IEEE P802.11
Wireless LANs

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| CC50 CR on U-SIG Part 2 |
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| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Alice Chen | Qualcomm |  |  | alicel@qti.qualcomm.com |
| Sameer Vermani | Qualcomm |  |  | svverman@qti.qualcomm.com |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11bn D0.1. The changes are based on P802.11bn D0.1.

The submission provides resolutions to the following CIDs in the U-SIG subclause 38.3.15.7.2

* 4, 7, 179, 313, 318, 319, 587, 588, 1156, 1161, 1162, 2707, 3506

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revised the resolutions to CIDs 319, 588

**3 CIDs in the paragraphs before the U-SIG tables:**

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 313 | Sigurd Schelstraete | 38.3.15.7.2 | 144.04 | "For further details on the receive behavior when encountered with Validate and Dis-regard fields or any field as being set to a value identified as Validate or Disregard, refer to 36.3.23 (EHT receive procedure) and 38.3.26 (UHR receive procedure).". Why is the reference to EHT receive procedure needed for a UHR receiver? | Clarify | Revised.The EHT receive procedure subclause was referred to because guidelines of how to proceed the Disregard/Validate fields or field values were given in that subclause. Agree that it is better to make the UHR Receive procedure subclause self-contained and no need to refer to the EHT receive subclause.Instruction to editor: Apply the changes marked as [#313] in 11-25/0588r1. |
| 1156 | Dong Guk Lim | 38.3.15.7.2 | 144.27 | The characteristic of ELR PPDU is already defined in the clause 38.3.8. So, the following sentence is redundant."A UHR ELR PPDU is only defined as a 20MHz PPDU. " Delete it. | As the comment. | Revised.Agree that we don’t duplicate the definition of the bandwidth of an ELR PPDU in this subclause. The original sentence was intended to describe the bandwidth of the U-SIG field. Change the sentence to describe the bandwidth of the U-SIG field, as in parallel to the bandwidth and frequency duplication description of the U-SIG field in MU and TB PPDUs.Instruction to editor: Apply the changes marked as [#1156] in 11-25/0588r1. |
| 2707 | Genadiy Tsodik | 38.3.15.7.2 | 144.34 | U-SIG fields are defined for DL CoBF and DL CoSR PPDUs only. It remains UL transmissions corresponding CoBF and CoSR not defined and thus CoBF and CoSR incomplete | Suggest define a relevant configurations to TB PPDU corresponding to CoBF/CoSR DL PPDU (for example ACK transmission) to complete the design of CoBF/CoSR procedures | Rejected.There is no passed motion to support the proposed change. |

**Instruction to editor:**

Please apply the changes in the following paragraphs to 38.3.15.7.2 in P153 of D0.2.

* Content

The U-SIG field in the UHR preamble is designed for backward and forward compatibility. It includes 5 version independent fields (i.e., PHY Version Identifier, Bandwidth, UL/DL, BSS Color, and TXOP) in the beginning and CRC and Tail fields at the end, where each of these fields has consistency in location, bitwidth and interpretation across multiple IEEE 802.11 PHY clauses that are defined for 2.4 GHz, 5 GHz, and 6 GHz spectrum starting from Clause 36 (Extremely high throughput (EHT) PHY specification). In addition, the U-SIG field in the UHR preamble has some version dependent fields specific to UHR.

The length of the U-SIG field for a UHR MU PPDU, UHR TB PPDU and UHR ELR PPDU is two OFDM symbols.

Similar to their counterparts in the EHT preamble, reserved fields in the UHR preamble or reserved values of the fields in the UHR preamble are divided into two categories: Validate (which indicates whether to continue reception of a PPDU at an EHT or UHR STA) and Disregard (which has no impact on a UHR STA’s continued reception of the PPDU). For further details on the definition of these two categories, refer to 36.3.12.7.2 (Content). For further details on the receive behavior when encountered with Validate and Disregard fields or any field as being set to a value identified as Validate or Disregard, refer to [#313]38.3.27 (UHR receive procedure).

It is possible that a certain combination of U-SIG field values in a U-SIG field that indicates a valid CRC, leads to an invalid UHR-SIG CRC. Further details on receive behavior for the aforementioned case, can be found in 38.3.27 (UHR receive procedure).

For a 40 MHz UHR MU PPDU, the U-SIG field content shall be identical in both 20 MHz subchannels. For an 80 MHz UHR MU PPDU, the U-SIG field content shall be identical in all nonpunctured 20 MHz subchannels. For a 160 MHz or 320 MHz UHR MU PPDU, 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. A UHR MU PPDU with TXVECTOR parameter UHR\_PPDU\_TYPE equal to 1 or 2 has the same U-SIG content for all nonpunctured 20 MHz subchannel for all PPDU bandwidths. A UHR MU PPDU with TXVECTOR parameter UHR\_PPDU\_TYPE equal to 0 has the same U-SIG content for all nonpunctured 20 MHz subchannel for all PPDU bandwidths, except that the Punctured Channel Information field might have different values between different 80 MHz frequency subblocks. For a 40 MHz, 80 MHz, 160 MHz or 320 MHz UHR TB PPDU, the U-SIG content shall be identical in all nonpunctured 20 MHz subchannels where the non-AP UHR STA’s UHR modulated fields are occupied. The U-SIG field of a UHR ELR PPDU is only 20 MHz[#1156].

**6 CIDs in Table 38-19 (Combination of UL/DL field, PPDU Type And Compression Mode field and B2 of U-SIG-2) in D0.1, which is Table 38-20 in D0.2:**

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 4 | Jialing Li | 38.3.15.7.2 | 148.33 | Remove the editor's note in a later draft, e.g., D0.2, as the conflict has been resolved in D0.1. Same comment to the editor's note in P155L25. | Refer to the comment. | Accepted. |
| 179 | You-Wei Chen | 38.3.15.7.2 | 149.01 | Table 38-19 title, why only B2's field name is not applied? | name table 38-19 as 'Combination of UL/DL field, PPDU Type And Compression Mode field and Co-BF/Co-SRIndication field' | Rejected.All cases including MU, TB, ELR PPDUs and validate states are tabulated in this table. The table title and second row should mention “B2 of U-SIG-2” instead of “Co-BF/Co-SR Indication” because this bit is only defined as the “Co-BF/Co-SR Indication” in an MU PPDU but not in other cases. |
| 318 | Sigurd Schelstraete | 38.3.15.7.2 | 149.12 | Table header refers to "B2 of U-SIG-2". This bit is named "CoBF/coSR Indication". Use this name instead. | See comment | Rejected.All cases including MU, TB, ELR PPDUs and validate states are tabulated in this table. The table title and second row should mention “B2 of U-SIG-2” instead of “Co-BF/Co-SR Indication” because this bit is only defined as the “Co-BF/Co-SR Indication” in an MU PPDU but not in other cases. |
| 319 | Sigurd Schelstraete | 38.3.15.7.2 | 149.45 | Last row of Table 38-19 on page 149. How is this to be interpreted? Bit B2 of U-SIG-2 set to LSB of STAID?? | Clarify | Revised.If the PPDU Type And Compression Mode field is set to 3 in an ELR PPDU, the STA-ID field is B2-B12 of U-SIG-2. So, B2 of U-SIG-2 is set to the LSB of STA-ID. Add a note to explain that in this case, this bit is simply part of STA-ID and the PPDU format does not depend on this bit.Instruction to editor: Apply the changes marked as [#319] in 11-25/0588r1. |
| 1161 | Dong Guk Lim | 38.3.15.7.2 | 149.46 | ELR PPDU does not include the user field because it does not include the UHR-SIG field. Thus, it is wrong that the total number of user field for ELR PPDU is 1 in the table 38-19. | Correct it. | Revised.Agree that the title of the eighth column in the table may have ambiguity. This column was intended to describe the number of receivers (users) in MU and ELR PPDUs and the number of transmitters (users) in TB PPDUs. Revise the title of the eighth column for clarity.Instruction to editor: Apply the changes marked as [#1161, #1162] in 11-25/0588r1. |
| 1162 | Dong Guk Lim | 38.3.15.7.2 | 150.40 | ELR PPDU does not include the user field because it does not include the UHR-SIG field. Thus, it is wrong that the total number of user field for ELR PPDU is 1 in the table 38-19. | Correct it. | Revised.Agree that the title of the eighth column in the table may have ambiguity. This column was intended to describe the number of receivers (users) in MU and ELR PPDUs and the number of transmitters (users) in TB PPDUs. Revise the title of the eighth column for clarity.Instruction to editor: Apply the changes marked as [#1161, #1162] in 11-25/0588r1. |

**Instruction to editor:**

Please apply the changes in Table 38-20 in P159-P160 of D0.2.

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| * Combination of UL/DL field, PPDU Type And Compression Mode field and B2 of U-SIG-2
 |
| U-SIG fields or bits | Description |
| UL/DL | PPDU Type And Compression Mode | B2 of U-SIG-2 | UHR PPDU format | UHR-SIG present? | RU Allocation subfields present? | ELR MARK and ELR-SIG present? | Total number of User fields in MU PPDU or Total number of transmitters in TB PPDU or Number of receivers in [#1161, #1162]ELR PPDU | Note |
| 0 (DL) | 0 | 0 | - | - | - | - | - | Validate |
| 0 | 1 | UHR MU | Yes | Yes | No | ≥ 1 | DL OFDMA (including non-MU-MIMO and MU-MIMO). |
| 1 | 0 | UHR MU  | Yes | No | No | 1 | DL SU Co-SR transmission. |
| 1 | 1 | UHR MU  | Yes | No | No | 1 | UHR SU transmission that is not addressed to an AP. |
| 2 | 0 | UHR MU  | Yes | No | No | >1 across two BSSs | DL non-OFDMA Co-BF transmission. |
| 2 | 1 | UHR MU  | Yes | No | No | >1 | DL non-OFDMA MU-MIMO. |
| 3 | LSB of STA-ID | UHR ELR | No | No | Yes | 1 | UHR ELR transmission that is not addressed to an AP. |
| 1 (UL) | 0 | 0 | - | - | - | - | - | Validate |
| 0 | 1 | UHR TB | No | No | No | ≥ 1 | UL OFDMA or UL non-OFDMA (including non-MU-MIMO and MU-MIMO). |
| 1 | 0 | - | - | - | - | - | Validate |
| 1 | 1 | UHR MU | Yes | No | No | 1 | UHR SU transmission that is addressed to an AP. |
| 2 | 0 or 1 | - | - | - | - | - | Validate |
| 3 | LSB of STA-ID | UHR ELR | No | No | Yes | 1 | UHR ELR transmission that is addressed to an AP. |

NOTE 1—If the PPDU Type And Compression Mode field is set to 3, B2 of U-SIG-2 is the LSB of the STA-ID field. The PPDU format does not depend on the value of this bit.[#319]

**4 CIDs in Table 38-21 (U-SIG field of a UHR ELR PPDU) in D0.1, which is Table 38-22 in D0.2:**

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 587 | Eunsung Park | 38.3.15.7.2 | 155.45 | Values 1-5 are Validate in the Bandwidth field only if the PPDU Type And Compression Mode field is set to 3. Otherwise they indicate corresponding bandwidths. Include this description. | See the comment. | Rejected.The U-SIG field structure of a UHR ELR PPDU (i.e., entire Table 38-21 in D0.1, or Table 38-22 in D0.2) depends on the PPDU Type And Compression Mode field being set to 3. No need to add this condition in each field description.  |
| 588 | Eunsung Park | 38.3.15.7.2 | 155.55 | In 5 GHz or 6 GHz band, value 0 is Validate in the UL/DL field only if the PPDU Type And Compression Mode field is set to 3. Include this description. | See the comment. | Revised.Agree to the comment that value 0 is Validate in 5 GHz or 6 GHz bands in this case. The U-SIG field structure of a UHR ELR PPDU (i.e., entire Table 38-21 in D0.1, or Table 38-22 in D0.2) depends on the PPDU Type And Compression Mode field being set to 3. No need to mention this condition in the description.Instruction to editor: Apply the changes marked as [#588] in 11-25/0588r1. |
| 3506 | ron porat | 38.3.15.7.2 | 155.57 | messed up table | Table 38-21 USIG-2 after B13-15 should be CRC and Tail, but the table is apparently wrong | Rejected.Table 38-21 in D0.1 is not messed up as in the comment. |
| 7 | Jialing Li | 38.3.15.7.2 | 156.39 | Fix "Table 38-A (U-SIG field<XREF> of a UHR MU PPDU)" to properly refer to Table 38-18, i.e., "Table 38-18 (U-SIG field of a UHR MU PPDU)". | Refer to the comment. | Revised.Agree to the proposed change, but the table becomes Table 38-19 in D0.2.Instruction to editor: In P166L39 in D0.2, change “Table 38-A (U-SIG field<XREF> of a UHR MU PPDU)” to “Table 38-19 (U-SIG field of a UHR MU PPDU)”. |

**Instruction to editor:**

Please apply the changes in the UL/DL field in Table 38-22 in P165L47-P165L56 of D0.2.

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| * U-SIG field of a UHR ELR PPDU
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| Two parts of U-SIG | Bit | Field | Number of bits | Description |
| U-SIG-1 | B6 | UL/DL | 1 | 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. In 5 GHz band or 6 GHz band, the value is always set to 1. Value 0 is Validate.[#588] |