IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | CC36 Comment Resolution on U-SIG Part 6 | | | | | | Date: 2022-03-03 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Alice Chen | Qualcomm |  |  | alicel@qti.qualcomm.com | | Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for the following comments from the CC36 on P802.11be D1.0: Some comments in 36.3.12.7 U-SIG.

NOTE – Set the Track Changes Viewing Option in the MS Word to “All Markup” to clearly see the proposed text edits.

**Revision History:**

R0: Initial version. Resolve CIDs 4585, 4599, 4600, 4601, 4602, 4603, 4604, 4605, 4946, 4947, 4948, 4949, 5475, 5476, 5820, 6466, 6798, 7202, 7203, 7205, 7206, 7464, 7465, 8007, 8008, 8009, 8010, 8011, 8013.

R1: Minor revisions.

R2: Remove CIDs 4602, 4603, 8007 for future resolution. Revise a couple of resolutions.

# CID 4585

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4585 | 36.3.12.7 | 0.00 | To improve transmission efficency, a bit can be added to U-SIG/EHT-SIG to indicate whether a immediate acknowledgment is needed or not. So the receiver can send the phy header before FEC in MAC layer is done, and the transmitter don't have to add PE even if the receiver is slow. | Define a bit in U-SIG/EHT-SIG to indicate whether a immediate acknowledgement is required. | Rejected.  No passed SP/Motion supports this comment and proposed change. |

# CID 4599, 4946, 5820

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4599 | 36.3.12.7 | 411.29 | "Undefined values of this field are Validate if dot11EHTBaseLineFeaturesImplementedOnly equals true(#2794)." but a) the value of this field is defined /undefined only in conjunction with the UL/DL field, b) one combination of values appears to be defined in a NOTE - so does this count as a definition or not!? | Try "If the UL/DL field is set to 0: A value of 0 indicates a DL OFDMA transmission. A value of 1 indicates a transmission to a single user or an EHT sounding NDP A value of 2 indicates a non-OFDMA DL MU-MIMO transmission. If the UL/DL field is set to 1: A value of 0 indicates a TB PPDU (see UL/DL field) A value of 1 indicates a transmission to a single user or an EHT sounding NDP  Undefined values of this field for a given value of the UL/DL field are Validate if dot11EHTBaseLineFeaturesImplementedOnly equals true(#2794)." | Revised.  Agree to the comment. Revise according to the proposed change with minor change in wording and also give more details on undefined values being Validate. Change the case of a TB PPDU to a note for clarity, because it is irrelevant in the U-SIG field of an EHT MU PPDU.  In the PPDU Type And Compression Mode subfield of the U-SIG field in the EHT TB PPDU, give more details on undefined values being Validate.  *Tgbe Editor: Please make changes for CID 4599 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx) |
| 4946 | 36.3.12.7 | 411.26 | “If the UL/DL field is set to 1, a value of 0 indicates a TB PPDU.” This table describes U-SIG field for EHT MU PPDU. How can setting of this field indicate TB PPDU? Seems like a value of 0 should not be allowed. | As in comment | Revised.  Agree to the comment that the case of a TB PPDU is irrelevant in the U-SIG field of an EHT MU PPDU. But if the UL/DL field is set to 1, a value of 0 is not defined here but described in a note. We revise the note for clarity.  *Tgbe Editor: Please make changes for CID 4946 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx) |
| 5820 | 36.3.12.7 | 419.18 | PPDU Type And Compressed Mode field =0 together with UL/DL field = 1 indicates a TB PPDU. | Change “Set to a value of 0 for a TB PPDU” to “ Set to a value of 0 for a TB PPDU if the UL/DL field is set to 1”. | Revised.  Agree to the comment. Revise the proposed change.  *Tgbe Editor: Please make changes for CID 5820 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0307-02-00be-cc36-comment-resolution-on-u-sig-part-6.docx) |

***Instructions to the editor:***

**Please make the changes to P559L14-L36 in 802.11be spec draft D1.4 (original P411L14-L36 in 802.11be spec draft D1.0) for CID 4599 and 4946 as shown below:**

## Table 36-28—U-SIG field of an EHT MU PPDU

|  |  |  |  |  |  |  |  |  |  |
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| **Two parts of U-SIG** | | **Bit** | | **Field** | | **Number of bits** | | **Description** | |
| U-SIG-2 | | B0–B1 | | PPDU Type And Compression Mode | | 2 | | (#1361)(#3177)(#2399)(#3187)(#1352)If the  UL/DL field is set to 0:  A value of 0 indicates a DL OFDMA transmission.  A value of 1 indicates a transmission to a single user or an EHT sounding NDP.  A value of 2 indicates a non-OFDMA DL MU-MIMO transmission.  A value of 3 is Validate.  If the UL/DL field is set to 1:  A value of 1 indicates a transmission to a single user or an EHT sounding NDP.  Values of 2 and 3 are Validate.  NOTE—A value of 0 indicates a TB PPDU. Refer to Table 36-31 (U-SIG field of an EHT TB PPDU).  For further clarifications on all values of this field, (#3178)refer to [Table 36-29](#bookmark109) [(Combination of UL/DL and PPDU Type And](#bookmark109) [Compression Mode field(#1562)(#1352))](#bookmark109). | |

***Instructions to the editor:***

**Please make the changes to P567L7-L15 in 802.11be spec draft D1.4 (original P419L18-L27 in 802.11be spec draft D1.0) for CID 4599 and 5820 as shown below:**

## Table 36-31—U-SIG field of an EHT TB PPDU

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | | **Bit** | | **Field** | | **Number of bits** | | **Description** | |
| U-SIG-2 | | B0–B1 | | PPDU Type And Compressed Mode | | 2 | | If the UL/DL field is set to 1:  (#8012)(#1352)Set to 0 for a TB PPDU.  Values of 2-3 are Validate.  NOTE—A value of 1 indicates a transmission to a single STA or an EHT sounding NDP. Refer to Table 36-28 (U-SIG field of an EHT MU PPDU).  For  further clarification on all values of this field, (#3178)refer to [Table 36-29 (Combination of](#bookmark109) [UL/DL and PPDU Type And Compression](#bookmark109) [Mode field(#1562)(#1352))](#bookmark109). | |

# CID 4600, 4601, 4948, 7203, 7464, 7465, 8009, 8010

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 8009 | 36.3.12.7 | 413.40 | This is better suited to be a NOTE. | Change "Transmission to a single user or NDP (Not to AP. Typically "DL")" to "Transmission to a single user or NDP that is not addressed to an AP.  NOTE - One such case is a downlink transmission from an AP to a non-AP STA." | Accepted.  Note to editor: This is in P561L50 in 802.11be spec draft D1.4. |
| 4601 | 36.3.12.7 | 413.40 | Use of scare quotes (""DL"") to indicate an enumerated value yet the use of scare quotes in this manner is not defined and is likely outside the style guide. Also there is vague and unhelpful language ("typically"). | Try "Either a transmission to a single user that is not an AP or an NDP after an NDPA that is not directed to an AP; used for DL or non-AP-to-non-AP transmissions." | Revised.  Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8009 on the same subject matter.  Note to editor: Use the same resolution to CID 8009. No change is needed. |
| 4948 | 36.3.12.7 | 413.39 | "(Not to AP. Typically "DL")". What is meant by this? Does this imply something wrt AP/STA or peer-to-peer? | as in comment | Revised.  Yes. It implies a typical DL case (from AP to a non-AP STA and peer-to-peer). Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8009 on the same subject matter.  Note to editor: Use the same resolution to CID 8009. No change is needed. |
| 7203 | 36.3.12.7 | 413.41 | Why do we need 'Typically "DL"'? First column indicates that this is DL. Also "typically" is too vague. | Delete "Typically DL" | Revised.  It implies a typical DL case (from AP to a non-AP STA and peer-to-peer). Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8009 on the same subject matter.  Note to editor: Use the same resolution to CID 8009. No change is needed. |
| 7464 | 36.3.12.7 | 413.38 | In Table 36-29, the entry (Typically "DL") | Please explain what "typically "DL"" means or delete the "typical". Also it is not clear why DL is with quotes. | Revised.  It implies a typical DL case (from AP to a non-AP STA and peer-to-peer). Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8009 on the same subject matter.  Note to editor: Use the same resolution to CID 8009. No change is needed. |
| 8010 | 36.3.12.7 | 414.21 | i.e. "UL"" is not the best phrase to be used in a standard | Change "Transmission to a single user or NDP (To AP, i.e., "UL")" to "Transmission to a single user or NDP that is addressed to an AP." | Accepted.  Note to editor: This is in P562L20 in 802.11be spec draft D1.4. |
| 4600 | 36.3.12.7 | 414.22 | Use of scare quotes (""UL"") to indicate an enumerated value yet the use of scare quotes in this manner is not defined and is likely outside the style guide, and also this reads peculiarly. | Try "Either a transmission to a single user that is an AP or an NDP after an NDPA directed to an AP" | Revised.  Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8010 on the same subject matter.  Note to editor: Use the same resolution to CID 8010. No change is needed. |
| 7465 | 36.3.12.7 | 414.22 | In Table 36-29, the entry (... "UL") | It is not clear why UL is with quotes. | Revised.  Agree to the comment that the sentence could be improved. We adopted the proposed change to CID 8010 on the same subject matter.  Note to editor: Use the same resolution to CID 8010. No change is needed. |

# CID 4949

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4949 | 36.3.12.7 | 414.32 | I think there needs to be a rule forbidding UL/DL 1 and PPDU Type And Compression Mode 0 for EHT MU. | as in comment | Rejected.  The combination of the UL/DL field and PPDU Type And Compression Mode field is used to determine the PPDU format and U-SIG and EHT-SIG structures. The combination of UL/DL field being 1 and PPDU Type And Compression Mode field being 0 will tell the receiver this is an EHT TB PPDU and then should use the U-SIG content/structure of an EHT TB PPDU to interpret the U-SIG field. It will not use the U-SIG content/structure of an EHT MU PPDU to interpret the U-SIG field. Therefore, one such rule is not needed. |

# CID 4604, 4605, 5475, 5476, 6798, 7202, 8008

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 5475 | 36.3.12.7 | 412.08 | When the PPDU Type And Compression Mode field is equal to 2, also needs DL | as in comment | Revised.  Agree to the comment. Add description of the UL/DL field value in the if condition.  Note to editor: This is in P560L7 in 802.11be spec draft D1.4. Change “If the PPDU Type And Compression Mode field is set to 1 or 2” to “If the  PPDU Type And Compression Mode field is set to 1 regardless of the value of the UL/DL field, or the PPDU Type And Compression Mode field is set to 2 and the UL/DL field is 0.” |
| 5476 | 36.3.12.7 | 412.20 | When the PPDU Type And Compression Mode field is equal to 0, also needs DL | as in comment | Revised.  Agree to the comment. Add description of the UL/DL field value in the if condition.  Note to editor: This is in P560L20 in 802.11be spec draft D1.4. Change “If the PPDU Type And Compression Mode field is set to 0” to “If the PPDU Type And Compression Mode field is set to 0 and the UL/DL field is 0.” |
| 4604 | 36.3.12.7 | 412.24 | If individual bits within a field need to be identified, then that's a sure sign that something is wrong, and in fact the field needs to be divided into named subfields. The complication is that this field is something like a C-language union where the bit field boundaries depend on other fields. | This problem can be solved (e.g. see VHT and specifically figures 21-18 and 21-19 in 11meD0.0). For problematic fields like Punctured Channel Information: Option a) like MAC fields, have an entry for the unbroken field in Table 36-28 which refers to a separate figure (like VHT) for the subfields, with one row for each arrangement of subfields, and distinct subfield names, then define them all in another table. Option b) merge these rows into this table, by allowing the same bit to appear multiple times in different rows, one time per unique range. Other options that name every bit range, and use those names thereafter, are also acceptable. | Rejected.  In VHT-SIG-A1 (Figure 21-18 in 11meD0.0) and VHT-SIG-A2 (Figure 21-19 in 11meD0.0), certain bits are used for different subfields and different number of subfields, and so the figures used different field structure definition for SU/MU cases. Here, in both the non-OFDMA and OFDMA cases, these bits are used for the same punctured channel information subfield. Furthermore, different from figures, in a table, we could specify how these bits are being set. The current description is clear. |
| 4605 | 36.3.12.7 | 412.24 | If individual bits within a field need to be identified, then that's a sure sign that something is wrong, and in fact the field needs to be divided into named subfields. The complication is that this field is something like a C-language union where the bit field boundaries depend on other fields. | This problem can be solved (e.g. see VHT and specifically figures 21-18 and 21-19 in 11meD0.0). For problematic fields like Punctured Channel Information: Option a) like MAC fields, have an entry for the unbroken field in Table 36-28 which refers to a separate figure (like VHT) for the subfields, with one row for each arrangement of subfields, and distinct subfield names, then define them all in another table. Option b) merge these rows into this table, by allowing the same bit to appear multiple times in different rows, one time per unique range. Other options that name every bit range, and use those names thereafter, are also acceptable. | Rejected.  In VHT-SIG-A1 (Figure 21-18 in 11meD0.0) and VHT-SIG-A2 (Figure 21-19 in 11meD0.0), certain bits are used for different subfields and different number of subfields, and so the figures used different field structure definition for SU/MU cases. Here, in both the non-OFDMA and OFDMA cases, these bits are used for the same punctured channel information subfield. Furthermore, different from figures, in a table, we could specify how these bits are being set. The current description is clear. |
| 6798 | 36.3.12.7 | 412.22 | Edit description of punctured channel information sub-field as:  "If the BW field is set to a value between 2 and 5, which indicates an 80/160/320 MHz PPDU, B3-B6 is a 4-bit bitmap that indicates which 20 MHz channel is punctured in the relevant 80 MHz subblock, where B3-B6 apply to 20 MHz channels from the lowest to the highest frequency 20 MHz channels." | As in comment | Rejected.  The proposed change doesn’t improve clarity of the sentence. The current sentences are clear enough. |
| 7202 | 36.3.12.7 | 412.27 | "the relevant 80 MHz subblock" needs to be specified better. E.g. The subblock where U-SIG processing is performed. | See comment | Revised.  Agree to the comment. Change “the relevant 80 MHz subblock” to “the 80 MHz frequency subblock where U-SIG processing is performed.”  Note to editor: This is in P560L27 in 802.11be spec draft D1.4. Change “the relevant 80 MHz subblock” to “the 80 MHz frequency subblock where U-SIG processing is performed.” |
| 8008 | 36.3.12.7 | 412.10 | Using the notation "B3-B7" always makes me wonder what is the LSB-MSB order. In this case, we are using al 5 bits of the field and integer value (Table 36-30 uses the 'integer' value). And there is a clear definition of LSB/MSB for integer valued fields at P408L44. So, do not use the unnecessary phrase "B3-B7" | Change "B3-B7 points to the entry of a bandwidth dependent table (defined in Table 36-30) to signal the non-OFDMA puncturing pattern of the entire PPDU bandwidth." to "Indicates the puncturing information of this non-OFDMA transmission. See Table 36-30 for the definition." | Accepted.  Note to editor: This is in P560L10 in 802.11be spec draft D1.4. |

# CID 6466, 8011

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 6466 | 36.3.12.7 | 417.26 | The wording "Both 80 MHz and 40 MHz puncturing" is not good | Change to "puncturing of three 40 MHz subchannels" or "puncturing of 80 MHz and 40 MHz at the same time" or "concurrent 80 MHz and 40 MHz puncturing" | Revised.  “Puncturing of three 40 MHz subchannels” is not accurate. Agree to change to “concurrent 80 MHz and 40 MHz puncturing” for clarity.  Note to editor: Please change “Both 80 MHz and 40 MHz puncturing” to “concurrent 80 MHz and 40 MHz puncturing” in Table 36-30. |
| 8011 | 36.3.12.7 | 414.39 | Table title could be more precies. Also the column definition for the "Field value" column | Change the title of Table 36-30 to "Definition of the Punctured Channel Indication field in the U-SIG for an EHT MU PPDU using non-OFDMA transmissions"  Change the content of the first row and last column of Table 36-30 from "Field value" to "Value of the Punctured Channel Indication field" | Revised.  Agree to the comment that the title of Table 36-30 could use the proposed change. But we don’t see significant difference in in changing the “Field value” to "Value of the Punctured Channel Indication field".  Note to editor: Change the title of Table 36-30 to "Definition of the Punctured Channel Indication field in the U-SIG for an EHT MU PPDU using non-OFDMA transmissions". |

# CID 4947

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4947 | 36.3.12.7 | 413.35 | PPDU Type And Compression Mode with 0 and 1 seems to both be used for single user. What is the decision process for which setting to use with a single user? | as in comment | Rejected.  This question was discussed in past PHY calls but no conclusion was reached. No change is needed at this point. |

# CID 7205, 7206, 8013

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 7205 | 36.3.12.7 | 420.21 | For better clarity, change "to each 20 MHz subchannel" to "to every 20 MHz subchannel" | See comment. Three occurences in Description of Spatial Reuse 1 | Rejected.  In the three occurrences, we don’t see ambiguity in the original expression of “each 20 MHz subchannel”, or any significant difference between “each 20 MHz subchannel” and “every 20 MHz subchannel.” In general, “each” can be used for two or more, while “every” is used for three or more. In the first occurrence, “each 20 MHz subchannel of the first 40 MHz subband” is talking about two 20 MHz subchannels. Therefore, “each” is correct and “every” is not correct here. For the other occurrences, simply better keep the same wording. |
| 7206 | 36.3.12.7 | 421.29 | For better clarity, change "to each 20 MHz subchannel" to "to every 20 MHz subchannel" | See comment. Two occurences in Description of Spatial Reuse 2 | Rejected.  In the three occurrences, we don’t see ambiguity in the original expression of “each 20 MHz subchannel”, or any significant difference between “each 20 MHz subchannel” and “every 20 MHz subchannel.” In general, “each” can be used for two or more, while “every” is used for three or more. In the first occurrence, “each 20 MHz subchannel of the first 40 MHz subband” is talking about two 20 MHz subchannels. Therefore, “each” is correct and “every” is not correct here. For the other occurrences, simply better keep the same wording. |
| 8013 | 36.3.12.7 | 420.17 | What is the "first" 20/40/80/160 MHz? | At P420L17, change "the first 20 MHz subband" to "the 20 MHz subband lower in frequency"  At P420L22, change "the first 40 MHz subband" to "the lower 40 MHz subband in frequency"  At P420L28, change "the first 80 MHz subband" to "the lower 80 MHz subband in frequency"  At P420L32, change "the first 160 MHz subband" to "the lower 160 MHz subband in frequency" | Revised.  Agree to the comment to the Spatial Reuse 1 subfield and also apply the similar change to replace “second” by “upper” in the Spatial Reuse 2 subfield for better clarity.  Note to editor: Please make the following changes in 802.11be spec draft D1.4.  At P567L35 (original P420L17 in D1.0), change "the first 20 MHz subband" to "the lowest 20 MHz subband in frequency."  At P567L38 (original P420L22 in D1.0), change "the first 40 MHz subband" to "the lowest 40 MHz subband in frequency."  At P567L42 (original P420L28 in D1.0), change "the first 80 MHz subband" to "the lowest 80 MHz subband in frequency."  At P567L48 (original P420L32 in D1.0), change "the first 160 MHz subband" to "the lower 160 MHz subband in frequency."  At P568L20 (original P421L23 in D1.0), change “the second 20 MHz subband” to “the upper 20 MHz subband in frequency.”  At P568L26 (original P421L29 in D1.0), change “the second 40 MHz subband” to “the upper 40 MHz subband in frequency.”  At P568L31 (original P421L35 in D1.0), change “the second 80 MHz subband” to “the upper 80 MHz subband in frequency.”  At P568L37 (original P421L42 in D1.0), change “the second 160 MHz subband” to “the upper 160 MHz subband in frequency.” |