IEEE P802.11  
Wireless LANs

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| Comment Resolutions for 11ax D6.0 HE PHY Service Interface Section | | | | |
| Date: 2020-02-20 | | | | |
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Abstract

This submission provisions with resolutions to the following 12 CIDs related to PHY Service Interface of IEEE P802.11ax D6.0, including suggested spec text modification to IEEE P802.11ax D6.0 to TGax editor:

* CIDs: 24048, 24138, 24178, 24180, 24187, 24294, 24397, 24455, 24456, 24498, 24499, 24549

Revisions:

* R0, comment resolutions initial draft.
* R1, improve discussion text for CID 24138 after discussion with Mark Rison.
* R2, update rejection reason for CID 24187 based on group discussion and correct multiple typos

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** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 24048 | 677.16 | 27.3.24 | There is no Annex D in this draft. | Change to "Annex E" | **Rejected**  **Reason:** The commented "Annex D" is actually referred to Annex D in IEEE 802.11-2016. Since IEEE P802.11ax is an amendment standard, it can refer content in a published and valid IEEE 802.11 standard.. |
| 24138 | 686.9 | 27.4.4 | aSlotTime and aSIFSTime are not defined for 6 GHz band. | Please define aSlotTime and aSIFSTime for 6 GHz band. | **Revised**  **Discussion:** Agree on the comment. The definition of aSlotTime and aSIFSTime for 5 GHz should be extended to 6 GHz and be added in Table 27-55 (HE PHY characteristics) .  **Instruction to TGax Tech Editor:**  Please implement the proposed modification to 11ax spec draft D6.0 as part of the resolution to CID 24138 as in 11-20/0352r2 |

*---------------------------****Proposed Spec Text Modifications for CID 24138****----------------------------------*

***TGax Editor: please insert two rows for aSlotTime and aSIFSTime in Table 27-55 (HE PHY characteristics) at pg696/ln20 in sub-clause 27.4.4 (HE PHY) in IEEE P802.11ax D6.0 as proposed below as part of resolution to CID 24138.***

**27.4.4 HE PHY**

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**Table 27-55 -- HE PHY characteristics**

|  |  |
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| Characteristics | Value |
| aTxPHYDelay | Implementation dependent |
| aRxPHYDelay | Implementation dependent |
| aSignalExtension | 0 μs if operating in the 5 GHz or 6 GHz band  6 μs if operating in the 2.4 GHz band |
| aSlotTime | When operating in the 2.4 GHz band:  If dot11OperatingClassesRequired is false, long = 20 μs  If dot11OperatingClassesRequired is true, long = 20 μs plus any coverage-class-dependent aAirPropagationTime (see Table 9-97 (Coverage Class field parameters))  If dot11OperatingClassesRequired is false, short = 9 μs  If dot11OperatingClassesRequired is true, short = 9 μs plus any  coverage-class-dependent aAirPropagationTime (see Table 9-97 (Coverage Class field parameters))  When operating in the 5 GHz or 6 GHz band:  If dot11OperatingClassesRequired is false, 9 μs  If dot11OperatingClassesRequired is true, 9 μs plus any coverage-class-dependent aAirPropagationTime (see Table 9-97 (Coverage Class field parameters))  *[CID # 24138]* |
| aSIFSTime | 10 μs when operating in the 2.4 GHz band  16 μs when operating in the 5 GHz or 6 GHz band  *[CID # 24138]* |
| aCCAMidTime | 25 μs |
| ...... | |

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-------------------- ***End of proposed changes for resolution to CID 24138*** *---------------------*

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| **CID** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 24178 | 504.46 | 27.3.1.1 | Sentence needs clarification | Change "The transmission within an RU in a PPDU may be a single stream to one user, spatially multiplexed to one user (SU-MIMO), or spatially multiplexed to multiple users (MU-MIMO)." to "The transmission within an  RU in a PPDU may be a single stream to one user, multiple streams spatially multiplexed to one user (SU-MIMO), or multiple streams spatially multiplexed to multiple users (MU-MIMO)." | **Accepted**  **Discussion:** Agree on the comment that the proposed changes improve the precision and readability of the spec text. |
| 24180 | 513.55 | 27.3.2.4 | Change "and" to "or" | See comment | **Accepted** |
| 24187 | 554.58 | 27.3.11.6 | "The RL-SIG field is a repeat of the L-SIG field" is not strictly correct since the pilot value is different. | Change to e.g., "with the exception of pilots, RL-SIG is a repeat of L-SIG" | **Rejected**  **Reason:**  As defined in sub-clause 27.3.11.5 (L-SIG) and 27.3.11.6 (RL-SIG), both L-SIG field and RL-SIG field in the referenced context refer to signaling field carried on data tones only. Also the pilot sequence defined in 17.3.5.10 has the same value for L-SIG and RL-SIG. |
| 24294 |  | 27 | The LDPC extra symbol segment does not apply for BCC | In Table 27-1--TXVECTOR and RXVECTOR parameters, for the LDPC\_EXTRA\_SYMBOL row, change "FORMAT is HE\_TB" to "FORMAT is HE\_TB and FEC\_CODING is LDPC\_CODING". In Table 27-20--HE-SIG-A field of an HE MU PPDU, for the LDPC Extra  Symbol Segment row, add "Reserved and set to 1 if there is no User field with the Coding field set to 1 in HE-SIG-B." to the end of the Description cell. At the end of the para at 122.14 add "Reserved if there is no User Info field with the UL FEC Coding Type subfield set to 1.". In 26.5.2.3.3 TXVECTOR parameters for HE TB PPDU response to Trigger frame change "The LDPC\_EXTRA\_SYMBOL parameter is set to the value indicated by the LDPC Extra Symbol  Segment subfield of the Common Info field of the Trigger frame." to "The LDPC\_EXTRA\_SYMBOL parameter (which is only present if the FEC\_CODING parameter is set to BCC\_CODING) is set to the value indicated by the LDPC Extra Symbol  Segment subfield of the Common Info field of the Trigger frame.". In Table 27-2--TRIGVECTOR parameters change "Set to 1 if LDPC extra symbol segment is present." to "Set to 1 if LDPC is the coding type for at least one expected HE TB PPDU and an LDPC extra symbol segment is present." | **Revised**  **Discussion:**  Agree on the comment that the LDPC extra symbol segment does not apply for BCC. But the author of this resolution doesn’t agree that the LDPC\_EXTRA\_SYMBOL is not present when LDPC is not used in a HE TB PPDU. Instead, for a simple and clean design, the parameter LDPC\_EXTRA\_SYMBOL will always be present for an HE TB PPDU.  Therefore, the author of this resolution doesn’t agree on the proposed changes to sub-clause 26.5.2.3.3 (TXVECTOR parameters for HE TB PPDU response to Trigger frame change). Instead, the author believes the counterpart in sub-clause 26.5.2.3.4 (TXVECTOR parameters for HE TB PPDU response to TRS Control subfiled) needs to be modified.  The author doesn’t agree on the proposed changes to Table 27-1, because the definition for LDPC\_EXTRA\_SYMBOL is to explain the value of the parameter. It’s not supposed to explain how to use this parameter which is actually defined in sub-clause 26.5.2.3.3 (TXVECTOR parameters for HE TB PPDU response to Trigger frame change) and 26.5.2.3.4 (TXVECTOR parameters for HE TB PPDU response to TRS Control subfiled).  The author doesn’t agree on the proposed changes to Table 27-2, because the proposed changes doesn’t provide more restriction nor change the meaning of the current definition.  The author doesn’t agree on the proposed changes to Table 27-20 (HE-SIG-A field of an HE MU PPDU), because the table is used to explain the value of each field. It’s not expected to explain how to use these field. Besides, the proposed changes are against current definition of the value of LDPC Extra Symbol Segment field.  **Instruction to TGax Tech Editor:**  Please implement the proposed modification to 11ax spec draft D6.0 as part of the resolution to CID 24294 as in 11-20/0352r2 |
| 24397 |  |  | [Resubmission of comment withdrawn on D5.0] The term "STA-ID" is unclear and does not match the more specific term AID12\_LIST | Change "STA-ID" to "AID11" throughout | **Rejected**  **Reason:**  The term “STA-ID” is very clear to indicate its purpose and potential usage. It’s not necessary to bundle the name of a field with the methodology to generate its value. |
| 24455 | 490.43 | 27.2.2 | CID 22210, 20477: again, the concept of "global" numbering of spatial streams is undefined. None of the material cited in the resolution for 22210 refers to "global" numbering of spatial streams | Delete "globally " in "spatial streams are globally numbered starting from 1" in the referenced subclause | **Revised**  **Discussion:** Agree that the term “globally” may cause confusion. Further more, CID 24456 offers a better wording for the technical purpose of this sentence.  **Instruction to TGax Tech Editor:**  Please implement the resolution to CID 24456 as proposed in 11-20/0352r2. |
| 24456 | 490.43 | 27.2.2 | CID 22210, 20477: again, the concept of "global" numbering of spatial streams is undefined. None of the material cited in the resolution for 22210 refers to "global" numbering of spatial streams | Change "spatial streams are globally numbered starting from 1" to "spatial streams in a given PPDU transmission are numbered starting from 1" in the referenced subclause | **Accepted** |
| 24498 |  | 26.2.6.3 | CID 22382, 20707. "SCRAMBLER\_INITIAL\_VALUE" would be clearer as "SCRAMBLER\_INITIALIZATION\_FIELD", since what the scrambler initial value is \*not\* what is being communicated; what is being communicated is the (scrambled) value of the Scrambler Initialization field. Note that as Table 27-1 indicates, this parameter "In TXVECTOR, if present, indicates the value of the \*\*\*Scram-  bler Initialization field\*\*\* in the SERVICE field, after scrambling.  In RXVECTOR, indicates the value of the \*\*\*Scrambler Initial-  ization field\*\*\* in the SERVICE field, prior to descrambling." (my emphasis) | Change "SCRAMBLER\_INITIAL\_VALUE" to "SCRAMBLER\_INITIALIZATION\_FIELD" throughout | **Rejected**  **Reason:**  As specified in the referenced section, “SCRAMBLER\_INITIAL\_VALUE” is the name of a TXVECTOR/RXVECTOR parameter which is clearly defined in Table 27-1. What is being communicated with this parameter is not defined by its name, but the definition clearly specified in Table 27-1. Therefore the author of the resolution doesn’t believe it makes essential difference to change the parameter’s name from “SCRAMBLER\_INITIAL\_VALUE” to “SCRAMBLER\_INITIALIZATION\_FIELD”.  **Discussion:** The reason of rejecting CID 22382 is cited as below:  “The parameter “SCRAMBLER\_INITIAL\_VALUE” has its specific definition without ambiguity. And the proposed new name “SCRAMBLER\_INITIALIZATION\_FIELD” doesn’t provide more explanation that saves readers’ time to check the definition of the parameter before understanding it.” |
| 24499 |  | 26.2.6.3 | To avoid interop problems related to the scrambler initialisation field value a NOTE would be helpful. Contrary to what the resolution to CID 22383 suggests, there were indeed interop problems, so an earlier draft had to change the description of the scrambler initialisation | After the para referring to SCRAMBLER\_INITIAL\_VALUE in the referenced subclause add a "NOTE---The TXVECTOR parameter SCRAMBLER\_INITIAL\_VALUE does not contain the scrambler seed. The scrambler seed to be must be derived from this parameter." | **Rejected**  **Reason:**  The comment failed to describe the potential interop problems it claims. Thus it’s not feasible to judge the validity of the comment.  **Discussion:** In referenced sub-clause, it’s clearly stated that the parameter SCRAMBLER\_INITIAL\_VALUE in TXVEXCTOR for transmitting CTS frame is set to the same value as the RXVECTOR parameter SCRAMBLER\_INITIAL\_VALUE of the PPDU carrying MU-RTS trigger frame, to guarantee that the received CTS frames from different STAs are completely identical at PHY level, as defined in sub-clause 26.2.6.3. Further more, the scrambling process is clearly defined in sub-clause 27.3.11.4. Therefore the interop problems are not identified. |
| 24549 | 490.42 | 27.2.2 | "spatial streams are globally numbered starting from 1". How is this accomplished? Is there a global registration authority for SS numbers? Surely, this is not really what is meant. | Replace with "spacial streams are uniquely numbered within a BSS, by the controlling AP" | **Revised**  **Discussion:** Agree that the term “globally” may cause confusion. Further more, CID 24456 offers a better wording for the technical purpose of this sentence.  **Instruction to TGax Tech Editor:**  Please implement the resolution to CID 24456 as proposed in 11-20/0352r2. |

*---------------------------****Proposed Spec Text Modifications for CID 24294****----------------------------------*

***TGax Editor: please modify the sentence at pg355/ln62 in sub-clause 27.5.2.3.4 (TXVECTOR parameters for HE TB PPDU response to TRS Control subfield) in IEEE P802.11ax D6.0 as proposed below as part of resolution to CID 24294.***

**26.5.2.3.4 TXVECTOR parameters for HE TB PPDU response to TRS Control subfield**

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* The LDPC\_EXTRA\_SYMBOL parameter is ~~not present~~ set to 0 if the RU Allocation subfield indicates less than a 484-tone RU; otherwise set to 1. *[CID # 24294]*

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-------------------- ***End of proposed changes for resolution to CID 24294*** *---------------------*

**References:**

1. **IEEE P802.11axTM/D6.0, Nov 2019.**