IEEE P802.11  
Wireless LANs

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| Comment Resolutions on CIDs related to Clause 36.1.1 | | | | |
| Date: | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Kanke Wu | Qualcomm, Inc. | 5775 Morehouse Dr. San Diego, CA 92121 |  | kankew@qti.qualcomm.com |
| Bin Tian |

Abstract

This document provides PHY resolutions for the following CIDs on subclause 36.1.1. The baseline for this comment resolution document is 802.11be Draft 0.3.

* CIDs:

1239 2676 1517 1603 1263 1264 3261 1266 1980 3087

2983 3088 3262 1982 1983 3089 3090 3091 1267 3092

3093 3263 3264 3265 3266 2987

Revisions:

* Rev 0: Initial version of the document.
* Rev 1 & 2: Typo fixes and updates
* Rev 3: Note added for CID 1983 according to Dongguk’s suggestion
* Rev 4 & 5: Update on resolutions for CIDs 1982 and 1983.

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| **CID** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 1239 | 36.1.1 | 153 | 55 | "In a MU-MIMO resource unit, there is support for up to 8 users with up to 4 spatial streams per user with the total across all users not exceeding 16 spatial streams." . Change to not exceeding 8 ss in R1 | as in comment | REVISED.  Agree in Principle. R1 will not be mentioned in the spec text.  Note to the editor:  The change required for this CID is the same as for CID 2676.  Please change the sentence on P154L54-P154L55 to:  “In a MU-MIMO resource unit, there is support for up to 8 users with up to 4 spatial streams per user with the total across all users not exceeding 8 spatial streams.” |
| 2676 | 36.1.1 | 153 | 55 | Maximum allowed Nss\_tot is 8 as defined in R1. Propose to change 16 to 8. | As in the comment. | ACCEPT.  Note to the editor: The change required for this CID is the same as for CID 1239. |

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| 1517 | 36.1.1 | 153 | 18 | HT PHY does not support the 80MHz BW | change "equal to 80 MHz and is" to " equal to 40 MHz and is" | REJECTED.  This sentence is talking about mandatory requirements of EHT STA which follows the 11ax style. It mandates an EHT STA supporting 80MHz shall support HT-PHY, and doesn’t imply 80MHz HT support. |

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| 1603 | 36.1.1 | 153 | 51 | EHT Dup mode is supported and spec needs to describe it. | See the comment. | REVISED.  Agree that support for this mode should be described.  Instructions to the editor:  Please insert the following sentence in P154L12 as a new paragraph.  “The EHT PHY supports BPSK-DCM mode (MCS15) and BPSK-DCM-DUP mode (MCS14). ” |
| 1263 | 36.1.1 | 154 | 37 | Since MCSs 14 and 15 are outliers, the first time they are introduced, add a descriptor | Change "EHT-MCS 15" to EHT-MCS 15 (i.e. MCS0 with DCM)" | REVISED.  Agree in principle.  By adding the sentence in P154L12 (based on CID1603), we have already introduced MCS14 and MCS15. In the following discussion, we could just use MCS14 and MCS15 to be consistent.  Instructions to the editor:  The required changes for this CID is the same as for CID1603. |
| 1264 | 36.1.1 | 154 | 61 | Since MCSs 14 and 15 are outliers, the first time they are introduced, add a descriptor | Change "EHT-MCS 14" to EHT-MCS 14 (i.e. duplicated MCS0 with DCM)" | REVISED.  Agree in principle.  Same as CID1263.  Adding the sentence in P154L12 allows us to describe MCS14.  Additional clarification is added to this bullet to further clarify support for MCS14.  Instructions to the editor:  Please make the changes as shown in 11/21-0360r5  <https://mentor.ieee.org/802.11/dcn/21/11-21-0360-05-00be-crs-on-cids-related-to-clause-36-1-1.docx> |

Instructions to the editor for CID 1264: Please make the following changes as highlighted in red to 36.1.1 (P154L61).

Single spatial stream EHT-MCS 14 in 6 GHz non-punctured transmission for ~~LPI channel~~

• Single user in 80MHz, 160MHz, and 320MHz PPDUs, if the STA declares support for 80MHz, 160MHz, and 320MHz PPDU, respectively.

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| 3261 | 36.1.1 | 154 | 8 | add "\_" between BPSK DCM such as BPSK\_DCM | BPSK DCM should be BPSK\_DCM to be consistent throught the spec | REVISED.  Agree in principle.  The notation should be consistent throughout text. This issue happens in other section of the text as well.  Instruction to the editor: Unify all terms to be the same as in Table 36-52 (P337L20). Change "BPSK DCM" to "BPSK-DCM" on P154L8.  Note: Other locations where similar change should be applied are: P209L46, where "BPSK DCM" was used. And P288L41, P288L48, where "BPSK+DCM" were used. |

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| 1266 | 36.1.1 | 154 | 15 | The list of mandatory RU and MRUs is unclear | Since I don't see it elsewhere in this section, enumerate all RU and MRU sizes that are mandatory and optional (according to the style of STA) in this section | REJECTED.  This statement is about mandatory support of non-OFDMA single user transmission for STA. It is not about defining set of RU/MRU that should be supported.  The mandatory support of RU and MRU set depends on STA type, operation BW, OFDMA or non-OFDMA transmission. This part is covered in clause 36.3.2. |

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| 1980 | 36.1.1 | 154 | 15 | The term of RU and Single RU are used together in many places in the draft(not only in this subclause) for the meaning of RU which is not multiple RU(MRU). | To avoid confusion, suggest to unify them by either RU or Single RU in whole related places. If RU needs to be used for the representive term of both Single RU and Multiple RU then Single RU might be better, otherwise just using RU will also works in general. | REVISED.  The adjective "single" here applies to both RU and MRU. The “single RU or MRU in the entire PPDU bandwidth” is used to characterize the non-OFDMA mode.  Instructions to the editor:  Please make the changes as shown in 11/21-0360r5  <https://mentor.ieee.org/802.11/dcn/21/11-21-0360-05-00be-crs-on-cids-related-to-clause-36-1-1.docx> |

Instructions to the editor for CID 1980: Please make the following changes as highlighted in red to 36.1.1 (P154L15).

* Single user transmission and reception of a~~n~~ non-OFDMA EHT MU PPDU ~~with single RU or MRU in the entire PPDU bandwidth~~.

The following bullets also need to be modified to be consistent:

P156L24:

* Reception of a~~n~~ non-OFDMA EHT MU PPDU ~~consisting of a single RU or MRU in the entire PPDU bandwidth and~~ utilizing MU-MIMO (DL MU-MIMO).

P156L33:

* MU-MIMO transmission in a~~n~~ non-OFDMA EHT TB PPDU ~~with single RU or MRU in the entire PPDU bandwidth~~ (UL MU-MIMO).

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| 3087 | 36.1.1 | 154 | 22 | In sentence "An RU or MRU using EHT-MCSs 10, 11, 12, and 13 in an EHT MU PPDU or an EHT TB PPDU", "12, and 13" should be replace with "12 or 13" since RU or MRU only need satisfiy one of the condition. | As in comment | ACCEPT. |
| 2983 | 36.1.1 | 154 | 32 | LDPC coding support if one of 10, 11, 12 and 13? Or all of them? | Change "LDPC coding (transmit and receive) in all supported EHT PPDU types, RU sizes, and number of spatial streams if the STA declares support for EHT-MCSs 10, 11, 12, and 13 (transmit and receive)." to "LDPC coding (transmit and receive) in all supported EHT PPDU types, RU sizes, and number of spatial streams if the STA declares support for at least one of EHT-MCSs 10, 11, 12, and 13 (transmit and receive)." | ACCEPT. |
| 3088 | 36.1.1 | 154 | 33 | "LDPC coding (transmit and receive) in all supported EHT PPDU types, RU sizes, and number of spatial streams if the STA declares support for EHT-MCSs 10, 11, 12, and 13 (transmit and receive)". Does this mean that LDPC coding is not requried to support if STA only declares support for EHT-MCSs 10 and 11, but not 12 and 13? This seems contradicts the LDPC coding mandatory support in 11ax D8.0. | Replace the sentence with "LDPC coding (transmit and receive) in all supported EHT PPDU types, RU sizes, and number of spatial streams if the STA declares support for EHT-MCS 10 and 11". | REVISED.  Agree in principle.  Instruction to the editor: The changes required for this CID is the same as for CID 2983. |
| 3262 | 36.1.1 | 154 | 43 | MCS should be EHT-MCS 0, 1, 3 and 15. | MCS should be EHT-MCS0, 1, 3 and 15. | REVISED.  Agree in principle.  Instruction to the editor:  Change “MCS 0, 1, 3, and 15” to “EHT-MCSs 0, 1, 3, and 15”. |

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| 1982 | 36.1.1 | 154 | 58, 59 | There is no definition of 20 MHz-only non-AP EHT STA. | Define it in 3.1 Definitions as following  20 MHz-only non-access-point (non-AP) extremely high throughput station (EHT STA): A non-AP EHT STA that indicates in the Supported Channel Width Set subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element that it supports only 20 MHz channel width for the frequency band in which it is operating. | REVISED  this resolution is already reflected by DCN 21-292r3 |
| 1983 | 36.1.1 | 158 | 16 | There is no definition of 20 MHz operating non-AP EHT STA. | Define it in 3.1 Definitions as following  20 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA): A non-AP EHT STA that is operating in 20 MHz channel width mode, such as a 20 MHz-only non-AP EHT STA or an EHT STA that has reduced its operating channel width to 20 MHz using operating mode indication (OMI). | REVISED.  This resolution is already reflected by DCN 21-292r3. |

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| 3089 | 36.1.1 | 154 | 39 | "20 MHz-only STA" is not defined. | Replace it with 20 Mhz-only non-AP EHT STA. | REVISED.  This MCS15 requirement support applies to both AP and non-AP STA. 20MHz-only STA refers to all EHT STA support only 20MHz.  Instruction to the editor:  Please make the changes as shown in 11/21-0360r5  <https://mentor.ieee.org/802.11/dcn/21/11-21-0360-05-00be-crs-on-cids-related-to-clause-36-1-1.docx> |
| 3090 | 36.1.1 | 154 | 40 | "non-20 MHz-only STA" is not defined. | Replace first two bullets "\*26-, 52-, 106-, and 242-tone RU for 20 MHz-only STA, \*26-, 52-, 106-, 242-, 484-, and 996-tone RU for non-20 MHz-only STA" with "\*26-, 52-, 106-, and 242-tone RU, \* 484-, and 996-tone RU except 20 MHz-only non-AP EHT STA" \*26-, 52-, 106-, 242-, 484-, and 996-tone RU for non-20 MHz-only STA" | REVISED.  This MCS15 requirement support applies to both AP and non-AP STA. non-20MHz STA refers to EHT STA support >20MHz.  Instruction to the editor:  Please make the changes as shown in 11/21-0360r5  <https://mentor.ieee.org/802.11/dcn/21/11-21-0360-05-00be-crs-on-cids-related-to-clause-36-1-1.docx> |

Instructions to the editor for CIDs 3089 and 3090: Please make the following changes as highlighted in red to 36.1.1 (P154L37-P154L42).

Single spatial stream EHT-MCS 15 (transmit and receive) in non MU-MIMO transmission for

•26-, 52-, 106-, and 242-tone RU for 20 MHz-only STA

•26-, 52-, 106-, 242-, 484-, and 996-tone RU if the STA declares support for larger than 20MHz PPDU ~~for non-20 MHz-only STA~~

•2×996-tone RU if the STA declares support for larger than or equal to 160 MHz PPDU

•~~2×996- and~~ 4×996-tone RU if the STA declares support for 320 MHz PPDU

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| 3091 | 36.1.1 | 154 | 58 | "EHT-MCSs 10 to 13 (transmit and receive) if the STA is not a 20 MHz only non-AP STA. ﾠEHT-MCSs 8 to 13 (transmit and receive) if the STA is a 20 MHz only non-AP STA.". It was not stated that STA shall support MCS 8 and 9 if it is not a 20-MHz only non-AP EHT STA. In the previous shall support part, only EHT-MCSs 0 to 7 are listed. | Add the mandatory support of EHT-MCS 8 and 9 if STA is not a 20 MHz only non-AP EHT STA in shall support part. Change non-AP STA to non-AP EHT STA in the text. | REVISED.  Agree in principle.  EHT-MCSs 8 and 9 should be mandatory supported for non-20MHz only non-AP STA.  The comment also mentions changing “STA” in the bullet to “EHT STA”. Since it is already stated in P154L57, “An EHT STA may support the following features:”, all STAs mentioned in the following bullets are automatically EHT STAs. We will not change “STA” to “EHT STA” here because making such changes is not necessary and will require changing similar occurrence across the entire section.  Instruction to the editor:  Add the following bullet after P154L34-35:  “EHT-MCSs 8 to 9 (transmit and receive) if the STA is not a 20 MHz-only non-AP STA.” |

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| 1267 | 36.1.1 | 154 | 64 | The RU list does not include 2x996+484 or 3x996+484 which is unexpected | Assuming this is not an error, add a note that MCS15 is not defined for these MRUs | REVISED.  According to Motion 137, SP279, 2x996+484 and 3x996x484 are not supported.  While PHY introduction section generally only covers what are supported but does not list what is not supported, considering MCS15 is newly introduced in EHT we can add a note for clarification.  Instructions to the editor:  Add note after the current sentence in P154L64: "Note: MCS15 is not defined for 2x996+484- and 3x996+484- tones MRU." |

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| 3092 | 36.1.1 | 155 | 30 | "Transmission of an EHT MU PPDU to multiple users with a 2x EHT-LTF and 0.8 μs GI duration on the EHT-LTF and Data field OFDM symbols". EHT MU PPDU to a single user should also be included in LTF+GI comb support, according to Motion 137, #SP 281. | Delete "to multiple users" in the sentence. The same change applies in the following text for other LTF+GI comb support. | REJECTED.  The requirement for single user transmission is already covered in the mandatory support of any STA (e.g P154L45.)  Supporting of transmission to multiple users is additional mandatory requirement for EHT AP only. |
| 3093 | 36.1.1 | 156 | 62 | "Reception of an EHT MU PPDU to multiple users with a 2x EHT-LTF and 0.8 μs GI duration on the EHT-LTF and Data field OFDM symbols". EHT MU PPDU to a single user should also be included in LTF+GI comb support, according to Motion 137, #SP 281. | Delete "to multiple users" in the sentence. The same change applies in the following text for other LTF+GI comb support. | REJECTED.  Similar to CID 3092.  The requirement for single user reception is already mandatory for all STA. (L154L45). |

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| 3263 | 36.1.1 | 155 | 59 | remove "/" and make it clear from "or" or "and" or add the meaning of the symbol / | as in comment | REVISED.  Agree in principle.  Instruction to the editor: Change “/” to “or”. |
| 3264 | 36.1.1 | 156 | 1 | remove "/" and make it clear from "or" or "and" or add the meaning of the symbol / | as in comment | REVISED.  Agree in principle.  Instruction to the editor: Change “/” to “or”. |
| 3265 | 36.1.1 | 156 | 19 | remove "/" and make it clear from "or" or "and" or add the meaning of the symbol / | as in comment | REVISED.  Agree in principle.  Instruction to the editor: Change “/” to “or”. |
| 3266 | 36.1.1 | 156 | 21 | remove "/" and make it clear from "or" or "and" or add the meaning of the symbol / | as in comment | REVISED.  Agree in principle.  Instruction to the editor: Change “/” to “or”. |

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| 2987 | 36.1.1 | 157 | 30 | It is obvious that 20 MHz only STA can't support larger than 242 tone. And the bullet is for optional feature, we don't need to mention about 20 MHz only STA. | Modify "160 MHz channel width and RU and MRU size larger than 996 tone in the 5 GHz and 6 GHz bands (transmit and receive) except for a 20 MHz-only non-AP EHT STA, in which case the 160 MHz channel width and RU and MRU size larger than 242 tone in the 5 GHz and 6 GHz bands are not applicable." as follow. "160 MHz channel width and RU and MRU size larger than 996 tone in the 5 GHz and 6 GHz bands (transmit and receive)." | REJECT.  This description is following 11ax draft 6.0 style.  I agree with the commentator’s reasoning that the 20 MHz only STA description seems redundant. However, the suggested change could result in questions about 20MHz only STA from some readers while the original sentence offers a more complete description. The suggested change relies on the implication that 20MHz only STA does not need to support anything larger than 242 tones, while the original sentence makes this explicit. |