IEEE P802.11  
Wireless LANs

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| CRs for 20 MHz-only STA – RU Restriction | | | | |
| Date: 2017-11-08 | | | | |
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Abstract

* The submission provides resolution to comment related to a 20 MHz-only non-AP HE STA RU restriction clarification
* This document contains comment resolution for 19 CIDs:
  + CID 13398, 13431, 13576, 13577, 13578, 13579, 13580, 13581, 13303, 12557, 13582, 13583, 13584, 13585, 13586, 13587, 13588, 13589, 14058
* The proposed changes are based on **P802.11ax D2.0 on clauses 28.3.3.6**

Rev. 0 initial version of the document

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

* Technical comments for 28.3.3.6 of P802.11ax D2.0

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| **CID** | **Page** | **Clause Number** | **Comment** | **Proposed Change** | **Resolution** |
| 13398 | 367.00 | 28.3.3.6 | Same conditions repeated for HE MU and HE TB PPDU separately. Merge for brevity. | e.g., for disallowed RU26 allocations for 20 MHz STAs, change to "26-tone RU 5, 10, 14, 19, 24, 28 and 33 of the lower 80 MHz or upper 80 MHz of an 80+80 MHz and 160 MHz HE TB PPDU and HE MU PPDU" | **Revised**  Agree in principal to merge the description and the same practice is exercised for all RU restrictions.  *TGax Editor*: Please change the text (marked as CID 13398) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13431 | 367.14 | 28.3.3.6 | Add reference to Table 28-7 for the numbering of the RUs | See comment | **Revised**  Agree in principal to add the reference for clarification. However, Table 28-7 is applied only for 40MHz HE PPDU, and Table 28-8 is applied for 80/160/80+80 MHz HE PPDU. Therefore, separate tables are refered for each RU restriction.  *TGax Editor*: Please change the text (marked as CID 13431) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13576 | 367.19 | 28.3.3.6 | 26-tone RU restriction for 20MHz operating non-AP HE STA is applied for both lower and upper 80 MHz of 80+80 MHz HE MU PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13576) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13577 | 367.20 | 28.3.3.6 | 26-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE MU PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13577) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13578 | 367.23 | 28.3.3.6 | 26-tone RU restriction for 20MHz operating non-AP HE STA is applied for both lower and upper 80 MHz of 80+80 MHz HE TB PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE TB PPDU.  *TGax Editor*: Please change the text (marked as CID 13578) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13579 | 367.23 | 28.3.3.6 | 26-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE TB PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE TB PPDU.  *TGax Editor*: Please change the text (marked as CID 13579) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13580 | 367.25 | 28.3.3.6 | 52-tone RU restriction is applied for both HE MU PPDU and HE TB PPDU | Change 'or' to 'and', i.e., 'HE MU PPDU and HE TB PPDU' | **Revised**  Agree that the restriction is applied for both HE MU PPDU and HE TB PPDU, so change it as commenter suggested.  *TGax Editor*: Please change the text (marked as CID 13580) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13581 | 367.27 | 28.3.3.6 | 52-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE MU PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13581) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13303 | 367.27 | 28.3.3.6 | Why only an HE MU PPDU? Surely the restriction applies to HE TB PPDU as well. | This is the only bullet that does not mention both HE MU PPDU and HE TB PPDU. Change the intro sentence to read "An AP shall not assign to a non-AP HE STA with 20 MHz operating channel width the following RUs in either an HE MU PPDU or HE TB PPDU:" Remove mention of the PPDU from each bullet. | **Revised**  Commenter is correct that RU restriction on UL OFDMA portion is omiited by mistake, so it is required to add back the description. In addition, HE MU PPDU and HE TB PPDU description is merged for brevity.  *TGax Editor*: Please change the text (marked as CID 13303) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 12557 | 367.27 | 28.3.3.5 | 52-tone RU 5 and 12 of the lower 80 MHz or upper 80 MHz of an 80+80 and 160 MHz HE TB PPDU is missing | Add "52-tone RU 5 and 12 of the lower 80 MHz or upper 80 MHz of an 80+80 MHz and 160 MHz HE TB PPDU" | **Revised**  Commenter is correct that RU restriction on UL OFDMA portion is omiited by mistake, so it is required to add back the description as commenter proposed.  *TGax Editor*: Please change the text (marked as CID 12557) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13582 | 367.27 | 28.3.3.6 | 52-tone RU restrction for 20MHz operating non-AP HE STA is applied for both HE MU and HE TB PPDU | Change 'or' to 'and', i.e., 'lower 80 MHZ and upper 80 MHz' | **Revised**  Agree in principal for the comment that 52-tone RU restriction is missing for HE TB PPDU, but the proposed text is not correct responding the comment. Therefore, instead of following the instruction, add the new statement as '52-tone RU 5 and 12 of the lower 80 MHz and upper 80 MHz of an 80+80 MHz and 160 MHz HE TB PPDU'  *TGax Editor*: Please change the text (marked as CID 13582) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13583 | 367.27 | 28.3.3.6 | 52-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE MU PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13583) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13584 | 367.29 | 28.3.3.6 | 52-tone RU restriction for lower/upper 80MHz of 80+80MHz/160MHz HE TB PPDU is mised by unintended mistake in 11-17/400r3, therefore the 52-tone RU restriction for HE TB PPDU is required | Add the bullet with the statement for the consistency; '52-tone RU 5 and 12 of the lower 80 MHz and upper 80 MHz of an 80+80 MHz and 160 MHz HE TB PPDU' | **Revised**  It is true RU restriction is applied as the same in both DL OFDMA and UL OFDMA for 20MHz operating STA except 242-tone RU case. During the comment resolution in 11-17-400r3, UL OFDMA portion is omiited by mistake, so it is required to add back the description as commenter proposed.  *TGax Editor*: Please change the text (marked as CID 13584) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13585 | 367.29 | 28.3.3.6 | The description on 52-tone RU restriction for 80+80MHz and 160MHz HE TB PPDU is omitted by mistake during the D1.0 comment resolution (11-17-400r3 (CR Motion 238)). Therefore, it is required to add the description on 52-tone restriction for 80+80MHz and 160MHz HE TB PPDU | Please add the new line for 52-tone RU rescription for HE TB PPDU as '52-tone RU 5 and 12 of the lower 80 MHz and upper 80 MHz of an 80+80 MHz and 160 MHz HE TB PPDU' | **Revised**  It is true RU restriction is applied as the same in both DL OFDMA and UL OFDMA for 20MHz operating STA except 242-tone RU case. During the comment resolution in 11-17-400r3, UL OFDMA portion is omiited by mistake, so it is required to add back the description as commenter proposed.  *TGax Editor*: Please change the text (marked as CID 13585) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13586 | 367.32 | 28.3.3.6 | 106-tone RU restriction for 20MHz operating non-AP HE STA is applied for both lower and upper 80 MHz of 80+80 MHz HE MU PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13586) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13587 | 367.32 | 28.3.3.6 | 106-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE MU PPDU | Change 'or' to 'and' for 106-tone RU HE MU PPDU, i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE MU PPDU.  *TGax Editor*: Please change the text (marked as CID 13587) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13588 | 367.35 | 28.3.3.6 | 106-tone RU restriction for 20MHz operating non-AP HE STA is applied for both lower and upper 80 MHz of 80+80 MHz HE TB PPDU | Change 'or' to 'and', i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE TB PPDU.  *TGax Editor*: Please change the text (marked as CID 13588) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 13589 | 367.35 | 28.3.3.6 | 106-tone RU restriction for 20MHz-only STA would be applied for both the lower 80MHz 'and' upper 80MHz of an 80+80MHz or 160MHz HE TB PPDU | Change 'or' to 'and' for 106-tone RU HE TB PPDU, i.e., 'the lower 80 MHz and upper 80 MHz of an 80+80 MHz' | **Revised**  Agree that the restriction is applied for both the lower and upper 80 MHz of 80+80MHz HE TB PPDU.  *TGax Editor*: Please change the text (marked as CID 13589) as indicated in **doc.: IEEE 802.11-17/1763r1** |
| 14058 | 367.37 | 28.3.3.6 | Where are the "RU <N>" defined? | Add "where the subcarrier indices of RU N are defined in Table 28-6, Table 28-7 and Table 28-8." | **Revised**  Agree in principal to add the reference for clarification. However, Table 28-6 does not require to be refered because it is for 20MHz HE PPDU. Only Table 28-7 and Table 28-8 are referred for the corresponding RU restrictions.  *TGax Editor*: Please change the text (marked as CID 14058) as indicated in **doc.: IEEE 802.11-17/1763r1** |

**Discussion**

The same RU restriction rule for 20 MHz operating non-AP HE STA is applied for both HE MU PPDU and HE TB PPDU except 242-tone RU. Therefore, all RU restriction rules except 242-tone RU should be described in a symmetric way for both HE MU PPDU and HE TB PPDU. Note that 242-tone RU is not permitted for HE TB PPDU of 20 MHz operating non-AP HE STA in P802.11ax D2.0.

**Changes on Section 28.3.3.6**

***To TGax editor:***  *Please update the paragraph in* ***P802.11ax D2.0*** *with the proposed changes below.*

***------------- Begin Text Changes ---------------***

***P367L19***

An AP shall not assign the following RUs to a 20 MHz operating non-AP HE STA where RU index *N* is defined in Table 28-7(#13431,14058):

26-tone RU 5 and 14 of a 40 MHz HE MU PPDU and HE TB PPDUAn AP shall not assign the following RUs to a 20 MHz operating non-AP HE STA where RU index *N* is defined in Table 28-8(#13431,14058):

* 26-tone RU 5, 10, 14, 19, 24, 28 and 33 of an 80 MHz HE MU PPDU and HE TB PPDU
* 26-tone RU 5, 10, 14, 19, 24, 28 and 33 of the lower 80 MHz of an 80+80 MHz and 160 MHz HE MU PPDU and HE TB PPDU(#13576,13577,13578,13579,13398)
* 26-tone RU 5, 10, 14, 19, 24, 28 and 33 of the upper 80 MHz of an 80+80 MHz HE MU PPDU and HE TB PPDU(#13576,13577,13578,13579,13398)
* (#13398)
* 52-tone RU 5 and 12 of an 80 MHz HE MU PPDU and HE TB PPDU(#13580)
* 52-tone RU 5 and 12 of the lower 80 MHz of an 80+80 MHz and 160 MHz HE MU PPDU and HE TB PPDU(#12557,13581,13303,13582,13583,13584,13585,13398)
* 52-tone RU 5 and 12 of the upper 80 MHz of an 80+80 MHz HE MU PPDU and HE TB PPDU(#12557,13581,13303,13582,13583,13584,13585,13398)
* 106-tone RU 3 and 6 of an 80 MHz HE MU PPDU and HE TB PPDU
* 106-tone RU 3 and 6 of the lower 80 MHz of an 80+80 MHz and 160 MHz HE MU PPDU and HE TB PPDU(#13586,13587,13588,13589,13398)
* 106-tone RU 3 and 6 of the upper 80 MHz of an 80+80 MHz HE MU PPDU and HE TB PPDU(#13586,13587,13588,13589,13398)
* (#13398)

***------------- End Text Changes ---------------***