IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | LB271 Comment Resolution on U-SIG Part 3 | | | | | | Date: 2023-03-10 | | | | | | 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 LB271 comments on P802.11be D3.0: 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 CID 15773, 16637, 16638, 16639, 16640, 17205, 17206, 17207.

# CID 15773, 16637, 16638

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 15773 | 36.3.12.7.2 | 763.32 | Why EHT has to define the U-SIG field of ER preamble despite not defining an ER PPDU for EHT? Currently, ER preamble is not used in any EHT PPDU formats. If it is for forward compatibility, we can conduct the classification by the PHY Version Identifier field. | Delete all related to the ER preamble. | Revised.  EHT defines an ER preamble for forward compatibility, but not an EHT ER PPDU. An EHT STA does not transmit the ER preamble but is required to be able to receive an ER preamble and interpret the version independent fields in the U-SIG field. The U-SIG field of an ER preamble is given here for the purpose of interpretation of version independent fields. The U-SIG field of an ER preamble is identified based on its 4-symbol structure with QBPSK modulation on the 2nd symbol without ambiguity. On top of that, the PHY Version Identifier field in U-SIG further differentiates the PHY version of the ER preamble. The U-SIG field structure and content in an ER preamble need to be defined to make sure forward compatibility. We could add one sentence in the beginning of the paragraph before Table 36-32 to state the intent of giving Table 36-32.  Instruction to editor: Add the following sentence in P775L1 in the beginning of the paragraph before Table 36-32: “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.” |
| 16637 | 36.3.12.7.2 | 763.44 | There are some cases which are not specified as Validate nor Disregard. For example, EHT-SIG MCS = 3 and EHT-SIG Symbols < 3. In this kind of case, what is correct receiver behavior? | Please clarify. | Rejected.  Such cases of invalid combinations of parameter values will lead to error in EHT-SIG reception, e.g., an invalid CRC. The corresponding receiver behavior has been defined in 36.3.23 (EHT receive procedure), not in the U-SIG subclause. |
| 16638 | 36.3.12.7.2 | 764.03 | In TB PPDU, there is a case where not all nonpunctured 20MHz channel is not transmitted. Use different language than nonpunctured. | P764L2-4. Modify text as follows: From "For a 160/320 MHz EHT TB PPDU, the U-SIG content shall be identical in all nonpunctured 20 MHz subchannels within the PPDU bandwidth." to "For an EHT TB PPDU, the U-SIG content shall be identical in all 20 MHz channels within the STA's EHT modulated fields are occupied." | Revised.  Agree to the comment and the idea of the proposed change. Revised the proposed change.  Instruction to editor: Please make changes for CID 16638 as shown in the following document:  <https://mentor.ieee.org/802.11/dcn/23/11-23-0446-00-00be-lb271-comment-resolution-on-u-sig-part-3.docx> |

***Instructions to the editor:***

**Please make the changes to P763L62-P764L8 in 802.11be spec D3.0 for resolution to CID 16638 as shown below:**

For a 40 MHz EHT PPDU or ER preamble, the U-SIG field content shall be identical in both 20 MHz subchannels. For an 80 MHz EHT MU PPDU or ER preamble, the U-SIG field content shall be identical in all nonpunctured 20 MHz subchannels. For a 160/320 MHz EHT MU PPDU or ER preamble, the U-SIG field content shall be identical in all nonpunctured 20 MHz subchannels within each 80 MHz frequency subblock, and the U-SIG field content in different 80 MHz frequency subblocks may be different. For an 80/160/320 MHz EHT TB PPDU, the U-SIG content shall be identical in all nonpunctured 20 MHz subchannels where the non-AP EHT STA’s EHT modulated fields are occupied. An EHT MU PPDU with TXVECTOR parameter EHT\_PPDU\_TYPE equal to 1 or 2 has the same U-SIG content for all nonpunctured 20 MHz subchannel for all PPDU bandwidths. Only the Punctured Channel Information field might have different values between different 80 MHz frequency subblocks in an EHT MU PPDU with TXVECTOR parameter EHT\_PPDU\_TYPE equal to 0.

# CID 17205

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 17205 | 36.3.12.7.2 | 773.07 | "If the UL/DL field is set to 1: Set to 0 for a TB PPDU. Values of 2 and 3 are Validate.". Why is there condition "If the UL/DL field is set to 1"? Shouldn't this always be the case for a TB PPDU? If not, then what should be done if the UL/DL field is set to 0? | Remove condition "If the UL/DL field is set to 1" or specify what should be done if If the UL/DL field is set to 0. | Revised.  Agree to the comment that in the U-SIG field of an EHT TB PPDU, the UL/DL field is always 1. Agree to remove this condition.  Instruction to editor: Remove “If the UL/DL field is set to 1:” in P773L7 and the indentation of the two following paragraphs. |

# CID 16640

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 16640 | 36.3.12.7.2 | 775.01 | Shall an EHT STA be able to decode ER preamble format (four U-SIG)? | Make ER preamble reception as a mandatory requirement | Revised.  An EHT STA shall be able to decode the version independent fields in U-SIG of an ER preamble. An EHT STA’s receiver behavior when an ER preamble is received is defined in the U-SIG subclause (P763L33-L41). Agree to the proposed change that should make ER preamble reception a mandatory requirement. This change should be made in 36.1.1.  Instruction to editor: Add one bullet paragraph in P660L42 under “An EHT STA shall support…” as following: “Reception of the U-SIG field in an ER preamble as described in 36.3.12.7.” |

# CID 16639, 17206, 17207

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 16639 | 36.3.12.7.2 | 775.01 | In ER preamble, PHY Version Identifier is set to 0 for EHT. Since we are not defining ER PPDU for EHT, there will be almost no usage for ER Preamble with PHY Version Identifier = 0. | Any value in the PHY Version Identifier shall be Validate for ER Preamble. | Revised.  Agree to the comment and accept idea of the proposed change.  Instruction to editor: In P775L13, change “Set to 0 for EHT. Values 1–7 are Validate.” to “Values 0-7 are Validate.” |
| 17206 | 36.3.12.7.2 | 775.35 | The description of the TXOP field in Table 36-32 is different from the description of the same field in e.g. Table 36-31 | Make consistent | Rejected.  Agree that the description of the TXOP field in the U-SIG of an ER preamble is different from that in the U-SIG of an EHT MU PPDU or EHT TB PPDU. The description of the TXOP field in the U-SIG of an EHT MU PPDU, EHT TB PPDU and an ER preamble were revised together in the following CC36 comment resolution: <https://mentor.ieee.org/802.11/dcn/22/11-22-0472-00-00be-cc36-comment-resolution-on-u-sig-part-7.docx>. Note that the description of the TXOP field in the U-SIG of an EHT MU PPDU or EHT TB PPDU is from the transmitter point of view (i.e., how to set its value), just like other fields in U-SIG. But since the U-SIG of an ER preamble is not defined with intention for transmission by an EHT STA (note that the TXVECTOR TXOP\_DURATION is not defined in this case), the TXOP field is described from the receiver point of view (i.e., how to interpret it and use it to derive the TXOP duration) instead. Therefore, they could not be made consistent. |
| 17207 | 36.3.12.7.2 | 775.46 | B20-25 of U-SIG1 and B0-B15 of U-SIG2 are all set to ones. That's a lot of consecutive ones. Since they're all "disregard" and we don't specify transmission of an ER PPDU, should we even mention the values? "set to all 1s" only makes sense if we intend to transmit. | See comment | Revised.  In the spec, the default value of a field should be given for completeness, so that the receiver knows what value to look for. Agree to the comment that “set ot all 1’s” only makes sense if an EHT STA intend to transmit the U-SIG field of an ER preamble. Revised the description to be from the receiver’s perspective. Also revised the description of the Bandwidth and Tail fields for this reason.  Instruction to editor: Please make changes for CID 17207 as shown in the following document:  [https://mentor.ieee.org/802.11/dcn/23/11-23-0446-00-00be-lb271-comment-resolution-on-u-sig-part-3.docx](https://mentor.ieee.org/802.11/dcn/23/11-23-xxxx-00-00be-lb271-comment-resolution-on-u-sig-part-3.docx) |

***Instructions to the editor:***

**Please make the changes to P775L5-L58 (Table 36-32) in 802.11be spec D3.0 for resolution to CID 16639 and 17207 as shown below:**

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

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| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-1 | B0–B2 | PHY Version Identifier | 3 | Differentiate between different PHY clauses Values 0–7 are Validate. |
| B3–B5 | Bandwidth | 3 | A value of 0 indicates 20 MHz.  A value of 1 indicates 40 MHz.  A value of 2 indicates 80 MHz.  A value of 3 indicates 160 MHz.  A value of 4 indicates 320 MHz-1.  A value of 5 indicates 320 MHz-2.  See definition of 320 MHz-1 and 320 MHz-2 in [36.3.24.2 (Channelization for 320 MHz](#bookmark329) [channel)](#bookmark329).  Values 6 and 7 are Validate. |
| B6 | UL/DL | 1 | 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 that PPDU is addressed to a non-AP STA. |
| B7–B12 | BSS Color | 6 | An identifier of the BSS. |
| B13–B19 | TXOP | 7 | Indicates a scaled version of the TXOP duration. The TXOP duration could be derived as follows:  If TXOP = 127, the TXOP duration is unspecified.  If TXOP is an even number, the TXOP duration is 8  TXOP/2 µs.  Otherwise, the TXOP duration is 512 + 128 (TXOP – 1)/2 µs. |
| B20–B25 | Disregard | 6 | The default values are all 1’s. Treat as Disregard. |
| U-SIG-2 | B0–B15 | Disregard | 16 | The default values are all 1’s. Treat as Disregard. |
| B16–B19 | CRC | 4 | CRC for bits 0–41 of the U-SIG field. Bits 0– 41 of the U-SIG field correspond to bits 0–25 of U-SIG-1 field followed by bits 0–15 of U- SIG-2 field. The CRC computation uses the same polynomial as that in 27.3.11.7.3 (CRC computation). |
| B20–B25 | Tail | 6 | Used to terminate the trellis of the convolutional decoder. The value is 0. |