IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | D2.0 Comment Resolution on U-SIG Part 3 | | | | | | Date: 2022-07-14 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Alice Chen | Qualcomm |  |  | alicel@qti.qualcomm.com | | Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com | | Youhan Kim | Qualcomm |  |  | youhank@qti.qualcomm.com | | Leonardo Lanante | Ofinno |  |  | llanante@ofinno.com | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for the following comments on P802.11be D2.0: Comments in 36.3.12.7.2.

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 10744, 11211, 12069, 12847, 13988.

# CID 10744, 12069, 12847

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 12069 | 36.3.12.7.2 | 642.14 | "The U-SIG field is designed to bring forward compatibility to the EHT preamble via the introduction of version independent fields. These are the fields that will be consistent in location and interpretation across multiple IEEE 802.11 PHY clauses." With this definition, the CRC and Tail should be considered Version Independent fields. They don't carry any message but are required to be consistent in location and interpretation | Clarify whether CRC and Tail of U-SIG is version independent or not. | Revised.  Agree to the comment that the CRC and Tail fields satisfy the definition of the version independent fields defined in this subclause. We revised the pargarph in P642L13-25 to clarify this. We also deleted the sentences on the bit ranges of version (in)dependent fields before each table of the U-SIG content, due to redundancy.  Instruction to editor:  *Please make changes for CID 12069 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx) |
| 10744 | 36.3.12.7.2 | 642.20 | The bit content in the version independent field may change in different versions such as PHY Version Identifier field. | suggest change from "bits" to "fields" in th phrase "... version independent bits followed by version dependent bits..." And, if agreed, change B0-B19 to B3-B19 on P643L14, and preferably add the clarification on "version (in)dependent bits" vs. "version (in)dependent field." | Revised.  Firstly, it is fine to change “bits” to “fields” in this sentence, because “fields” is more appropriate. To unify terminologies, could also change other “version (in)dependent bits/content” to “version (in)dependent fields” and the related sentences accordingly. Secondly, disagree to change B0-B19 to B3-B19 on P643L14. The reason is the PHY Version Identifier field (B0-B2) is a version independent field, because it’s intended to be consistent in location and interpretation across multiple IEEE 802.11 PHY clauses. Note that the related sentences were deleted in the resolution of CID 12069. Lastly, the definitions of version (in)dependent fields are in P642L14-19. We further revised the text clarify what fields are version independent fields in the paragraph in P642L13-25.  Instruction to editor:  *Please make changes for CID 13988 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx) |
| 12847 | 36.3.12.7.2 | 642.19 | Prefer to use "fields" rather than "bits" in this sentence. | Change the sentence to "The U-SIG field includes version independent fields followed by version dependent fields." | Accepted.  Instruction to editor:This CID 12847 is resolved in the resolution to CID 10744. No need to make any change. |

***Instructions to the editor:***

**Note that those changes were from previous CID resolutions and irrelated to changes addressed in this document.**

**Please make the changes to P642L13-38 as shown below for CID 10744, 12069 and 12847:**

The U-SIG field is designed to bring forward compatibility to the EHT preamble via the introduction of version independent fields. These are the fields that will be consistent in location and interpretation across multiple IEEE 802.11 PHY clauses. The intent of the version independent fields is to achieve better coexistence among IEEE 802.11 PHY clauses that are defined for 2.4, 5, and 6 GHz spectrum from Clause 36 (Extremely high throughput (EHT) PHY specification) onwards. In addition, the U-SIG field can have some version dependent fields that are fields specific to an IEEE 802.11 PHY clause. The U-SIG field includes, 5 version independent fields, i.e., PHY Version Identifier, Bandwidth, UL/DL, BSS Color and TXOP, followed by the version dependent fields, and version independent CRC and Tail fields at the end. The purpose of the PHY Version Identifier is to simplify detection for IEEE 802.11 PHY clauses that are defined for 2.4, 5, and 6 GHz spectrum from Clause 36 (Extremely high throughput (EHT) PHY specification) onwards, i.e., the value of this field is used to identify the exact PHY version starting with EHT.

The length of the U-SIG field for EHT MU PPDU and EHT TB PPDU is two OFDM symbols. For forward compatibility, EHT also defines the U-SIG field of an ER preamble while not defining an ER PPDU with the PHY Version Identifier field in the U-SIG equal to 0 (EHT) for an EHT STA. An EHT STA shall be able to decode and interpret the version independent fields in the U-SIG field of an ER preamble that may be introduced in IEEE 802.11 PHY clauses that are defined for 2.4, 5, and 6 GHz spectrum from Clause 36 (Extremely high throughput (EHT) PHY specification) onwards. Regardless of the value of the PHY Version Identifier field in U-SIG field, an EHT STA shall defer for the duration of the PPDU as defined in 36.3.22 (EHT receive procedure), report the information from the version independent fields within the RXVECTOR, and terminate the reception of the PPDU. The length of the U-SIG field for an ER preamble is four OFDM symbols.

**Please make the changes to P643L13-15 as shown below for CID 10744 and 12069:**

The U-SIG field for an EHT MU PPDU contains the fields listed in Table 36-28 (U-SIG field of an EHT MU PPDU).

**Please make the changes to P651L1-2 as shown below for CID 10744 and 12069:**

The U-SIG field for an EHT TB PPDU contains the fields listed in Table 36-31 (U-SIG field of an EHT TB PPDU).

**Please make the changes to P654L1-2 as shown below for CID 10744 and 12069:**

The U-SIG field for an ER preamble contains the fields listed in Table 36-32 (U-SIG field of an ER preamble).

# CID 13988

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 13988 | 36.3.12.7.2 | 642.37 | According to this sentence, a STA reports information from the version independent fields within the RXVECTOR regardless of the PHY Version Identifier field. However, the RXVECTOR parameter FORMAT and other RXVECTOR parameters are not defined when the PHY Version Identifier field does not indicate EHT. | Define the RXVECTOR parameter FORMAT for the case when the PHY Version Identifier field does not indicate EHT, and define other RXVECTOR parameters for that case. | Revised.  Agree to the comment that need to define one RXVECTOR parameter FORMAT for beyond EHT versions, and a few other RXVECTOR parameters for the version independent fields of that FORMAT case.  Instruction to editor:  *Please make changes for CID 13988 as shown in the following document*  [*https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx*](https://mentor.ieee.org/802.11/dcn/22/11-22-1100-00-00be-d2.0-comment-resolution-on-u-sig-part-3.docx) |

***Instructions to the editor:***

**Please make the changes to P547L52-P548L2 as shown below for CID 13988:**

The parameters in Table 36-1 (TXVECTOR and RXVECTOR parameters) are defined as part of the TXVECTOR parameter list in the PHY-TXSTART.request primitive for PPDU transmitting and/or as part of the RXVECTOR parameter list in the PHY-RXSTART.indication and PHY-RXEND.indication primitives for PPDU receiving. If the RXVECTOR parameter FORMAT is PHY\_VER\_GT\_0, then the RXVECTOR contains only five parameters – FORMAT, CH\_BANDWIDTH, TXOP\_DURATION, BSS\_COLOR and UPLINK\_FLAG.

**Please make the changes to P548L14-34 (in Table 36-1) as shown below for CID 13988:**

**Table 36-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| FORMAT |  | Determines the format of the PPDU. Enumerated type:  NON\_HT indicates Clause 15, Clause 16, Clause 17, Clause 18, or non-HT duplicate PPDU format. In this case, the modulation is determined by the NON\_HT\_MODULA- TION parameter defined in Table 19-1 (TXVECTOR and RXVECTOR parameters).  HT\_MF indicates HT-mixed format. HT\_GF indicates HT-greenfield format. VHT indicates VHT format.  HE\_SU indicates HE SU PPDU format. HE\_MU indicates HE MU PPDU format. HE\_ER\_SU indicates HE ER SU PPDU format. HE\_TB indicates HE TB PPDU format.  EHT\_MU indicates EHT MU PPDU format. EHT\_TB indicates EHT TB PPDU format.  PHY\_VER\_GT\_0 indicates a PPDU with the PHY Version Identifier field in the U-SIG having a value greater than 0.  The enumerated type PHY\_VER\_GT\_0 is not used in the TXVECTOR. | Y | Y |
|  |  |  |  |

**Please make the changes to P552L26-38 (in Table 36-1) as shown below for CID 13988:**

**Table 36-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| CH\_BANDWIDTH | FORMAT is EHT\_MU or EHT\_TB | Indicates the channel width of the PPDU. Enumerated type:  CBW20 for 20 MHz. CBW40 for 40 MHz. CBW80 for 80 MHz. CBW160 for 160 MHz. CBW320-1 for 320 MHz-1. CBW320-2 for 320 MHz-2. | Y | Y |
| FORMAT is PHY\_VER\_GT\_0 | Indicates the channel width of the PPDU. Enumerated type:  CBW20 for 20 MHz. CBW40 for 40 MHz. CBW80 for 80 MHz. CBW160 for 160 MHz. CBW320-1 for 320 MHz-1. CBW320-2 for 320 MHz-2. | N | Y |
| Otherwise | See corresponding entry in Table 19-1 (TXVECTOR and RXVECTOR parameters), Table 21-1 (TXVECTOR and RXVECTOR parameters), or Table 27-1 (TXVECTOR and RXVECTOR parameters). | | |

**Please make the changes to P554L30-54 (in Table 36-1) as shown below for CID 13988:**

**Table 36-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| TXOP\_DURATION | FORMAT is EHT\_MU or EHT\_TB | Indicates the TXOP duration. Enumerated type or integer:  UNSPECIFIED indicates no NAV value specified. 0–8448 indicates a value in units of 1 µs that is used to update the NAV for this TXOP (see 26.2.4 (Updating two NAVs)).  The TXOP subfield in U-SIG is computed from the TXVECTOR parameter TXOP\_DURATION as follows:  TXOP\_DURATION = UNSPECIFIED: TXOP = 127. TXOP\_DURATION < 512:  TXOP = 2 × floor(TXOP\_DURATION/8).  Otherwise: TXOP = 2 × floor((TXOP\_DURATION – 512)/ 128) + 1.  The RXVECTOR parameter TXOP\_DURATION is computed from the value of the TXOP subfield in U-SIG as follows:  TXOP = 127: TXOP\_DURATION = UNSPECIFIED.  TXOP is an even number: TXOP\_DURATION = 8 × TXOP/2.  Otherwise: TXOP\_DURATION = 512 + 128 × (TXOP – 1)/2. | Y | Y |
| FORMAT is PHY\_VER\_GT\_0 | Indicates the TXOP duration. Enumerated type or integer:  UNSPECIFIED indicates no NAV value specified. 0–8448 indicates a value in units of 1 µs that is used to update the NAV for this TXOP (see 26.2.4 (Updating two NAVs)).  The RXVECTOR parameter TXOP\_DURATION is computed from the value of the TXOP subfield in U-SIG as follows:  TXOP = 127: TXOP\_DURATION = UNSPECIFIED.  TXOP is an even number: TXOP\_DURATION = 8 × TXOP/2.  Otherwise: TXOP\_DURATION = 512 + 128 × (TXOP – 1)/2. | N | Y |
| Otherwise | See corresponding entry in Table 27-1 (TXVECTOR and RXVECTOR parameters). | | |

**Please make the changes to P558L29-42 (in Table 36-1) as shown below for CID 13988:**

**Table 36-1—TXVECTOR and RXVECTOR parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| BSS\_COLOR | FORMAT is EHT\_MU or EHT\_TB | Set to a value in the range of 0 to 63 (see 35.12.1.4 (BSS\_COLOR)). | Y | Y |
| FORMAT is PHY\_VER\_GT\_0 | It is a value in the range of 0 to 63 (see 35.12.1.4 (BSS\_COLOR)). | N | Y |
| Otherwise | See corresponding entry in Table 27-1 (TXVECTOR and RXVECTOR parameters). | | |
| UPLINK\_FLAG | FORMAT is EHT\_MU | Set to 1 if the PPDU is addressed to an AP. Set to 0 otherwise. | Y | Y |
| FORMAT is PHY\_VER\_GT\_0 | 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. | N | Y |
| FORMAT is EHT\_TB | Not present. | | |
| Otherwise | See corresponding entry in Table 27-1 (TXVECTOR and RXVECTOR parameters). | | |

# CID 11211

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 11211 | 36.3.12.7.2 | 651.28 | Table 36-31: for an arbitrary receiver that is not the triggering AP, it is impossible to implement Validate behavior for UL/DL = 0 in an EHT TB PPDU, since such a receiver relies on the combination of UL/DL=1 and and PPDU type = 0 to infer a TB PPDU in the first place. | Remove "A value of 0 is Validate." | Accepted. |