IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| [CR for clause 36.3.3] | | | | |
| Date: 2021-10-12 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Junghoon Suh | Huawei |  |  | junghoon.suh@huawei.com |
| Edward Au | Huawei |  |  |  |
| Ross Jian Yu | Huawei |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for the follwing 10 CC36 CIDs: 4591, 4654, 4688, 4802, 4993, 5092, 5400, 5468, 5469, and 6899. The proposed changes are based on IEEE 802.11be D1.1 [1].

Revisions:

* Rev 0: Initial version of the document.
* Rev 1:

## CID 4591, 4654, 4688, 4802, 4993, 5092, 5400, 5468, 5469, and 6899

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4591 | 372.21 | 36.3.3.2.2 | Title of clause 36.3.3.2.2 should be changed from "Supported RU sizes in UL MU-MIMO" to "Supported RU/MRU sizes in UL MU-MIMO" as multiple RUs are supported for both UL and DL MU-MIMO. The current title doesn't clarify that multiple RUs are allowed for UL MU-MIMO although following text seem to allow both RU and multiple RUs. This is also to be consistent with clause 36.3.3.1.1 (Supported RU/MRU sizes in DL MU-MIMO) | As in comment | Accepted |
| 4654 | 371.58 | 36.3.3.1.2 | "The minimum value for the subfields of each bandwidth is 4." is too low given that 11be is pushing towards 16SS, and this limitation cripples the motivation for higher SS counts | Replace "4" by "8" or higher, certainly for non-IoT devices | Rejected  We do not have a concensus on this change. |
| 4688 | 372.52 | 36.3.3.2.3 | only 1x LTF is allowed for UL MU-MIMO | do not mention 2x and 4x LTF here, or clearfy it | Rejected  1x, 2x and 4x LTF are all mandatorily supported for EHT TB PPDU. 1× EHT-LTF and 1.6 μs GI is used only for non-OFDMA UL MU-MIMO, and  2x and 4x EHT-LTF can be used for OFDMA+UL MU-MIMO case. |
| 4802 | 371.44 | 36.3.3.1.2 | The same text is repeated for the cases <=80MHz, = 160MHz, =320MHz. | Unify the text and remove repetitions, here is a suggestion "For EHT MU PPDUs using bandwidth less than or equal to 80 MHz, equal to 160MHz, or equal to 320MHz, a non-AP EHT STA shall support the reception of DL MU-MIMO transmissions with the total number of spatial streams (across all users) that is supported for the reception of an EHT MU PPDU up to the value indicated by the Beamformee SS (≤ 80 MHz, =160MHz, or =320MHz, respectively) subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element. " | Revised  Agree with basic motivation of the comment. Just, Beamformee SS (≤ 80 MHz), Beamformee SS (=160MHz), or Beamformee SS (=320MHz) is a subfield in the EHT PHY Capabilities Information field, so we keep each name with one unified text for all three cases.  TGbe Editor: Incorporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-1712-00-00be-cr-for-cc36-mu-mimo.docx |
| 4993 | 371.44 | 36.3.3.1.2 | Non-AP STAs shall be able to participate in a wider bandwidth transmission. For example, an 80 MHz operating non-AP STA shall be able to participate in a 160 MHz DL transmission and the non-AP STA can receive a signal where DL MU MIMO is applied to smaller than or equal to 996-tone RU. Clarify whether the Beamformee SS subfields in the second paragraph are defined regardless of the non-AP STA's operating channel width. | See the comment. | Revised  The paragraph is regarding the non-AP STA’s capabilities (Capabilities of Supported SS per BW in each non-AP STA). The scheduling of the DL MU-MIMO is up to the AP, and the scheduling information including the number of SS is determined by the AP based on the capabilities of each participating non-AP STA. This applies to the STAs participating in the wider bandwidth MU-MIMO, as well.  TGbe Editor: Incorporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-1712-00-00be-cr-for-cc36-mu-mimo.docx |
| 5092 | 373.01 | 36.3.3.2.4 | The limit of total number of 8 spatial streams should be for each single allocated RU/MRU | Modify as in comment | Revised  TGbe Editor: Incorporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-1712-00-00be-cr-for-cc36-mu-mimo.docx |
| 5400 | 372.53 | 36.3.3.2.3 | The two "LTFs" should be "EHT-LTFs". | Please refer to my comment. | Revised  TGbe Editor: Incorporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-1712-00-00be-cr-for-cc36-mu-mimo.docx |
| 5468 | 372.60 | 36.3.3.2.4 | Change smaller to minimum | as in comment | Rejected  .  Either “smaller” or “minimum” does not change the technical meaning.  Note to the commenter: To be aligned with the resolution of CID 6901, which results in no change. |
| 5469 | 373.5 | 36.3.3.2.4 | Move the whole paragraph to the end of the paragraph in row 62 of page 373. As it exists only for the calculation of The number of spatial streams allocated to the non-AP STA. | as in comment | Rejected  Not clear about the comment. Row 62 corresponds to the EHT PPDU sub-caluse. |
| 6899 | 372.30 | 36.3.3.2.2 | "The support of an EHT non-OFDMA UL MU-MIMO reception by an EHT AP ..." should mention that this EHT non-OFDMA UL MU-MIMO is in EHT TB PPDU. | May be rephased as "The support of the reception of an EHT non-OFDMA UL MU-MIMO in an EHT TB PPDU by an EHT AP...." | Rejected  The UL MU-MIMO is always transmitted in an EHT TB PPDU, regardless of OFDMA or non-OFDMA UL MU-MIMO. |

Propose :

***TGbe editor: please modify the senstence between P421L44 and P421L59 in D1.1 as follows***

*For EHT MU PPDUs using bandwidth less than or equal to 80 MHz, equal to 160MHz, or equal to 320MHz, a non-AP EHT STA shall support the reception of DL MU-MIMO transmissions with the total number of spatial streams (across all users) that is supported for the reception of an EHT MU PPDU up to the value indicated by the Beamformee SS (≤ 80 MHz), Beamformee SS (=160MHz), or Beamformee SS (=320MHz) subfield, respectively* in the EHT PHY Capabilities Information field in the EHT Capabilities element. The minimum value for the subfields of each bandwidth is 4. (#4802)

*For a non-AP EHT STA receiving the DL MU-MIMO of wider bandwidth, the non-AP EHT STA shall support the reception of DL MU-MIMO transmissions with the total number of spatial streams (across all users) up to the maximum supportable number of beamformee spatial streams of its own operating bandwidth.* (#4993)

***TGbe editor: please modify the senstence between P423L1 and P423L3 in D1.1 as follows***

The number of total spatial streams (summed over all users) for the EHT TB PPDU across all the

scheduled users using MU-MIMO is less than or equal to 8. *For the non-AP STA that supports the partial BW based UL MU-MIMO, the number of total spatial streams (summed over all users) for the RU/MRU of EHT TB PPDU across all the scheduled users using MU-MIMO is less than or equal to 8.* (#5092)

***TGbe editor: please modify the senstence between P422L51 and P422L53 in D1.1 as follows***

A non-AP STA shall support, for UL MU-MIMO transmissions in an EHT TB PPDU, transmission of 1× *EHT-*LTFs without pilots and transmission of 2× and 4× *EHT-*LTFs with single stream pilots. (#5400)

**References:**

**[1] 802.11be D1.1**