IEEE P802.11
Wireless LANs

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| Comment Resolutions for 11ax D7.0 HE PHY TXVECTOR RXVECTOR parameters  |
| Date: 2020-09-25 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Bo Sun | ZTE | ZTE R&D center, #9 Wuxingduan, Xifeng Rd., Chang’an district, Xi’an, China | +86-29-68700944 | Sun.bo1@zte.com.cn |
| Youhan Kim |  QualComm |  |  | youhank@qti.qualcomm.com |

Abstract

This submission provisions with resolutions to the following 4 CIDs related to PHY Service Interface of IEEE P802.11ax D7.0, including suggested spec text modification to IEEE P802.11ax D7.0 to TGax editor:

* CIDs: 25051, 25052, 25059 and 25132

Revisions:

* R0, comment resolutions initial draft.
* R1, update referred doc and proposed modification text of resolution to CID 25132
* R2, update based on discussion in TC
* R3, update resolution to CID 25132 based on discussion with Youhan Kim and Mark Rison.

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** | **Pg/Ln** | **Clause** | **Comment** | **Proposed Changed** | **Resolution** |
| 25051 | 509.19 | 27.2.2 | "NOTE—The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame" is present as a result of the resolution to CID 24522. However (a) it does not address the issue raised in the comment (about where the channel width of the transmitted PPDU is represented), (b) it makes a statement that could be made about lots of other parameters (many other TXVECTOR parameters for HE TB PPDUs come from the triggering frame) and (c) it loses the caveat pointed out by the NOTE in D6.0. | Change to "NOTE-The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame (see 26.5.2.3.3 and 26.5.2.3.4). The CH\_BANDWIDTH parameter does not represent the channel width of the PPDU. The channel width of the PPDU is represented in the RU\_ALLOCATION parameter." | **Revised****Discussion:** As pointed out by the comment, the addressed sentence is present as a result of the resolution to CID 24522. CID 24522 said, "*NOTE--The TXVECTOR parameter CH\_BANDWIDTH does not represent the channel width of the transmitted PPDU." -- this is rather counter-intuitive, so a reference to what does should be given in this NOTE*”. And it proposed changes “*Append ‘This is represented in the TXVECTOR parameter RU\_ALLOCATION.’*”.The resolution to CID 24522 is:*TXVECTOR parameter RU\_ALLOCATION is an 8 bits variable, whose definition is referred to 9.3.1.22. Even at 9.3.1.22, the RU size is simply specified in terms of number of subcarriers, not by “bandwidth”.* *Hence, the proposed resolution instead is to update the text to clarify what CH\_BANDWIDTH means.**Instruction to Editor:At D6.0 P484L64, change the NOTE to “NOTE - The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame. See 26.5.2.3.3 and 26.5.2.3.4.”* The Table 27-1 is used to explain the TXVECTOR/RXVECTOR parameters, not to explain functions other than these parameters. Therefore it’s not proper to explain how to indicate the bandwidth of an HE\_TB PPDU at the place designated to explain what TXVECTOR/RXVECTOR parameter CH\_BANDWIDTH means for an HE\_TB PPDU. So regarding the issue (a) and (b), the comment CID 24522 is not proper as argued above and the current text in D7.0 is a result trying to satisfy comment CID 24522 without bringing other confusing information. If the commenter of CID 24522 is not satisfied with the resolution, we can change back to the text as in D6.0. Regarding issue (c), we can change the text back to the one in D6.0.The proposed changes will result in confusing text that has nothing to do with the purpose of Table 27-1. **Instruction to TGax Tech Editor:** ~~At pg509/ln19, replace the NOTE with “ NOTE—The TXVECTOR parameter CH\_BANDWIDTH does not represent the channel width of the transmitted PPDU. ”~~ At pg509/ln19, remove the entire NOTE.  |
| 25052 | 509.19 | 27.2.2 | "NOTE—The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame" is present as a result of the resolution to CID 24522. However (a) it does not address the issue raised in the comment (about where the channel width of the transmitted PPDU is represented), (b) it makes a statement that could be made about lots of other parameters (many other TXVECTOR parameters for HE TB PPDUs come from the triggering frame) and (c) it loses the caveat pointed out by the NOTE in D6.0. | Change to "NOTE---The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame (see 26.5.2.3.3 and 26.5.2.3.4). The CH\_BANDWIDTH parameter does not represent the channel width of the PPDU. The channel width of the PPDU is represented in the RU\_ALLOCATION parameter. The mapping from RU\_ALLOCATION parameter to channel width of the PPDU is given in Table 9-31i (B7–B1 of the RU Allocation subfield) in the RU size column." | **Revised****Discussion:** As pointed out by the comment, the addressed sentence is present as a result of the resolution to CID 24522. CID 24522 said, "*NOTE--The TXVECTOR parameter CH\_BANDWIDTH does not represent the channel width of the transmitted PPDU." -- this is rather counter-intuitive, so a reference to what does should be given in this NOTE*”. And it proposed changes “*Append ‘This is represented in the TXVECTOR parameter RU\_ALLOCATION.’*”.The resolution to CID 24522 is:*TXVECTOR parameter RU\_ALLOCATION is an 8 bits variable, whose definition is referred to 9.3.1.22. Even at 9.3.1.22, the RU size is simply specified in terms of number of subcarriers, not by “bandwidth”.* *Hence, the proposed resolution instead is to update the text to clarify what CH\_BANDWIDTH means.**Instruction to Editor:At D6.0 P484L64, change the NOTE to “NOTE - The setting of the CH\_BANDWIDTH parameter is determined by the triggering frame. See 26.5.2.3.3 and 26.5.2.3.4.”* The Table 27-1 is used to explain the TXVECTOR/RXVECTOR parameters, not to explain functions other than these parameters. Therefore it’s not proper to explain how to indicate the bandwidth of an HE\_TB PPDU at the place designated to explain what TXVECTOR/RXVECTOR parameter CH\_BANDWIDTH means for an HE\_TB PPDU. So regarding the issue (a) and (b), the comment CID 24522 is not proper as argued above and the current text in D7.0 is a result trying to satisfy comment CID 24522 without bringing other confusing information. If the commenter of CID 24522 is not satisfied with the resolution, we can change back to the text as in D6.0. Regarding issue (c), we can change the text back to the one in D6.0.The proposed changes will result in confusing text that has nothing to do with the purpose of Table 27-1. **Instruction to TGax Tech Editor:** ~~At pg509/ln19, replace the NOTE with “ NOTE—The TXVECTOR parameter CH\_BANDWIDTH does not represent the channel width of the transmitted PPDU. ”~~At pg509/ln19, remove the entire NOTE.  |
| 25059 | 512.12 | 27.2.2 | "NAV duration information" -- there is no concept of a "NAV duration" in the baseline | Change to "NAV value" and change "duration" to "value" in the next line | **Revised****Discussion:** Agree on the comment with a little editorial update on the proposed changes.**Instruction to TGax Tech Editor:** At pg512/ln13, replace “…no NAV duration information” with “…no NAV value specified”. And at pg512/ln14, replace “0-8448 indicates a duration in units of …” with “0-8448 indicates a value in units of …” |
| 25132 | 515.42 | 27.2.2 | I clearly don't understand how the spatial stream numbering works. However, the new sentence here seems non-sensical. It now appears that the STARTING\_STS\_NUM is always zero, by definition. | Expand on what this paramter actually represents; for example, "Set to the starting spatial stream number" of what? (Clearly, not of this PPDU, or it really is non-sensical.) Make this align with the behavior for the parameter in 26.5.2.3.3, 26.5.2.3.4 and 26.5.7.2. | **Revised****Discussion:** Agree on the comment that the explain text for parameter STARTING\_STS\_NUM is confusing. An alternative text is provided as part of the resolution.**Instruction to TGax Tech Editor:** Please implement the proposed spec text modification as resolution to CID 25132 as in document 11-20/1543r3.  |
|  |  |  |  |  |  |

*---------------------------****Proposed Spec Text Modifications for CID 25132****----------------------------------*

***TGax Editor: Update D7.0 P127L2 as shown below.***

9.3.1.22 Trigger frame format

9.3.1.22.1 General

….

The Starting Spatial Stream subfield indicates the starting spatial stream and is set to the starting spatial stream minus 1 (see 26.5.2.3.3 (TXVECTOR parameters for HE TB PPDU response to Trigger frame)).

***TGax Editor: please modify the Value column for parameter STARTING\_STS\_NUM at pg515/ln42 in Table 27-1 (TXVECTOR and RXVECTOR parameters) in sub-clause 27.2.2 (TXVECTOR and RXVECTOR parameters) in IEEE P802.11ax D7.0 as proposed below as part of resolution to CID 25132.***

**27.2.2 TXVECTOR and RXVECTOR parameters**

……

**Table 27-1 – TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameters | Condition | Value | TXVECTOR | RXVECTOR |
| … | …. | … |  |  |
| STARTING\_STS\_NUM | FORMAT is HE\_TB | ~~Set to the starting spatial stream number minus 1 (spatial streams in a given PPDU transmission are numbered starting from 1).~~The sum of the number of space-time streams assigned to other users with lower space-time stream indices than this user. | Y | N |
| Otherwise | Not present | N | N |
| … | … | … |  |  |

The sum of the number of space-time streams assigned to other users with lower space-time stream indices than this user.

***TGax Editor: Update D7.0 P619L37 as shown below.***

27.3.11.9 HE-STF

…

The time domain representation of the signal for an HE TB PPDU transmitted by user *u* in the *r-*th RU on frequency segment *iSeg* and transmit chain *iTX* shall be as specified in Equation (27-39).

 (M217)(27-39)

where

…

*Mr,u* is given by the TXVECTOR parameter STARTING\_STS\_NUM~~in the Starting Spatial Stream subfield in the SS Allocation subfield of the Trigger frame User info field for the~~ *~~u~~*~~-th user in the~~ *~~r~~*~~-th occupied RU in Figure 9-64e (SS Allocation subfield format)~~.(M217)

***TGax Editor: Update D7.0 P635L43 as shown below.***

27.3.11.10 HE-LTF

…

In an HE SU PPDU, HE MU PPDU and HE ER SU PPDU, the time domain representation of the waveform transmitted on frequency segment *iSeg* and transmit chain *iTX* shall be as described by Equation (27-58).

 (27-58)

In an HE TB PPDU, the time domain representation of the waveform of user *u* in the *r*-th RU, transmitted on frequency segment *iSeg* and transmit chain *iTX*, shall be as described by Equation (27-59).

 (27-59)

…

*Mr,u* is given in Table 27-15 (Frequently used parameters) for HE SU PPDU, HE ER SU PPDU and HE MU PPDU. For an HE TB PPDU, it is given by the TXVECTOR parameter STARTING\_STS\_NUM ~~in the Starting Spatial Stream subfield in the SS Allocation subfield of Trigger frame User info field for~~ *~~u-~~*~~th user in~~ *~~r~~*~~-th occupied RU in Figure 9-64e (SS Allocation subfield format)~~.

***TGax Editor: Update D7.0 P659L26 as shown below.***

27.3.12.14 OFDM modulation

…

If midambles are not present, the time domain waveform of the Data field of an HE TB PPDU for user *u* in the *r*-th RU from transmit chain  shall be as defined in Equation (27-111).

  (27-111)

where

 is defined in 27.3.10 (Mathematical description of signals).

*Mr,u* is given by the TXVECTOR parameter STARTING\_STS\_NUM.

-------------------- ***End of proposed changes for resolution to CID 25132*** *---------------------*

**References:**

1. **IEEE P802.11axTM/D7.0, Sep 2020.**