IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | CC36 Comment Resolution on U-SIG Part 5 | | | | | | Date: 2022-01-12 | | | | | | 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, 4596, 4597, 4655, 4608, 4609, 4669, 5412, 5477, 5819, 6436, 6997, 7201, 7204, 7207, 8006.

R1: Remove CID 4585. Update page and line reference according to 802.11be spec draft D1.4.

R2: Minor revision per discussion in IEEE presentation.

# CID 6436

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 6436 | 36.3.12.7 | 410.03 | Add a period at the end of a sentence. | As in comment | Accepted.  Note to editor: This CID has same resolution to CID 4641, which has been resolved in <https://mentor.ieee.org/802.11/dcn/21/11-21-1368-01-00be-cc36-cr-on-36-3-12-7-2-u-sig-content-part-4.docx>. No change is needed. |

# CID 4596, 4597, 8006

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 8006 | 36.3.12.7.2 | 409.16 | All EHT STAs should check the validate fields/states. | Delete "if dot11EHTBaseLineFeaturesImplementedOnly equals true" at P410L16/29, P411L7/11/29/38, P412L17/40/47/50/54, P413L48, P414L26, P418L15/29, P419L12/25/34, P421L19, P422L12/43/57, P423L37/40. | Accepted.  Note to editor: Make the proposed change to the following locations in 802.11be spec draft D1.4: P558L16/29, P559L7/11/29/38, P560L17/41/49/53/56, P561L59, P562L25, P566L15/29/60, P567L13/20, P568L16, P569L10/41/54, P570L26/30 (corresponding to the following locations in 802.11be spec draft D1.0: P410L16/29, P411L7/11/29/38, P412L17/40/47/50/54, P413L48, P414L26, P418L15/29, P419L12/25/34, P421L19, P422L12/43/57, P423L37/40). |
| 4596 | 36.3.12.7 | 410.17 | "Differentiate between different PHY clauses. Set to 0 for EHT. Values 1-7 are Validate if dot11EHTBaseLineFeaturesImplementedOnly equals true." is not future proofed in the sense that all EHT STAs are expected to validate that field. | Change dot11EHTBaseLineFeaturesImplementedOnly to dot11EHTOptionImplemented. Ditto P418L16, P422L43 | Revised.  Agree to the comment. We make a different proposed change as in CID 8006 instead of the proposed change in this CID 4596.  Note to editor: This CID has same resolution as CID 8006. No change is needed. |
| 4597 | 36.3.12.7 | 410.30 | "Values 6 and 7 are Validate if dot11EHTBaseLineFeaturesImplementedOnly" is not future proofed in the sense that all EHT STAs are expected to validate that field if and until new values are defined (which is not expected in R2). | Change dot11EHTBaseLineFeaturesImplementedOnly to dot11EHTOptionImplemented. Ditto P418L29 and P422L57. If something unexpected occurs and R2 somehow really wants to define new bandwidths(!), they can, but by default, R2 devices should be expected to validate this field. | Revised.  Agree to the comment. We make a different proposed change as in CID 8006 instead of the proposed change in this CID 4597.  Note to editor: This CID has same resolution as CID 8006. No change is needed. |

# CID 4655

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4655 | 36.3.12.7 | 410.20 | BW is an unncessary contraction | Change BW to Bandwidth, and where this fieldname is referenced | Revised.  Agree to the comment. Make the proposed change also to where this fieldname is referenced.  Note to editor: Please change “BW” to “Bandwidth” in the following locations in 802.11be spec draft D1.4: P558L20, P560L22/46, P566L18, P569L45, P603L44, P604L41, P605L54, P695L54 (corresponding to the following locations in 802.11be spec draft D1.0: P410L20, P412L22/44, P418L18, P422L46, P460L44, P461L41, P462L54, P548L53). |

# CID 4608, 4609, 4669, 5477, 7204

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 4608 | 36.3.12.7 | 410.37 | "See the TXVECTOR parameter xxxx" is weak since actually the PHY needs to populate this field with the TXVECTOR parameter provided by the MAC | Change "See" to "Set to" here and at L422L60. Ditto BSS\_COLOR in this table at P410L40 and at P418L35. | Revised.  Agree to the comment. Make the proposed change in the UL/DL subfield and use the original text as explanation for the U-SIG field in EHT MU PPDU (Table 36-28). Make the proposed change in the BSS\_Color subfield in the U-SIG fields of EHT MU PPDU (Table 36-28) and EHT TB PPDU (Table 36-31). For the UL/DL subfield in the U-SIG field of the ER preamble (Table 36-32, P422L60 in 802.11be spec draft D1.0), since the UPLINK\_FLAG and BSS\_COLOR are not defined in TXVECTOR for this case (because there is not a FORMAT for an ER preamble for EHT and beyond), we delete the text of how to set these subfields in their description and only use the explanation. An EHT R1 STA is not required to know how to set field values in the U-SIG field.  *Tgbe Editor: Please make changes for CID 4608 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx) |
| 4609 | 36.3.12.7 | 410.33 | The description ("Set to 1 if the PPDU is addressed to an AP.") would historically be a layer violation since to a large extent the 802.11 PHY is designed to operate within a STA that is an AP or a non-AP STA (or a mesh thingie ...), so has no particular need to know in what mode its MLME is operating. Even today, to promote layering, especially with virtualized APs and non-APs sitting atop the same PHY, it is a good design practice for the MAC to only inform the PHY what the PHY needs to know: i.e., by providing the PHY with the UL/DL parameter in the TXVECTOR. On receive the PHY may want to save power etc by ignoring PPDUs known not to be for it, and again the MAC should provide the minimum information needed by the PHY: i.e., how to perform this PPDU identification by configuring the PHY with knowledge of what filtering to apply (keep UL, keep DL, keep both UL and DL). Yes this is an issue for 11ax also. VHT provides a better model, where the LISTEN\_TO\_GID00 and LISTEN\_TO\_GID63 PHYCONFIG\_VECTOR parameters are provided in clause 8. | At P410L33, P418L33, P422L60, for TX, refer to the UL/DL parameter given by the TXVECTOR only; then for RX, add a PHYCONFIG\_VECTOR pertaining to UL/DL filtering and refer to that. The "to/from AP" language is probably still helpful but must be confined to a note. Another option (with all the problems described in the comment) is to add a PHYCONFIG\_VECTOR parameter to let the PHY know if is operating as an AP or as a non-AP. | Revised.  Agree to the comment. Make the proposed change in the UL/DL subfield and use the original text as explanation for the U-SIG field in EHT MU PPDU (Table 36-28). For the UL/DL subfield in the U-SIG field of the EHT TB PPDU (Table 36-31), there is no change because UPLINK\_FLAG is not defined in TXVECTOR for FORMAT being EHT\_TB. So, it is simply “set to 1”. For the UL/DL subfield in the U-SIG field of the ER preamble (Table 36-32, P422L60 in 802.11be spec draft D1.0), since the UPLINK\_FLAG is not defined in TXVECTOR for this case (because there is not a FORMAT for an ER preamble for EHT and beyond), we delete the text of how to set the subfields and the reference to UPLINK\_FLAG in the description and only use the explanation. An EHT R1 STA is not required to know how to set field values in the U-SIG field.  Where to pass subfields in the U-SIG field at Rx is not a concern of the U-SIG subclause. No text regarding Rx behavior is added.  Note to editor: This CID 4609 is also resolved in CID 4608. No additional change is needed. |
| 4669 | 36.3.12.7 | 410.40 | "See the TXVECTOR parameter xxxx" is weak since actually the PHY needs to populate this field with the TXVECTOR parameter provided by the MAC | Change "See" to "Set to". Ditto P422L63, BSS\_COLOR in this table and at P418L37 and P423L8. | Revised.  Agree to the comment. Make the proposed change to the BSS\_color subfield in the U-SIG field of EHT MU PPDU (Table 36-28) and EHT TB PPDU (Table 36-31). But for the U-SIG field of the ER preamble (Table 36-32), the TXVECTOR parameter BSS\_COLOR is undefined. Therefore, delete the original reference to the TXVECTOR parameter BSS\_COLOR.  Note to editor: This CID 4669 is also resolved in CID 4608. No additional change is needed. |
| 5477 | 36.3.12.7 | 418.33 | UL/DL for EHT TB PPDU: Validate for 0 | Add "Value 0 is Validate" | Revised.  Agree to the comment. Change the proposed solution to “A value of 0 is Validate.”  *Tgbe Editor: Please make changes for CID 5477 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx) |
| 7204 | 36.3.12.7 | 418.32 | UL/DL field is described as "Set to 1 to indicate that the PPDU is addressed to the AP.". Since this is a TB PPDU, this will always be the case. Wouldn't it be better to define it as a Validate bit in this case? | Make B6 Validate for TB PPDU | Revised.  Agree to the comment. Add a sentence “A value of 0 is Validate.”  Note to editor: This CID 7204 has same resolution to CID 5477. No additional change is needed. |

***Instructions to the editor:***

**Please make the changes to P558L32-L44 in 802.11be spec draft D1.4 (original P410L32-L43 in 802.11be spec draft D1.0) as shown below for CID 4608, 4609, 4669:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B6 | UL/DL | 1 | (#5410)Indicates whether the PPDU is sent in UL or DL. Set to the TXVECTOR parameter UPLINK\_FLAG.  A value of 1 indicates the PPDU is addressed to an AP.  A value of 0 indicates the PPDU is addressed to a non-AP STA. |
|  | B7–B12 | BSS Color | 6 | An identifier of the BSS.  Set to the TXVECTOR parameter BSS\_COLOR. |

***Instructions to the editor:***

**Please make the changes to P566L31-L37 in 802.11be spec draft D1.4 (original P418L35-L37 in 802.11be spec draft D1.0) as shown below for CID 4608, 4609, 4669, 5477, 7204:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B6 | UL/DL | 1 | Set to 1 to indicate that the PPDU is addressed to the AP.  A value of 0 is Validate. |
| B7–B12 | BSS Color | 6 | An identifier of the BSS.  Set to the TXVECTOR parameter BSS\_COLOR. |

***Instructions to the editor:***

**Please make the changes to P569L58-L65 in 802.11be spec draft D1.4 (original P422L60-P423L10 in 802.11be spec draft D1.0) as shown below for CID 4608, 4609, 4669:**

## Table 36-32—U-SIG field of an ER preamble

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B6 | UL/DL | 1 | (#2769)Indicates whether the PPDU is sent in UL or DL.  A value of 1 indicates the PPDU is addressed to an AP.  A value of 0 indicates the PPDU is addressed to a non-AP STA. |
| B7–B12 | BSS Color | 6 | An identifier of the BSS. |

# CID 5412, 7207, 7201

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 5412 | 36.3.12.7 | 423.35 | Change "disregard" to "Disregard". Ditto P423L39. | Please refer to my comment. | Accepted.  Note to editor: This is in P560L26/30 in 802.11be spec draft D1.4 (original P423L35/39 in 802.11be spec draft D1.0). |
| 7207 | 36.3.12.7 | 423.35 | Use consistent spelling: "disregard" or "Disregard"? | See comment | Revised.  Change to “Disregard” for consistency.  Note to editor: This CID 7207 has same resolution to CID 5412. No additional change is needed. |
| 7201 | 36.3.12.7 | 411.07 | "Set to all 1s and Disregard ...". Set to all 1s applies at the transmitter, disregard applies at the receiver. | Change to "Set to all 1s at the transmitter and Disregard at the receiver ...". Check for other instances as well. | Revised.  Agree to the comment that the sentence could be revised for clarity. No need to clarify “at the transmitter” because how to set the field value is at the transmitter. “Disregard” and “Validate” and the corresponding receiver behaviors are defined in the beginning of this subclause, they’re no longer verbs. Therefore, change “Disregard” to “treat as Disregard”. The entire phrase is changed to “Set to all 1s and treat it as Disregard” for better clarity. Also change other similar instances for Disregard/Validate fields.  Change “Set to all 1s and Disregard” to “Set to all 1s and treat it as Disregard” for the following locations in 802.11be spec draft D1.4: P559L7, P570L26/30 (corresponding to the following locations in 802.11be spec draft D1.0: P411L7, P423L35/39).  Change “Set to the value of the TXVECTOR parameter TB\_DISREGARD\_IN\_USIG1 and Disregard” to “Set to the value of the TXVECTOR parameter TB\_DISREGARD\_IN\_USIG1 and treat it as Disregard” in P566L57 in 802.11be spec draft D1.4 (corresponding to P419L7 in 802.11be spec draft D1.0).  Change “Set to the value of the TXVECTOR parameter TB\_DISREGARD\_IN\_USIG2 and Disregard” to “Set to the value of the TXVECTOR parameter TB\_DISREGARD\_IN\_USIG2 and treat it as Disregard” in P569L7 in 802.11be spec draft D1.4 (corresponding to P422L7 in 802.11be spec draft D1.0).  Change “Set to 1 and Validate” to “Set to 1 and treat it as Validate” for the following locations in 802.11be spec draft D1.4: P559L11/38, P560L56 (corresponding to the following locations in 802.11be spec draft D1.0: P411L11/38, P412L54).  Change “Set to the value of the TXVECTOR parameter TB\_VALIDATE\_IN\_USIG2 and Validate” to “Set to the value of the TXVECTOR parameter TB\_VALIDATE\_IN\_USIG2 and treat it as Validate” in P567L17 in 802.11be spec draft D1.4 (corresponding to P419L29 in 802.11be spec draft D1.0).  *Tgbe Editor: Please make changes for CID 7201 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-0078-02-00be-cc36-comment-resolution-on-u-sig-part-5.docx) |

***Instructions to the editor:***

**Please make the changes to P559L7-L13 in 802.11be spec draft D1.4 (original P411L7-L13 in 802.11be spec draft D1.0) as shown below for CID 7201, 8006:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B20–B24 | Disregard | 5 | Set to all 1s and treat as Disregard. |
| B25 | Validate | 1 | Set to 1 and treat as Validate. |

***Instructions to the editor:***

**Please make the changes to P559L38-L41 in 802.11be spec draft D1.4 (original P411L38-L41 in 802.11be spec draft D1.0) as shown below for CID 7201, 8006:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-2 | B2 | Validate | 1 | (#2796)Set to 1 and treat as Validate. |

***Instructions to the editor:***

**Please make the changes to P560L56-L59 in 802.11be spec draft D1.4 (original P412L54-L56 in 802.11be spec draft D1.0) as shown below for CID 7201, 8006:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-2 | B8 | Validate | 1 | (#2796)Set to 1 and treat as Validate. |

***Instructions to the editor:***

**Please make the changes to P566L57-L64 in 802.11be spec draft D1.4 (note that original P419L7-L16 in 802.11be spec draft D1.0 has been revised) as shown below for CID 7201:**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B20–B25 | Disregard | 6 | (#8012)(#4607)((#1563)(#2794)Set to  the value indicated in the Disregard In U-SIG-1 subfield in the Special User Info field in the Trigger frame and treat as Disregard. See Table 9- 53d (Mapping from Special User Info field to U-SIG-1 and U-SIG-2 fields in the EHT TB PPDU(#4607)). |

***Instructions to the editor:***

**Please make the changes to P567L17-L25 in 802.11be spec draft D1.4 (note that original P419L28-L39 in 802.11be spec draft D1.0 has been revised) as shown below for CID 7201, 8006:**

## 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 | B2 | Validate | 1 | (#8012)(#4607)(#1563)(#2794)(#279  6)Set to the value indicated in the Validate In U-SIG-2 subfield in the Special User Info field in the Trigger frame and treat as Validate. See Table 9-53d (Mapping from Special User Info field to U-SIG-1 and U-SIG-2 fields in the EHT TB PPDU(#4607)). The default value is 1. |

***Instructions to the editor:***

**Please make the changes to P569L7-L15 in 802.11be spec draft D1.4 (note that original P422L7-L16 in 802.11be spec draft D1.0 has been revised) as shown below for CID 7201, 8006:**

## 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 | B11–B15 | Disregard | 5 | (#8012)(#4607)(#1563)(#2794)Set to  the value indicated in the Disregard In U-SIG-2 subfield in the Special User Info field in the Trigger frame and treat as Disregard. See Table 9-53d (Mapping from Special User Info field to U-SIG-1 and U-SIG-2 fields in the EHT TB PPDU(#4607)). |

***Instructions to the editor:***

**Please make the changes to P570L26-L32 in 802.11be spec draft D1.4 (original P423L35-L41 in 802.11be spec draft D1.0) as shown below for CID 7201, 8006:**

## Table 36-32—U-SIG field of an ER preamble

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B20–B25 | Disregard | 6 | Set to all 1s and treat as Disregard. |
| U-SIG-2 | B0–B15 | Disregard | 16 | Set to all 1s and treat as Disregard. |

# CID 5819

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 5819 | 36.3.12.7 | 412.64 | It is better to add "This value shall be the same in every 80 MHz subblock" in the description column for EHT-SIG MCS. | as in the comment | Rejected.  P557L45-L54 in 802.11 be spec draft D1.4 as well as the comment resolution to CID 8005 (in <https://mentor.ieee.org/802.11/dcn/21/11-21-1165-01-00be-cc36-comment-resolution-on-u-sig-part-3.docx>) have clarified what U-SIG contents need to be identical in entire PPDU bandwidth and what U-SIG contents may vary in different 80MHz frequency subblocks under what condition. No need to clarify this in each subfield description. |

# CID 6997

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 6997 | 36.3.12.7 | 411.07 | Using Disregard sequence of all 1s in the U-SIG field of an MU PPDU leads to un-necessarily high PAPR of the U-SIG symbols. This should be changed. | Replace the all 1s sequence with a different fixed sequence, preferably '01001' which is optimized to lower the PAPR. I will bring a proposal to discuss this. | Rejected.  No passed SP/Motion supports this comment and proposed change. |