IEEE P802.11  
Wireless LANs

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| --- | --- | --- | --- | --- |
| CRs on 28.3.10.8.4 and 28.3.10.8.5 | | | | |
| Date: 2017-05-07 | | | | |
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Abstract

This submission shows

* Resolution for a comment received from TGax comment collection (TGax Draft D1.0)
* The proposed changes are based on 11ax D1.0.

The submission provides resolutions to comment related to HE-SIG-B field.

* The submission provides solutions to 32 CIDs:   
  8951, 4890, 4922, 8952, 4923, 8953, 4924, 8954, 5271, 8955,   
  9554, 4891, 6118, 8155, 10066, 10217, 5272, 8958, 8959, 8960,   
  5273, 8961, 8962, 8963, 10067, 8115, 8964, 3095, 8965, 8966,   
  8968, 10219

Revisions:

* Rev 0: Initial version of the document.

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** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8951 | 290.32 | Change "user fields in each RU" to "users in each RU" | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 4890 | 290.39 | It states that the center 26RU indication in the HE-SIGB only presents for full bandwidth 80MHz, 160MHz and 80+80MHz, which is not correct. Center RU26 still needs to be indicated even in some of the preamble puncturing cases like only the 4th 20MHz channel puncture in 80MHz case. Remove the "full bandwidth" in the description. Make the samilar changes to the line 16 and line 17 in P291. | as in comment | Revised  agreed in principle.  "This field is present only for full bandwidth 80 MHz, 160 MHz and 80+80 MHz." is replaced with   "This field is present only when the Bandwidth field of HE-SIG-A field in an HE MU PPDU is set to greaterthan 1"  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 4922 | 290.40 | "full bandwidth 80" is only use here (i.e. is undefined). And a naive reading would look at the last row of fig 28-4 (996 subcarriers) But there is no 26 RU there | Define "full bandwidth 80". I assume it must have a center tone 26? | Revised  The same resolution as CID 4890 is applied. And add the reference of Figure 28-4 to show the definition of Center 26-tone RU.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8952 | 290.43 | Improve wording. Change "Set to 1 to indicate that the center 26-tone RU is allocated in the Common Block fields of both HE-SIG-B content channels with the same value. Set to 0, otherwise." to "Set to 1 to indicate that a user is allocated to the center 26-tone RU. Set to 0 otherwise. Use the same value in both content channels." | See comment | Accepted.   "Set to 1 to indicate that the center 26-tone RU is allocated in the Common Block fields of both HE-SIG-B content channels with the same value. Set to 0, otherwise."  is replaced with  "Set to 1 to indicate that a user is allocated to the center 26-tone RU; otherwise, set to 0.   Use the same value in both HE-SIG-B content channels."   TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 4923 | 290.44 | "allocated ... with the same value" doesn't make sense | "and the contents of both allocations are the same" / "signal the same allocation" etc | Revised.  The same resolution as CID 8952 is applied.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8953 | 290.48 | Improve wording. Change "Set to 1 to indicate that the center 26-tone RU is allocated for one individual 80 MHz in the Common Block fields of both HE-SIG-B content channels. Set to 0, otherwise." to "Set to 1 to indicate that a user is allocated to the center 26-tone RU. Set to 0 otherwise. Each content channel carries the value for one 80 MHz segment." | See comment | Revised.  Agreed in priciple.  "Set to 1 to indicate that the center 26-tone RU is allocated for one individual 80 MHz in the Common Block fields of both HE-SIG-B content channels. Set to 0, otherwise."  is replaced with  “For HE-SIG-B content channel 1, set to 1 to indicate that a user is allocated to the center 26-tone RU of the lower frequency 80 MHz; otherwise, set to 0.  For HE-SIG-B content channel 2, set to 1 to indicate that a user is allocated to the center 26-tone RU of the higher frequency 80 MHz; otherwise, set to 0”  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 4924 | 290.51 | "160 ... the center 26-tone RU" but aren't there two center 26 tone RUs in this case? Also I cannot make sense of the 160/80+80M text | Rewrite for greater clarity. Also, define the "otherwise" at L45 and L51, since this would help the explanation of this field | Revised.  The same resolution as CID 8953 is applied.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |

**Discussion**

The modifications improve the wording and the description in Table 28-20.

**Changes to Section 28.3.10.8.4**

***To TGax editor:*** ***P290L24*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

|  |  |  |
| --- | --- | --- |
| * Common Block field | | |
| Subfield | Number of bits | Description |
| RU Allocation | *N* x 8 | Indicates the RU assignment in the frequency domain. It also indicates the number of users in each RU. For RUs of size greater than or equal to 106-tones that support MU-MIMO, it indicates the number of users multiplexed using MU-MIMO. (#8951)  *N*= 1 for a 20 MHz and a 40 MHz HE MU PPDU  *N*= 2 for an 80 MHz HE MU PPDU  *N* = 4 for a 160 MHz or 80+80 MHz HE MU PPDU |
| Center 26-tone RU | 1 | This field is present only when the Bandwidth field of HE-SIG-A field in an HE MU PPDU is set to greater than 1. (#4890)(#4922)  When the Bandwidth field of HE-SIG-A field in an HE MU PPDU is set to 2, 4 or 5 for 80  MHz:  .  Set to 1 to indicate that a user is allocated to the center 26-tone RU(see Figure 28-4(RU locations in an 80 MHz HE PPDU)); otherwise, set to 0.  Use the same value in both HE-SIG-B content channels. (#8952),(#4923)  When the Bandwidth field of HE-SIG-A field in an HE MU PPDU is set to 3, 6 or 7 for 160 MHz or 80+80 MHz:  ..  For HE-SIG-B content channel 1, set to 1 to indicate that a user is allocated to the center 26-tone RU of the lower frequency 80 MHz; otherwise, set to 0.  For HE-SIG-B content channel 2, set to 1 to indicate that a user is allocated to the center 26-tone RU of the higher frequency 80 MHz; otherwise, set to 0” (#8953),(#4924) |
| CRC | 4 | See 28.3.10.7.3 (CRC computation) |
| Tail | 6 | Used to terminate the trellis of the convolutional decoder. Set to 0 |
| NOTE—Integer fields are transmitted in unsigned binary format, LSB first, where the LSB is in the lowest numbered bit position. | | |

An RU Allocation subfield in the Common Block field of HE-SIG-B consists of 8 bits that indicates the following for a 20 MHz PPDU BW:

* The RU assignment in the frequency domain: indexes the size of the RUs and their placement in the frequency domain.
* The number of user fields in a 20 MHz BW within the HE-SIG-B content channel: the number of users multiplexed in the RUs indicated by the arrangement; for RUs of size greater than or equal to 106 tones that support MU-MIMO, it indicates the number of users multiplexed using MU-MIMO.

The mapping of the 8-bit RU Allocation subfield to the RU assignment and the number of user fields per RU is defined in the Table 28-21 (RU allocation signaling: arrangement and number of MU-MIMO allocations). In the table, the number of entries column refers to the number of 8-bit indices that refer to the same RU assignment in the frequency domain but differ in the number of users fields per RU. The RU assignment and the number of user fields per RU together indicate the number of user-fields in the User specific field of HE-SIG-B. Signaling for the center 26-tone RU in BW ≥ 80 MHz follows the RU Allocation subfields.

When the Bandwidth field of the HE-SIG-A field in an HE MU PPDU is set to 2, 4 or 5 for 80 MHz, 1 bit is added to indicate if a user is allocated to the center 26-tone RU. The bit has the same value for both HE-SIG-B content channels. When the Bandwidth field of HE-SIG-A field in an HE MU PPDU is set to 3, 6 or 7 for 160 MHz or 80+80 MHz, 1 bit in HE-SIG-B content channel 1 indicates whether a user is allocated to the center 26-tone RU of lower frequency 80 MHz, and 1 bit in HE-SIG-B content channel 2 indicates if a user is allocated to the center 26-tone RU of higher frequency 80 MHz.(#4890)

***------------- End Text Changes ---------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8954 | 291.08 | Change "user fields per RU" to "users per RU" | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |

**Discussion**

The modification improve the wording.

**Changes to Section 26.3.10.8.4**

***To TGax editor:*** ***P291L08*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

The mapping of the 8-bit RU Allocation subfield to the RU assignment and the number of users per RU is defined in the Table 28-21 (RU allocation signaling: arrangement and number of MU-MIMO allocations) (#8954)

***------------- End Text Changes ---------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 5271 | 292.26 | Just to confirm, for entry "0110y\_1y\_0z\_1z\_0" in Table 28-21, the maximum number of MU-MIMO users per 106-tone RU is four? This is half of our claim of increasing MU-MIMO users to 8. Please clarify. | as in comment | Revised.  The spec is correct based on 16/0633 approved. When we had a discussion on partial allocations, given the number of available entries in Table 28-21, we decided to limit the number of spatially multiplexed users to 4 in each 106-tone RU for the 106+106 case. |
| 8955 | 292.30 | Why is the description of code 01110001 "242-tone RU empty", but code 01110010 is "484-tone RU with zero HE-SIG-B User Specific field". Use consistent description for "empty" arrangements. | See comment | Rejected.  In 484/996-tone RU, since it may have user fields in one of two HE-SIG-B contents channel, “empty” is not a good way. |
| 9554 | 292.41 | Table 28-21, Number of entries for 011111x1x0  The value 8 should be 4. | As in the comment. | Revised.  Agreed in Principle. The value should be 8 with 01111 y2y1y0 as 8 bits indices.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 4891 | 293.08 | Can clean up the description. No need to introduce another set of the parameters y[3]y[2]y[1]. Can write a formula to directly map y2y1y0 to the number of STAs multiplexed. May the samilar changes to the notes on other fields like z2z1z0, y1y0, z1z0,etc. | as in comment | Revised.  Agreed in principle. y[3]y[2]y[1] is replaced with y2y1y0 to indicate the number of STAs multiplexed in the RU. The identical description is applied to [z[3]z[2]z[1]], [y[2]y[1]] and [z[2]z[1]].  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 6118 | 293.08 | y2y1y0 applies to not only 106-RU case | Add clarification | Revised.  y2y1y0 applies to not only 106-RU case but also 242-, 484-, 996- or 2×996-tone RU.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8155 | 293.08 | y2y1y0 is not only used for 106-tone RU but also for 242,484,996-tone RUs. | clarify the explaination of y2y1y0 | Revised.  The same resolution as CID 6118 is applied  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 10066 | 293.08 | y2y1y0 is not limited to be used to indicate only 106-tone RU in the table. Looking at the last 5 rows in the table, y2y1y0 indicates the number of STAs multiplexed in one RU with 106/242/484/996/2x996-tone RU. | y2y1y0 = 000-111 indicates number of STAs multiplexed in one RU (e.g., 106 / 242 / 484 / 996 / 2x996-tone RU) or the left 106-tone RU if there are two 106-tone RUs(#2035). The binary vector y2y1y0 is indexed as [y[3]y[2]y[1]] indicates 22 +∙ y[3] + 21 +∙ y[2] + y[1] + 1 STAs multiplexed in the RU. | Revised.  The same resolution as CID 6118 is applied  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 10217 | 292.04 | According to the definition of y2y1y0, z2z1z0, y1y0 and z1z0, some of 8 bits indicates in Table 28-21 are incorrect. For example, the cases of RUs of 242, 484 and 996 cannot be defined by y2y1y0 because the y2y1y0 is for 106-tone RUs. | Correct erros in Table 28-21 and/or revise the definitions of y2y1y0, z2z1z0, y1y0 and z1z0. | Revised.  The same resolution as CID 6118 is applied  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |

**Discussion**

The modifications improve the description in Table 28-21.

**Changes to Section 26.3.10.8.4**

***To TGax editor:*** ***P291L23*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| * RU allocation signaling: arrangement and number of MU-MIMO allocations | | | | | | | | | | |
| 8 bits indices  (B7 B6 B5 B4 B3 B2 B1 B0) | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | Number of entries |
| 00000000 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 1 |
| 00000001 | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 52 | | 1 |
| 00000010 | 26 | 26 | 26 | 26 | 26 | 52 | | 26 | 26 | 1 |
| 00000011 | 26 | 26 | 26 | 26 | 26 | 52 | | 52 | | 1 |
| 00000100 | 26 | 26 | 52 | | 26 | 26 | 26 | 26 | 26 | 1 |
| 00000101 | 26 | 26 | 52 | | 26 | 26 | 26 | 52 | | 1 |
| 00000110 | 26 | 26 | 52 | | 26 | 52 | | 26 | 26 | 1 |
| 00000111 | 26 | 26 | 52 | | 26 | 52 | | 52 | | 1 |
| 00001000 | 52 | | 26 | 26 | 26 | 26 | 26 | 26 | 26 | 1 |
| 00001001 | 52 | | 26 | 26 | 26 | 26 | 26 | 52 | | 1 |
| 00001010 | 52 | | 26 | 26 | 26 | 52 | | 26 | 26 | 1 |
| 00001011 | 52 | | 26 | 26 | 26 | 52 | | 52 | | 1 |
| 00001100 | 52 | | 52 | | 26 | 26 | 26 | 26 | 26 | 1 |
| 00001101 | 52 | | 52 | | 26 | 26 | 26 | 52 | | 1 |
| 00001110 | 52 | | 52 | | 26 | 52 | | 26 | 26 | 1 |
| 00001111 | 52 | | 52 | | 26 | 52 | | 52 | | 1 |
| 00010y2y1y0 | 52 | | 52 | | - | 106 | | | | 8 |
| 00011y2y1y0 | 106 | | | | - | 52 | | 52 | | 8 |
| 00100y2y1y0 | 26 | 26 | 26 | 26 | 26 | 106 | | | | 8 |
| 00101y2y1y0 | 26 | 26 | 52 | | 26 | 106 | | | | 8 |
| 00110y2y1y0 | 52 | | 26 | 26 | 26 | 106 | | | | 8 |
| 00111y2y1y0 | 52 | | 52 | | 26 | 106 | | | | 8 |
| 01000y2y1y0 | 106 | | | | 26 | 26 | 26 | 26 | 26 | 8 |
| 01001y2y1y0 | 106 | | | | 26 | 26 | 26 | 52 | | 8 |
| 01010y2y1y0 | 106 | | | | 26 | 52 | | 26 | 26 | 8 |
| 01011y2y1y0 | 106 | | | | 26 | 52 | | 52 | | 8 |
| 0110y1y0z1z0 | 106 | | | | - | 106 | | | | 16 |
| 01110000 | 52 | | 52 | | - | 52 | | 52 | | 1 |
| 01110001 | 242-tone RU empty | | | | | | | | | 1 |
| 01110010 | 484-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | | 1 |
| 01110011 | 996-tone RU with zero HE-SIG-B User Specific field in the corresponding HE-SIG-B Content Channel | | | | | | | | | 1 |
| 011101x1x0 | Reserved | | | | | | | | | 4 |
| 01111 y2y1y0  (#9554) | Reserved | | | | | | | | | 8 |
| 10y2y1y0z2z1z0 | 106 | | | | 26 | 106 | | | | 64 |
| 11000y2y1y0 | 242 | | | | | | | | | 8 |
| 11001y2y1y0 | 484 | | | | | | | | | 8 |
| 11010y2y1y0 | 996 | | | | | | | | | 8 |
| 11011y2y1y0 | 2×996 | | | | | | | | | 8 |
| 111x4x3x2x1x0 | Reserved | | | | | | | | | 32 |
| y2y1y0 = 000-111 indicates number of STAs multiplexed in the 106-, 242-, 484-, 996- or 2×996-tone RU or the lower freuqnecy 106-tone RU if there are two 106-tone RUs when one 26-tone RU is assigned between two 106-tone RUs. The binary vector y2y1y0 indicates 22 × y2] + 21 × y1+ y0 + 1 STAs multiplexed in the RU. (#4891)(#6118) (#8155)(#10066)(#10217)  z2z1z0 = 000-111 indicates number of STAs multiplexed in the higher frequency 106-tone RU if there are two 106-tone RUs when one 26-tone RU is assigned between two 106-tone RUs. The binary vector z2z1z0 indicates 22 × z2+ 21 × z1+ z0+ 1 STAs multiplexed in the RU. (#4891)  Similarly, y1y0 = 00-11 indicates number of STAs multiplexed in the lower frequency 106-tone RU. The binary vector y1y0 indicates 21 × y1+ y0+ 1 STAs multiplexed in the RU. (#4891)  Similarly, z1z0 = 00-11 indicates the number of STAs multiplexed in the higher frequency 106-tone RU. The binary vector z1z0 indicates 21 × z1+ z0+ 1 STAs multiplexed in the RU. (#4891)  #1 to #9 (from left to the right) is ordered in increasing order of the absolute frequency.  x1x0 = 00-11, x4x3x2x1x0 = 00000-11111.  ‘-’ means no STA in that RU. | | | | | | | | | | |

***------------- End Text Changes ---------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 5272 | 293.33 | What does "default mode" mean? This implies other types of modes, but I don't see other types of modes described. Please clarify. | as in comment | Revised  Agreed in principle.  The default mode is not necessary here separately because the SIGB Compression field in HE-SIG-A field of an HE MU PPDU can be used to indicate this mode.  The following text  "In the default mode when the SIGB Compression field in the HE-SIG-A field of an HE MU PPDU is set to 0, for a 20 MHz and a 40 MHz PPDU, each HE-SIG-B content channel ..."  changes to  "When the SIGB Compression field in the HE-SIG-A field of an HE MU PPDU is set to 0 for a 20 MHz and a 40 MHz PPDU, each HE-SIG-B content channel ..."  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8958 | 293.37 | Change "assignment to the user" to "assignment to each user" | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8959 | 293.42 | Change "assignment to the user" to "assignment to each user" | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8960 | 293.49 | Change "Use Specific" to "User Specific" | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |

**Discussion**

The modifications improve the wording and correct typos.

**Changes to Section 28.3.10.8.4**

***To TGax editor:*** ***P293L33*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

The number of RU Allocation subfields in the Common Block field depends on the PPDU bandwidth

* When the SIGB Compression field in the HE-SIG-A field of an HE MU PPDU is set to 0 for a 20 MHz and a 40 MHz PPDU, each HE-SIG-B content channel contains one RU Allocation field in the Common field followed by multiple User fields. (#5272) The position of the User field in the User Specific field together with the 8-bit RU Allocation field indicates the RU assignment to each user.(#8958)
* When the SIGB Compression field in the HE-SIG-A field of an HE MU PPDU is set to 0 for an 80 MHz PPDU, each HE-SIG-B content channel contains two RU Allocation subfields for a total of 16 bits of RU allocation signaling, one each for the RUs in the two 20 MHz segments of the HE-SIG-B content channel.(#5272) The position of the User field in the User Specific field together with the 8-bit RU Allocation field indicates the RU assignment to each user.(#8959) The User fields corresponding to the first RU Allocation field are followed by the User fields indicated by the second RU Allocation field in the User Specific field.
* When the SIGB Compression field in the HE-SIG-A field of an HE MU PPDU is set to 0 for a 160 MHz PPDU, each HE-SIG-B content channel contains four RU Allocation subfields for a total of 32 bits of RU allocation signaling, one each for the RUs in the four 20 MHz segments of the HE-SIG-B content channel.(#5272) The position of the User field in the User Specific field together with the 8-bit RU Allocation field indicates the RU assignment to each user.(#8960) The User fields for each of the 20 MHz segments in the content channel are arranged by the order in which their RU Allocation fields appear in the Common field.

***------------- End Text Changes ---------------***

**Changes to Section 28.3.10.8.2**

***To TGax editor:*** ***P286L47*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

|  |
| --- |
|  |
| * HE-SIG-B content channel for a 20 MHz PPDU |

…

|  |
| --- |
|  |
| * HE-SIG-B content channel for a 40 MHz PPDU |

…

|  |
| --- |
|  |
| * Mapping of the two HE-SIG-B content channels and their duplication in an 80 MHz PPDU(#5272) |

…

|  |
| --- |
|  |
| * Mapping of the two HE-SIG-B content channels and their duplication in a 160 MHz PPDU(#5272) |

***------------- End Text Changes ---------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 5273 | 293.60 | Regarding "Multiple RU allocations addressed to a single STA shall not be allowed in 802.11ax.", I don't think you can refer to the task group. | as in comment | Revised.  Agreed in principle. "in 802.11ax" is deleted in the sentence.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |

**Discussion**

The modifications improve the wording and correct typos.

**Changes to Section 28.3.10.8.4**

***To TGax editor:*** ***P293L60*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

The User Specific field consists of multiple User fields. The User fields follow the Common field of HE-SIG-B. The RU Allocation field in the Common field and the position of the User field in the User Specific field together identify the RU used to transmit a STA’s data. Multiple RUs addressed to a single STA shall not be allowed in the User Specific field. (#5273)

***------------- End Text Changes ---------------***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8961 | 294.25 | Change "The contents of the User field differ based on ..." to "The contents of the User fields differ depending on ..." | See comment | Accepted  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8962 | 295.01 | Change "HE-SIG-B user field" to "user field" for consistency | See comment. Same comment for line 2 and 6 | Revised.  Agreed in principle. In order to keep consistency, Change "HE-SIG-B user field" to "User field".  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8963 | 295.01 | Use consistent wording. An RU with only one user has been referred to as "single STA in an RU" (page 294.25), ""field for an SU allocation" (page 295.1), "field for a non-MU-MIMO allocation" (page 295.6) | Decide on naming for an RU with one user. | Revised.  Agreed in principle. “a STA in a non-MU-MIMO allocation” is used to keep consistency.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 10067 | 295.06 | In Table 28-22, "non-MU-MIMO allocation" means "SU-MIMO allocation in the signaled RU" assignment. The terminology as "non-MU-MIMO is used only in the chapter". | "non-MU-MIMO allocation" should be replaced with "SU-MIMO allocation in the signaled RU" | Rejected.  The same resolution as CID 8963 is applied |
| 8115 | 295.06 | SIG B does not currently specify a means for indicating multiple RU allocations to a single STA. | Specify a means for indicating multiple RU allocations to a single STA within the SIGB, for example, by allowing the AID of a single STA to appear multiple times within the SIGB fields. | Rejected.  Multiple RU allocation for one STA shall not be allowed in 11ax according to PHY Motion 128 with 16/0079r2.  Corresponding text in the spec is in P163L8 and P293L60 following as  “Two STA-ID fields in HE-SIG-B shall not have the same value, unless the value is 2046, which is used to indicate an unallocated RU.” "Multiple RU allocations addressed to a single STA shall not be allowed in User Specific field." |
| 8964 | 295.12 | STAID or STA-ID? | Use one term consistenly in third column. | Revised.  Agreed in principle. STAID is replaced with STA-ID which is the field name.   TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8966 | 296.06 | Change "the payload of the HE MU PPDU is modulated with dual carrier modulation" to "the payload of the corresponding user of the HE MU PPDU is modulated with dual carrier modulation" | See comment | Accepted.  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 8968 | 296.48 | Change "the payload of the HE MU PPDU is modulated with dual carrier modulation" to "the payload of the corresponding user of the HE MU PPDU is modulated with dual carrier modulation" | See comment | Accepted.  The same resolution as CID 8966 is applied  TGax Editor: make changes according to this document 11-17-0288-00-00ax CRs on HE-SIG-B 28.3.10.8.4-5. |
| 10219 | 297.28 | According to P213L54, the minimum number of users per HE MU PPDU is defined as one; howvever, in Table 28-24, N\_user starts from two. As well as a VHT MU PPDU, it may be needed that an HE MU PPDU support "one user" transmission. | If necessary, add the case for N\_user of one. | Rejected.  Given that a HE MU PPDU format carries one or more PSDUs to one or more users in the spec, I agree that HE MU PPDU is not excluded for one user.   However the Table 28-23 is given for at least two users assigned for an MU-MIMO transmision. In case one user is assigned in HE MU PPDU then you can use Table 28-22 which shows fields of User field for one user. See 11-17/173r0. |

**Discussion**

The modifications improve the wording and description in Table 28-22.

**Changes to Section 28.3.10.8.5**

***To TGax editor:*** ***P294L25*** *replace the current text with the proposed changes below.*

***------------- Begin Text Changes ---------------***

The contents of the User field differ depending on whether the field addresses a STA in a non-MU-MIMO allocation in an RU or a STA in an MU-MIMO allocation in an RU.(#8961)(#8963) Irrespective of whether the allocation is for a STA in a non-MU-MIMO or an MU-MIMO allocation, the size of the user field is the same.

The User field for a non-MU-MIMO allocation contains the fields shown in Fields of the User field for a non-MU-MIMO allocation. (# 8962)(#8963)

|  |  |  |  |
| --- | --- | --- | --- |
| * Fields of the User field for a non-MU-MIMO allocation | | | |
| Bit | Field | Number of bits | Description |
| B0-B10 | STA-ID | 11 | The STA-ID refers to the AID described in 9.4.1.8 (AID field). The 11 LSBs of the AID field are used to address the STAs in this field.  For RUs that carry a broadcast allocation:   * For single BSS AP, the STAID for broadcast will be 0 * For Multiple BSS AP, the STA-ID for broadcast to a specific BSS will follow the group addressed AID assignment in the TIM according to the existing Multi-BSSID TIM operation(#8963) * For multiple BSS AP, the STA-ID for broadcast to all BSS of the AP is set to 2047(#8963)   And further:   * STA-ID value 2046 is used to indicate that the RU carries no data(#8963) * When a STA transmits on the uplink using the HE MU PPDU format, the STA-ID field is populated by the AID of the transmitter assigned by the AP |
| B11-B13 | NSTS | 3 | Number of spatial streams.  Set to the number of space time streams minus 1. |
| B14 | Tx Beamforming | 1 | Use of transmit beamforming.  Set to 1 if a beamforming steering matrix is applied to the waveform in an SU transmission.  Set to 0 otherwise. |
| B15-B18 | MCS | 4 | Modulation and coding scheme  Set to *n* for MCS*n*, where *n* = 0, 1 ,2 …., 11  Values 12 to 15 are reserved |
| B19 | DCM | 1 | Indicates whether or not dual carrier modulation is used.  Set to 1 to indicate that the payload of the corresponding user of the HE MU PPDU is modulated with dual carrier modulation for the MCS.  Set to 0 indicates that the payload of the PPDU is not modulated with dual carrier modulation for the MCS.(#8966) |
| B20 | Coding | 1 | Indicates whether BCC or LDPC is used.  Set to 0 for BCC  Set to 1 for LDPC |
| NOTE—Integer fields are transmitted in unsigned binary format, LSB first, where the LSB is in the lowest numbered bit position. | | | |

The User field for a STA in an MU-MIMO allocation contains the fields shown in Fields of the User field for an MU-MIMO allocation .

|  |  |  |  |
| --- | --- | --- | --- |
| * Fields of the User field for an MU-MIMO allocation | | | |
| Bit | Field | Number of bits | Description |
| B0-B10 | STA-ID | 11 | The STA-ID refers to the AID described in 9.4.1.8 (AID field). The 11 LSBs of the AID field are used to address STAs in this field. |
| B11-B14 | Spatial Configuration | 4 | Indication for the number of spatial streams for a STA in an MU-MIMO allocation. See **Error! Reference source not found.**. |
| B15-B18 | MCS | 4 | Modulation and coding scheme.  Set to n for MCS*n*, where *n* = 0, 1, 2,…..11  Values 12 to 15 are reserved |
| B19 | DCM | 1 | Indicates whether or not dual carrier modulation is used.  Set to 1 to indicate that the payload of the corresponding user of the HE MU PPDU is modulated with dual carrier modulation for the MCS.(# 8968)  Set to 0 indicates that the payload of the PPDU is not modulated with dual carrier modulation for the MCS. |
| B20 | Coding | 1 | Indicates whether BCC or LDPC is used.  Set to 0 for BCC  Set to 1 for LDPC |
| NOTE—Integer fields are transmitted in unsigned binary format, LSB first, where the LSB is in the lowest numbered bit position. | | | |