IEEE P802.11
Wireless LANs

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| **TGax D1.1 Comment Resolutions for 28.3.10.9 HE-STF** |
| **Date:** 2017-03-08 |
| **Author(s):** |

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Abstract

This submission proposes resolutions for comments of TGax D1.1 with the following CIDs:

* 7048, 8969, 8970, 8971, 8974, 9749, 9750

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 D1.1 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D1.1 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 7048*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7048 | 28.3.10.9 | 300.35 | Description on a parameter of Eq. 28-34 is missing | Add the description on what Mr,u is. | Rejected-*M\_r,u* is already defined in Table 28-12 (Frequently used parameters). |

#### *CID 8969*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 8969 | 28.3.10.9 | 298.38 | Change "HE PPDUs except HE trigger-based PPDUs" to "HE PPDUs that are not HE trigger-based PPDUs". This occurs in numerous places in this section | See comment | Revised-Agree in principle with the commenter. Modify the corresponding sentences.TGax editor to make the changes shown in 11-17/0321r0. |

*TGax Editor: Please make the following changes in Line 38 and 42 on Page 306 and in Line 1, 13, 20, 26, 33 and 37 on Page 307:*

The main purpose of the HE-STF field is to improve automatic gain control estimation in a MIMO transmission. The duration of the HE-STF field for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is *T*HE-STF-NT (periodicity of 0.8 μs with 5 periods) and the duration of the HE-STF field for an HE trigger-based PPDU is *T*HE-STF-T (periodicity of 1.6 μs with 5 periods). The tone indices for HE-STF field for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is defined in Equation (28-21).

For a 20 MHz transmission, the frequency domain sequence for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is given by Equation (28-24).

For a 40 MHz transmission, the frequency domain sequence for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is given by Equation (28-25).

For an 80 MHz transmission, the frequency domain sequence for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is given by Equation (28-26).

For a 160 MHz transmission, the frequency domain sequence for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is given by Equation (28-27).

For an 80+80 MHz transmission, the primary 80 MHz segment for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs shall use the HE-STF pattern for the 80 MHz defined in Equation (28-26).

For an 80+80 MHz transmission, the frequency domain sequence of the secondary 80 MHz segment for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs is given by Equation (28-28).

#### *CID 8970, 9749, 9750*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 8970 | 28.3.10.9 | 298.44 | Don't use such an abstract definition of the tones for HE-STF. List the tones instead. | The tones are -112:16:112, -240:16:240, -496:16:496 for 20, 40, 80 MHz respectively for PPDUs tahta rte not trigger-based and -120:8:120, -248:8:248, -504:8:504 for Trigger-based PPDUs. | Revised-Agree in principle with the commenter. However, DC tone is not required for HE-STF tones and the expression the commenter proposed needs to be defined. So, the suggestion is that delete the abstract definition of the tones for HE-STF and add the description to clarify the tones for HE-STF. TGax editor to make the changes shown in 11-17/0321r0. |
| 9749 | 28.3.10.9 | 298.41 | "The tone indices for HE-STF field for HE PPDUs except HE trigger-based PPDUs is defined in Equation (28-21)."The HE-STF tone index (iSTF) is never used in any other places.Delete the corresponding sentence and Equation (28-21). | As per comment. | Revised-Agree in principle with the commenter. However, the tones used in HE-STF are different from the other fields such as HE-LTF and Data, and thus it needs to be clarified. The suggestion is that delete Equation (28-21) and add the description to clarify the tones for HE-STF.TGax editor to make the changes shown in 11-17/0321r0. |
| 9750 | 28.3.10.9 | 298.48 | "The tone indices for HE-STF fields for an HE trigger-based PPDU are defined in Equation (28-22)."The HE-STF tone index (iSTF) is never used in any other places.Delete the corresponding sentence and Equation (28-22). | As per comment. | Revised-Agree in principle with the commenter. However, the tones used in HE-STF are different from the other fields such as HE-LTF and Data, and thus it needs to be clarified. The suggestion is that delete Equation (28-22) and add the description to clarify the tones for HE-STF.TGax editor to make the changes shown in 11-17/0321r0. |

*TGax Editor: Please make the following changes in Line 40 to 53 on Page 306:*

The tone indices for HE-STF field are all multiples of 16 except for 0 between the lowest and the highest data subcarrier indices per frequency segment for HE PPDUs ~~except~~ that are not HE trigger-based PPDUs. ~~is defined in Equation (28‑21).~~

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|  | ~~(28‑21)~~ |

The tone indices for HE-STF field~~s~~ are all multiples of 8 except for 0 between the lowest and the highest data subcarrier indices per frequency segment for ~~an~~ HE trigger-based PPDUs. ~~are defined in Equation (28‑22).~~

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|  | ~~(28‑22)~~ |

#### *CID 8971*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 8971 | 28.3.10.9 | 300.24 | Change "tone indices for which no RUs are defined" to "tone indices that fall within RU's that have no user(s) assigned to them" | See comment | Revised-Agree in principle with the commenter. Modify the corresponding sentences.TGax editor to make the changes shown in 11-17/0321r0. |

*TGax Editor: Please make the following changes in Line 23 to 25 on Page 308:*

For an OFDMA transmission, the coefficients in Equation (28-24) to Equation (28-33) are set to zero if those values are corresponding to tone indices ~~for which no~~that fall within RUs that have no user(s) assigned to them ~~are defined (see 28.3.9 (Mathematical description of signals))~~.

#### *CID 8974*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 8974 | 28.3.10.9 | 301.10 | The dimensions of Q in (28-35) don't look correct. A STA transmitting N\_STS,r,u streams on N\_TX antennas needs a spatial mapping matrix of dimensions N\_TX x N\_STS,r,u. Instead, the subscript (M\_r,u + m) implies that the matrix is larger. | Correct. No need for M\_r,u in spatial mapping matrix (it is needed in T\_CS,HE). Maybe the matrix Q needs a label depending on r,u.Same issue exists for HE-LTF and Data for Trigger-based PPDUs. | Revised-Agree in principle with the commenter. Delete *M\_r,u* in the spatial mapping matrix and modify the Q matrix. Also, add a sentence to refer to the description of the modified Q matrix. The modified Q matrix is dependent on *u* and *k* and does not require *r* index since *r* and *k* are one to one mapping. From resolving CID 8885, the modified Q matrix will be defined in section 28.3.9.TGax editor to make the changes shown in 11-17/0321r0. |

*TGax Editor: Please make the following changes in Equation (28-35) and add the sentence to refer to the description of the modified Q matrix:*

|  |  |
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|  | (28‑35) |

where

 is the windowing function for HE-STF field in the HE trigger-based PPDU

 is defined in 28.3.9 (Mathematical description of signals)

*TGax Editor: Please modify the Q matrix in Equation (28-59) and (28-112) as follows:*



*TGax Editor: Please add the sentence to refer to the description of the modified Q matrix in Line 60 on Page 321 after the description of the conventional Q matrix:*

 is defined in 28.3.9 (Mathematical description of signals)

 is defined in 28.3.9 (Mathematical description of signals)

*TGax Editor: Please make the following changes in Line 54 to 60 on Page 344:*

 is ~~a spatial mapping/steering matrix with~~ *~~N~~~~TX~~*~~rows and~~ *~~N~~~~STS,r,total~~*~~columns for subcarrier~~ *~~k~~* ~~in frequency segment~~ *~~i~~~~Seg~~*~~.~~  ~~may be frequency dependent, and the dimension may be variant in each RU. Refer to the descriptions in 22.3.10.11.1 (Transmission in VHT format) for examples of~~ ~~.~~defined in 28.3.9 (Mathematical description of signals)