needed. |

**CID 20214, 20215, 21818**

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 20214 | 328.06 | Is (26-1) applicable for all cases or just when BCC is used in TF? | Clarify | Revised.  (26-1) is only applicable to BCC coded TFs. For LDPC coded TFs, the padding follows the requirements defined in the end of this subclause. See more discussions below.  ***TGax Editor*:** Please make changes to IEEE P802.11ax D4.1 according to the proposed text changes as resolution to CID 20214 in 11-19/0703r0 |
| 20215 | 328.58 | For LDPC, does the padding rule include both the additional 4 bullets, and (26-1), whichever leads to longer T\_trigproc? | Clarify | Revised.  See resolution for CID 20214. |
| 20818 | 328.04 | " the number of bits in the PSDU following the last bit of SCH " does not allow for padding using the PE field, since the PE field is not part of the PSDU | After the cited text at the referenced location append "(except that a Packet Extension field of equivalent duration may be used for some of those bits) ". At 328.53 change "An AP may use any type of padding to satisfy the MinTrigProcTime requirement of a non-AP STA, such as using the Padding field in a Trigger frame, post-EOF A-MPDU padding, or aggregating other MPDUs in the A-MPDU." to "An AP may use any type of padding to satisfy the MinTrigProcTime requirement of a non-AP STA, such as using the Padding field in a Trigger frame, post-EOF A-MPDU padding, aggregating other MPDUs in the A-MPDU, and/or including a Packet Extension field in the PPDU." | Revised.  For BCC encoded Trigger frame/TRS field, the Trigger MAC padding defined in (26-1) is sufficient to provide MinTrigProcTime. No need to mix extra PE with MAC padding.  For LDPC encoded Trigger frame/TRS field, need to clarify that (26-1) does not apply. AP only need to satisfy the requirements defined as the 4 rules in the end of this sub clause. In this case, extra PE, other padding methods, other MPDUs are all allowed.  See resolution for CID 20214. |

***Discussions***

Applying (26-1) to LDPC encoded case has two problems:

1. When LDPC encoded, the *LPAD,MAC* bits following SCH may not contribute to the MAC processing time. If all or part of *LPAD,MAC* bits are within the LDPC codeword encoding the last bit of SCH, these padding bits will not buy receiver the required MAC processing time. 🡪 In some cases, *LPAD,MAC* bits padding is not sufficient for LDPC case.
2. In some cases, mandating *LPAD,MAC* bits padding leads to one extra LDPC codeword which may occupy many symbols and bring too much overhead. 🡪 In some cases, mandating *LPAD,MAC* bits padding is a overkill.

LDPC encoded Trigger Frame or TRS field shall follow the 4 bullets in the end of the sub clause instead of (26-1).

Also, if Trigger Frame/TRS field is carried in HE MU PPDU, there could be both BCC and LDPC encoded frames in the PPDU. Propose to update the text and clarify that the LDPC rules apply to LDPC encoded Trigger frame/TRS field, not the whole PPDU.

***TGax Editor: Change the text in P331L7 of D4.1 as follows:***

An AP transmitting a PPDU that contains a BCC encoded (#20214) Trigger frame or frame containing a TRS Control subfield soliciting a response from a non-AP STA shall ensure that the number of bits in the PSDU following the last bit of SCH is at least *LPAD,MAC* as defined in Equation (26-1), which is based on the *MinTrigProcTime* indicated by the non-AP STA (see Table 9-321a (Subfields of the HE MAC Capabilities Information field)), …

***TGax Editor: Change the text in P331L58 of D4.1 as follows:***

If a Trigger frame or frame containing a TRS Control subfield is LDPC encoded ~~carried in a PPDU with LDPC encoding~~, (#20214) then the transmitting AP ensures that *TTrigProc* meets the following requirements:

**CID 20587**

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| 20587 | 328.12 | "the TRS Control subfield of the last or only frame" -- the last frame might not have a TRS Control, e.g. because it is a Control frame or the TRS Control won't fit | Change 328.9 "SCH is either: \* the User Info field addressed to the STA of the last or only Trigger frame, or \* the TRS Control subfield of the last or only frame." to "SCH is the last of the following in the PSDU: \* a User Info field addressed to the STA, in a Trigger frame \* a TRS Control subfield in a frame addressed to the STA." | Revised.  Agree in principle. “TRS control subfield of the last or only frame” is not accurate. It should be “the last TRS control subfield in the PSDU”.  *TGax Editor*: Please make changes to IEEE P802.11ax D4.1 according to the proposed text changes as resolution to CID 20587 in 11-19/0703r0 |

***TGax Editor: Change the text in P331L10 of D4.1 as follows:***

SCH is either:

* the User Info field addressed to the STA of the last or only Trigger frame, or
* the last TRS Control subfield ~~of the last or only frame~~ in the PSDU. (#20587)

**CID 21191**

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| 21191 | 328.21 | Table 27-16 (referred to here) states NDBPS is undefined for HE MU PPDU, making this equation invalid. | Add clarification text that NDBPS,u is used when the Trigger is carried in an HE MU PPDU. | Revised.  Agree in principle.  *TGax Editor*: Please make changes to IEEE P802.11ax D4.1 according to the proposed text changes as resolution to CID 21191 in 11-19/0703r0 |

***TGax Editor: Change the text in P331L21 of D4.1 as follows:***

Where

*NDBPS* is defined in Table 17-4 (Modulation-dependent parameters) for a non-HT PPDU, Table 19-7 (Frequently used parameters) for an HT PPDU, Table 21-6 (Frequently used parameters) for a VHT PPDU and Table 27-15 (Frequently used parameters) for an HE PPDU. If the Trigger frame or TRS Control subfield is carried in HE MU PPDU, NDBPS is replaced by NDBPS,u of the target user in (26-1). (#21191)

**CID 20216, 21550**

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| 20216 | 329.08 | "T\_PE,Nominal" is defined in clause 27, may need to quote the clause. A question is: does MAC level knows the exact T\_PE.Nominal value (derived by running the math of clause 27.3.12), given that the TXVECTOR only provides the primitive "NOMINAL\_PACKET\_PADDING"? | Clarify, may need some editorial changes | Revised.  Agree in principle. Add a reference to 27.3.12 for *TPE,nominal*.  TXVECTOR is for MAC to provide parameters to PHY. No need to add parameters for *TPE,nominal* in TXVECTOR. *TPE,nominal* should be given by table 27-44 and “a” factor in the table should be calculated in MAC. It is same as MAC calculate and signal “a” factor in the Trigger frame for following HE TB PPDU.  ***TGax Editor*:** Please make changes to IEEE P802.11ax D4.1 according to the proposed text changes as resolution to CID 20216 in 11-19/0703r0 |
| 21550 | 329.07 | How does MAC know T\_PE,nominal? | Create an interface to fetch back T\_PE,nominal from PHY to MAC. | Revised.  MAC calculate *TPE,nominal* from table 27-44 and “a” factor in the table should be calculated in MAC same way as MAC calculate “a” for the following HE TB PPDU. No need to add interface from PHY to MAC for it but can add some reference to 27.3.12. If add PHY service interface, need to define a new VECTOR since TXVECTOR, RXVECTOR, TRIGVECTOR are all not proper place for it.  See resolution for CID 20216. |

***TGax Editor: Change the text in P332L7 of D4.1 as follows:***

*TTrigProc* is defined as the duration of PPDU that is after the OFDM symbol containing the last coded bit of the LDPC codeword that encodes the last bit of SCH minus *TPE,nominal* defined in 27.3.12 (#20216).

**References:**