IEEE P802.11
Wireless LANs

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| D4.0 Comment Resolution – Part 2 |
| Date: 2019-5-14 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Youhan Kim | Qualcomm |  |  | youhank@qti.qualcomm.com |
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Abstract

This submission proposes resolutions for the following comments from the letter ballot on P802.11ax D4.0:

21383, 20870, 20871, 21214, 20868, 20785, 20783, 20784, 20560, 21365, 21360, 20277, 20278, 21348, 21471

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.

R1: Added CID 21471. Also made updates during May 2019 IEEE meeting.

# CID 21383

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21383 | 27.2.2 | 458.51 | "8 bits for 20 MHz and 40 MHz PPDU;16 bits for 80 MHz PPDU;32 bits for 160 MHz and 80+80 MHz PPDU." shoud be "8 bits for a 20 MHz PPDU;16 bits for a 40 MHz PPDU;32 bits for an 80 MHz PPDU64 bits for a 160 MHz or 80+80 MHz PPDU." | Correct |

**Discussion**

Note that INACTIVE\_SUBCHANNELS and RU\_ALLOCATION goes hands-in-hand for punctured transmissions other than HE MU and HE TB PPDUs.

D4.1 P413:

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Also, REVmd D2.1 P187 states:

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Hence, non-HT duplicate PPDU does not include 20 MHz. Also, there is no need to indicate puncturing for 20 or 40 MHz PPDUs.

Also, D4.1 P413 only talks about 80 and 160 MHz PPDUs for INACTIVE\_SUBCHANNELS.

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Lastly, 21.3.10.12 in D4.1 uses INACTIVE\_SUBCHANNELS only in Equation (21-100), which is for 80 and 160 MHz non-HT duplicate only. Also, it states that INACTIVE\_SUBCHANNELS is optionally present.

D4.1 P297:

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**Proposed Resolution: CID 21383**

**Revised**.

There is no need to indicate puncturing for 20 or 40 MHz PPDUs. Furthermore, clause 26.11.7 (INACTIVE\_SUBCHANNELS and RU\_ALLOCATION) in D4.1 talks about CBW80 and CBW160 only, and also mentions only non-HT duplicate (> 20 MHz) but not non-HT (20 MHz). Hence, TXVECTOR parameter RU\_ALLOCATION should not deal with 20 and 40 MHz PPDUs.

Proposed text updates in 11-19/0831 clarifies these points.

Instruction to Editor: Implement the proposed text updates for CIDs 21383 in 11-19/0831r1.

**Proposed Text Updates: CID 21383**

*TGax Editor: Update Table 27-1 in D4.1 as shown below.*

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| * TXVECTOR and RXVECTOR parameters
 |
| Parameter | Condition | Value | TXVECTOR | RXVECTOR |
| RU\_ALLOCATION | FORMAT is HE\_MU and SIG\_B\_COMPRESSION\_MODE is 0 | For the TXVECTOR, indicates the RU Allocation subfield of Common field in the HE-SIG-B of the transmitted PPDU.8 bits for a 20 MHz PPDU;16 bits for a 40 MHz PPDU;32 bits for an 80 MHz PPDU64 bits for a 160 MHz or 80+80 MHz PPDU.See 27.3.10.8.4 (HE-SIG-B common content) for details.For the RXVECTOR, 8 bits are used to indicate the RU allocated in the whole bandwidth.See 9.3.1.22 (Trigger frame format) for details. | Y | Y |
| FORMAT is HE\_TB | 8 bits are used to indicate the RU allocated in the whole bandwidth per user.See 9.3.1.22 (Trigger frame format) for details. | Y | N |
| FORMAT is HE\_SU, APEP\_LENGTH is 0 and CH\_BANDWIDTH is not CBW20 or CBW40,orFORMAT is NON\_HT, NON\_HT\_MODULATION is NON\_HT\_DUP\_OFDM and CH\_BANDWIDTH is not CBW20 or CBW40 | For the TXVECTOR, indicates the active RUs.32 bits for 80 MHz PPDU;64 bits for 160 MHz and 80+80 MHz PPDU.For each 8 bits, only the following values are allowed:0111000111000000See 27.3.10.8.4 (HE-SIG-B common content) for details. | O | N |
| Otherwise | Not present | N | N |

*TGax Editor: Update Table 27-4 in D4.1 as shown below.*

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| Table 27-4 – Interpretation of CH\_BANDWIDTH and INACTIVE\_SUBCHANNELS parameters when FORMAT is equal to NON\_HT and NON\_HT\_MODULATION is equal to NON\_HT\_DUP\_OFDM   |
| CH\_BANDWIDTH | INACTIVE\_SUBCHANNELS | CH\_OFFSET | PPDU format |
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| CBW80 | All bits set to 1 except for the four bits corresponding to the primary 80 MHz channel which are set to 0 | N/A | The STA transmits a NON\_HT PPDU of 80 MHz bandwidth. If the BSS bandwidth is wider than 80 MHz, then the transmission shall use the primary 80 MHz channel. |
| CBW80 | The bit corresponding to the primary 20 MHz channel set to 0 and one or two other bits set to 0 that correspond to any other subchannels in the primary 80 MHz, all other bits set to 1 | N/A | The STA transmits a punctured NON\_HT PPDU of 80 MHz bandwidth. If the BSS bandwidth is wider than 80 MHz, then the transmission shall use the primary 80 MHz channel. |
| CBW160 | All eight bits set to 0 | N/A | The STA transmits a NON\_HT PPDU of 160 MHz bandwidth. |
| CBW160 | The bit corresponding to the primary 20 MHz channel set to 0 and one to six other bits set to 0 that correspond to any other subchannels in the 160 MHz, all other bits set to 1 | N/A | The STA transmits a punctured NON\_HT PPDU of 160 MHz bandwidth. |
| CBW80+80 | All eight bits set to 0 | N/A | The STA transmits a NON\_HT PPDU of 80+80 MHz bandwidth. |
| CBW80+80 | The bit corresponding to the primary 20 MHz channel set to 0 and one to six other bits set to 0 that correspond to any other subchannels in the 80+80 MHz, all other bits set to 1 | N/A | The STA transmits a punctured NON\_HT PPDU of 80+80 MHz bandwidth. |

# CID 20870, 20871

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20870 | 27.3.2.2 | 479.25 | Re CID 15974: the resolution does not address the comment. The "Central 26-tone RU" text in Figure 27-5---RU locations in a 20 MHz HE PPDU, since this is confusing: it is not the magic bonus central 26-tone RU that you get for 80M+ PPDUs and that is signalled in the Center 26-tone RU subfield of the Common field of HE-SIG-B | Delete the text cited from the figure referenced |
| 20871 | 27.3.2.2 | 479.25 | Re CID 15977: the resolution does not address the comment. The "Central 26-tone RU" text in Figure 27-5---RU locations in a 20 MHz HE PPDU, since this is confusing: it is not the magic bonus central 26-tone RU that you get for 80M+ PPDUs and that is signalled in the Center 26-tone RU subfield of the Common field of HE-SIG-B | Prepend "Additional" to "Center 26-tone RU" in the figure referenced |

**Discussion**

D4.1 has 45 instances of “center 26-tone RU”. Out of these three instances refer to the 26-tone RU in the middle of a 20 MHz (sub)channel, while the remaining 42 instances refer to the 26-tone RU in the middle of 80 MHz (and indicated in the “Center 26-tone RU” in the HE-SIG-B Common field).

The commenter is referring to one of the three instances of “center 26-tone RU” referring to the 26-tone RU in the middle of a 20 MHz (sub)channel.

**Proposed Resolution: CID 20870, 20871**

**Revised**.

The term “center 26-tone RU” has two meanings in the draft so it would be better to define a new term to describe the 26-tone RU in the middle of 20 MHz. Proposed text updates for in 11-19/0831 uses the term “middle 26-tone RU” instead.

Instruction to Editor: Implement the proposed text updates for CIDs 20870 and 20871 in 11-19/0831r1.

**Proposed Text Updates: CID 20870, 20871**

26.5.1.3 RU allocation in an HE MU PPDU

*TGax Editor: Update D4.1 P327L31 as shown below.*

The middle 26-tone RU in any 20 MHz channel of a 40 MHz, 80 MHz, 160 MHz, or 80+80 MHz HE MU PPDU shall not be assigned to a 20 MHz operating non-AP STA.

27.3.2.2 Resource unit, guard and DC subcarriers

*TGax Editor: Update D4.1 P483L25 as shown below.*

The location of the 26-tone RUs are shown in Figure 27-5, Figure 27-6 and Figure 27-7 for the 20 MHz, 40 MHz and 80 MHz HE MU PPDU formats or HE TB PPDU formats using OFDMA transmission, respectively. The same structure as used for the 80 MHz HE MU PPDU formats or HE TB PPDU formats using OFDMA transmission is used for each 80 MHz frequency segment of the 160 MHz and 80+80 MHz HE MU PPDU or HE TB PPDU formats using OFDMA transmission. The middle 26-tone RU in the 20 MHz HE MU PPDU or HE TB PPDU and the center 26-tone RU in the 80 MHz HE MU PPDU or HE TB PPDU formats using OFDMA transmission (Figure 27-5 and Figure 27-7) is located on subcarriers [–16: –4, 4: 16].

 *TGax Editor: Change “Center 26-tone RU” to “Middle 26-tone RU” in Figure 25-5 as shown below.*

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| Figure 27-5 – RU locations in a 20 MHz HE PPDU |

  

# CID 21214

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21214 | 27.3.2.6 | 485.41 | "or no pilots" could be interpretted as there being no energy at the pilot tone locations, which is not the case. | Introduce a third term such as "HE full-stream pilot unmasked HE-LTF mode". Create a clause 3 definition for it, and use it at P485L41, P38L39, P38L60, L465L33, P485L41, P485L46, P572L12, P572L26, and P576L49. |

**Background**

D4.1 P489:

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**Proposed Resolution: CID 21214**

**Revised**.

Proposed text update in 11-19/0831 defines a new term named “HE no pilot HE-LTF mode”, and makes changes in the locations identified by the commenter.

Instruction to Editor: Implement the proposed text updates for CID 21214 in 11-19/0831r1.

**Proposed Text Updates: CID 21214**

3.2 Definitions

*TGax Editor: Update D4.1 P42L52 as shown below.*

**high efficiency (HE) masked HE-LTF sequence mode:**

An HE-LTF mode used in HE TB PPDU. The masked HE-LTF sequence mode does not have any pilot subcarriers in the HE-LTF field and uses a masked HE-LTF sequence generated by multiplying orthogonal code (distinct to each spatial stream) over groups of subcarriers.

*TGax Editor: Insert the following definition after D4.1 P38L65.*

**high efficiency (HE) no pilot HE-LTF mode:** An HE-LTF mode used in HE TB PPDU. The no pilot HE-LTF mode does not have any pilot subcarriers in the HE-LTF field and does not use a masked HE-LTF sequence (see HE masked HE-LTF sequence mode).

*TGax Editor: Update D4.1 P43L7 as shown below.*

**high efficiency (HE) single stream pilot HE-LTF mode:**

An HE-LTF mode used in HE SU, HE ER SU, HE MU and HE TB PPDU. The HE single stream pilot HE-LTF mode has single stream pilot subcarriers in the HE-LTF field.

9.3.1.22 Trigger frame format

9.3.1.22.1 General

*TGax Editor: Update D4.1 P110L21 as shown below.*

If the GI And LTF Type subfield of the Common Info field is set to indicate 1x HE-LTF + 1.6 μs GI(#15968), the MU-MIMO LTF Mode subfield of the Common Info field is reserved. If a non-OFDMA MU-MIMO HE TB PPDU uses a 1x HE-LTF, then the HE no pilot HE-LTF mode is used.(#17102)

27.3.2.6 Resource allocation for an HE TB PPDU

*TGax Editor: Update D4.1 P289L12 as shown below.*

The Trigger frame indicates whether the UL MU transmission following it uses HE single stream pilot HE-LTF mode or HE masked HE-LTF sequence mode if the LTF Type of the HE TB PPDU is 2x HE-LTF or 4x HE-LTF. HE no pilot HE-LTF mode is used if the LTF Type of the HE TB PPDU is 1x HE-LTF. If HE single stream pilot HE-LTF mode is used, no masking is applied to the HE-LTF. HE single stream pilot HE-LTF mode is used for any UL OFDMA transmission, including UL OFDMA with MU-MIMO transmissions.

27.3.10.10 HE-LTF

*TGax Editor: Update D4.1 P577L12 as shown below.*

In an UL MU-MIMO transmission using the HE masked HE-LTF sequence mode, the HE-LTF sequence per frequency segment is generated by masking the nonzero elements in the common HE-LTF sequence repeatedly with a distinct orthogonal code as defined by Equation (27-52).

*TGax Editor: Update D4.1 P581L48 as shown below.*

If the 1x HE-LTF is used for non-OFDMA UL MU-MIMO, the HE no pilot HE-LTF mode is used.

# CID 20868

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20868 | 27.3.2.6 | 485.44 | It is not clear whether "full bandwidth UL MU-MIMO" requires more than two STAs to have been asked to transmit an HE TB PPDU, or whether the case of a Trigger frame that allocates the full bandwidth and all SSes to a single STA is a special case of "full bandwidth UL MU-MIMO" | At the end of the referenced subclause add a "NOTE---A full bandwidth UL MU-MIMO transmission is one where one or more STAs transmit an HE TB PPDU, all over the same bandwidth." |

**Background**

D4.1 P489:

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**Proposed Resolution: CID 20868**

**Revised**.

Note that the sentence pointed out by the commenter has been deleted as part of resolution for CID 21214.

Note to Editor: There is no text change needed for this CID.

# CID 20785, 20783, 20784

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20785 | 27.3.10.10 | 562.16 | Re CID 16344: it does hurt to repeat the same requirement in multiple places as this leads to spec rot. It's even worse if the duplication is only partial, because the reader is left wondering whether there's some distinction between the material that was duplicated and that which was not, or if there is a mistake and if so which is correct | Delete ""It is optionalto support the 1x HE-LTF in an HE SU PPDU and HE ER SU PPDU. It is mandatory to support 1x HE-LTFfor full bandwidth UL MU-MIMO, for a STA declaring support for UL MU-MIMO. The 1x HE-LTF is dis-allowed in an HE MU PPDU and in an HE TB PPDU with more than one RU." |
| 20783 | 27.3.10.10 | 562.36 | Re CID 16342: I'm not clear what "This option is fundamentally optional" means. It is important to be clear that some of the options are "conditional mandatory", i.e. if you support something else, then they're in fact mandatory not optional | Indicate in the table that certain "optional" combinations are mandatory if the corresponding ER combinations are supported, as indicated in 28.1.1: "shall support [...] HE SU PPDUs with 0.8 us GI duration on both the HE-LTF and Data field symbols when the HE-LTF is a 4x LTF if the STA supports HE ER SU PPDUs with 0.8 us GI duration on both the HE-LTF and Data field symbols when the HE-LTF is a 4x LTF (transmit and receive). [...] HE MU PPDUs with 0.8 us GI duration on both the HE-LTF and Data field symbols when the 4xHE-LTF is used if the HE AP supports HE ER SU PPDUs with 0.8 us GI duration on both the HE-LTF and Data field symbols when the HE-LTF is a 4x LTF (transmit)." |
| 20784 | 27.3.10.10 | 562.36 | Re CID 16343: the whole point was to make the information digestible, because when we didn't have the table it was extremely difficult to find the mandatory/optional/unavailable distinctions | Indicate in each cell whether it is about tx or rx and whether it is about an AP or a non-AP STA |

**Proposed Resolution: CID 20785**

**Accepted**.

Note to Editor: Proposed text updates for CIDs 20785 and 20783 in 11-19/0831r1 has the consolidated text changes which includes the exact changes proposed by the commenter.

**Proposed Resolution: CID 20783**

**Revised**.

Proposed text update in 11-19/0831 adds ‘conditional mandatory’ as an option, and lists the condition in notes.

Instruction to Editor: Implement the proposed text updates for CIDs 20785 and 20783 in 11-19/0831r1.

**Proposed Resolution: CID 20784**

**Rejected**.

The main purpose of Table 27-29 is to describe the mandatory/optionality of various LTF/GI modes. Whether the transmission and/or reception of a PPDU type is mandatory or optional for AP and/or non-AP STA is described in other parts of the standard (e.g. 27.1.1). Table 27-29 does not ‘override’ that. For example, 27.1.1 does not require an AP to transmit HE TB PPDU, or require a non-AP STA to receive HE TB PPDU. Hence, even if a particular LTF/GI combination is indicated as mandatory in Table 27-29, it is clear that transmitting that LTF/GI combination is not required by an AP, and receiving that LTF/GI combination is not required by a non-AP STA. There is no need to further complicate Table 27-29 with such information.

**Proposed Text Updates: CID 20785, 20783**

*TGax Editor: Update D4.1 P567L18 as shown below.*

An HE PPDU supports 3 HE-LTF types: 1x HE-LTF, 2x HE-LTF and 4x HE-LTF. Table 27-29 indicates whether a particular HE-LTF type and GI duration combination is mandatory, conditional mandatory or optional for each HE PPDU format.

In an HE SU PPDU, HE MU PPDU and HE ER SU PPDU, the combination of HE-LTF type and GI duration is indicated in HE-SIG-A field. In an HE TB PPDU, the combination of HE-LTF type and GI duration is indicated in the Trigger frame that triggers the transmission of the PPDU. If an HE PPDU is an HE sounding NDP, the combinations of HE-LTF types and GI durations are listed in 27.3.18 (Transmit specification). If an HE PPDU is an HE TB feedback NDP, the combinations of types and GI durations are listed in 27.3.4 (HE PPDU formats).

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| Table 27-29 HE-LTF mode and GI duration combinations for various HE PPDU formats  |
| HE-LTF type and GI duration combination | HE SU PPDU | HE MU PPDU | HE ER SU PPDU | HE TB PPDU | HE sounding NDP | HE TB feedback NDP |
| 1x HE-LTF0.8 µs GI | O | N/A | O | N/A | N/A | N/A |
| 1x HE-LTF1.6 µs GI | N/A | N/A | N/A | CM(See NOTE 3) | N/A | N/A |
| 2x HE-LTF0.8 µs GI | M | M | M | N/A | M | N/A |
| 2x HE-LTF1.6 µs GI | M | M | M | M | M | N/A |
| 4x HE-LTF0.8 µs GI | CM(See NOTE 1) | CM(See NOTE 2) | O | N/A | N/A | N/A |
| 4x HE-LTF3.2 µs GI | M | M | M | M | O | M |
| M = mandatoryCM = conditional mandatoryO = optionalN/A = not supported by the PPDU formatNOTE 1 – Mandatory if the STA supports 4x HE-LTF 0.8 µs GI for HE ER SU PPDU. Otherwise, optional.NOTE 2 – For an AP, mandatory for transmission if the AP supports 4x HE-LTF 0.8 µs GI for HE ER SU PPDU. For a non-AP STA, mandatory for reception if the non-AP STA supports 4x HE-LTF 0.8 µs GI for HE ER SU PPDU. Otherwise, optional.NOTE 3 – Mandatory if the STA supports UL MU-MIMO. Otherwise, not supported. |

# CID 20560

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20560 | 27.3.14.2 | 608.17 | "from the non-HE portion of the HE PPDU preamble of the Trigger frame" -- a Trigger frame might be carried in a non-HE PPDU. Besides, a Trigger frame doesn't have a preamble [powerprecorr] | Change the cited text at the referenced location to "from the L-STF, L-LTF and L-SIG of the triggering PPDU (or from the PHY preamble, for triggering PPDUs that are DSSS or HR/DSSS PPDUs)". After the first para of 26.5.3.1 add a para "A triggering PPDU shall not be transmitted in HT\_GF format." |

**Proposed Resolution: CID 20560**

**Revised**.

Agree with the commenter that the cited text does not take into account the cases where the trigger PPDU is not an HE PPDU. Note that DSSS or HR/DSSS PPDUs cannot be used as a triggering PPDU (see D4.1 P330L39). Also, while excluding HT\_GF from being a triggering PPDU is an option, it is not necessary in resolving the problem stated by the commenter.

Proposed text update in 11-19/0831 expands the language to cover the cases of triggering PPDUs being non-HT, non-HT duplicate, HT, VHT and HE PPDUs.

Instruction to Editor: Implement the proposed text updates for CID 20560 in 11-19/0831r1.

**Proposed Text Updates: CID 20560**

*TGax Editor: Update D4.1 P613L17 as shown below.*

  (27-124)

where

 represents the AP's combined transmit power at the antenna connectors of all the transmit antennas used to transmit the Trigger frame and normalized to 20 MHz bandwidth.  is dBm value of AP Tx Power subfield of the Common Info field in Trigger frame, the encoding of which is specified in 9.3.1.22 (Trigger frame format).

*DLRSSI* represents the measured received power of the triggering PPDU at the STA normalized to 20 MHz bandwidth. *DLRSSI* in dBm is an average of the received power over the antennas on which the average *PLDL* is being computed. If the triggering PPDU is a HT-mixed, VHT or HE PPDU, then the received power is measured from the fields prior to the HT-STF, VHT-STF or HE-STF, respectively.

# CID 21365

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21365 | 27.3.18 | 615.34 | Next, for each frequency at which "neither" of the two 80 MHz interim masks have values greater than or equal to -20 dBr and less than or equal to 0 dBr, the higher value of the two interim masks shall be taken as the overall interim spectral value. | Should replace 'neither' with 'either'. |

**Discussion**

D4.1 P620:

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The “neither” pointed out by the commenter (the first word in the green region) is correct. However, in order for the last pink step to work, the blue part has to be defined first. The blue is missing from D4.1.

**Proposed Resolution: CID 21365**

**Revised**.

“Neither” is correct here. During the review, however, another error was found in the spectral mask definition for the 80+80MHz mask. See 11-19/831 for further details. Proposed text change in 11-19/831 fixes the issue.

Instruction to Editor: Implement the proposed text updates for CID 21365 in 11-19/0831r1.

**Proposed Text Updates: CID 21365**

*TGax Editor: Update D4.1 P620L30 as shown below.*

For an 80+80 MHz mask PPDU of HE format, the overall transmit spectral mask is constructed in the following manner. First, the 80 MHz interim spectral mask is placed on each of the two 80 MHz segments. For each frequency at which either of the 80 MHz interim spectral mask has value equal to 0 dBr, then 0 dBr shall be taken as the overall interim spectral mask value. Then, for each frequency at which both of the 80 MHz interim spectral masks have values greater than 40 dBr and less than 20 dBr, the sum of the two interim mask values (summed in linear domain) shall be taken as the overall interim spectral mask value. Next, for each frequency at which neither of the two 80 MHz interim masks have values greater than or equal to 20 dBr, the higher value of the two interim masks shall be taken as the overall interim spectral mask value. Finally, for any frequency region where the overall interim spectral mask value has not been defined yet, linear interpolation (in dB domain) between the nearest two frequency points with the overall interim spectral mask value defined shall be used to define the overall interim spectral mask value. The transmit spectrum shall not exceed the maximum of the overall interim transmit spectrum mask and 59 dBm/MHz at any frequency offset.

# CID 21360

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21360 | 27.3.19.1 | 624.38 | If the PPDU bandwidth is 20 MHz, BCC is used | For 20MHz 1024 QAM, need to use LDPC |

**Background**

D4.0 P624:

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D4.1 P631:

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**Proposed Resolution: CID 21360**

**Revised**.

This has already been fixed in D4.1 per CID 20360.

Note to Editor: There is no additional text change needed for this CID.

# CID 20277

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20277 | 3.2 | 34.64 | Why does a 40 MHz non-HT duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) transmitted by an HE STA use the 40 MHz transmit spectral mask defined in Clause 19 instead of using mask defined in clause 27? | Change to "a 40 MHz non-HT duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) transmitted by an HE STA using the 40 MHz transmit spectral mask defined in Clause 27(High Efficiency (HE) PHY specification)" |

**Background**

D4.1 P38-39:

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| … |

**Proposed Resolution: CID 20277**

**Rejected**.

The shape of the transmit spectrum is primarily a function the PPDU type, not the STA type. Even if an HE STA is transmtting a 40 MHz non-HT duplicate PPDU, it is using the subcarrier spacing (312.5 KHz), number of subcarriers, symbol duration, etc. as defined in clause 19. Spectral mask in clause 27 is specifically for the case of narrower subcarrier spacing (78.125 KHz), longer symbol duration (12.8 usec), etc.

# CID 20278

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 20277 | 3.2 | 35.17 | Since a STA operating in 6GHz band doesn't support VHT operation, the STA transmits an 80 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) transmitted using the 80 MHz transmit spectral mask defined in Clause 27(High Efficiency (HE) PHY specification) instead of in Clause 21 (Very High Throughput (VHT) PHY specification). Please clarify it. | As in comment. |

**Background**

D4.1 P39:

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| … |

**Proposed Resolution: CID 20278**

**Rejected**.

The shape of the transmit spectrum is primarily a function the PPDU type, not the STA type. Even if an HE STA is transmtting a 80 MHz non-HT duplicate PPDU, it is using the subcarrier spacing (312.5 KHz), number of subcarriers, symbol duration, etc. as defined in clause 21. Spectral mask in clause 27 is specifically for the case of narrower subcarrier spacing (78.125 KHz), longer symbol duration (12.8 usec), etc.

Furthermore, while an HE STA in 6 GHz is not a VHT STA, it does not mean that we cannot reference some of the information (e.g. transmit spectral mask) in clause 21. For example, cyclic shift values for pre-HE modulated fields refer to Table 21-10 (see D4.1 P523L62). The fact that we reference some information (e.g. CSD values) in clause 21 does not mean that HE cannot operate in the 6 GHz band.

# CID 21348

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21348 | 3.2 | 40.27 | The definition of "triggering frame" seems redundant as it is only used in this section to define trigerring PPDU and is not used anywhere else in the specfication. | Delete the definition for triggering frame and change the definition of trigerring PPDU as:"A PPDU carrying a Trigger frame or a frame carrying a TRS Control Subfield." |

**Proposed Resolution: CID 21348**

**Revised**.

There are a number of instances in D4.1 which uses the phrase “Trigger frame or a frame carrying a TRS Control subfield”. Proposed text update in 11-19/0831 replaces those with “triggering frame”.

Instruction to Editor: Implement the proposed text updates for CID 21348 in 11-19/0831r1.

**Proposed Text Updates: CID 21348**

*TGax Editor: Update D4.1 P260L34 as shown below.*

* A frame soliciting an HE TB PPDU (triggering frame) or an A-MPDU containing at least one such frame, followed after SIFS by an HE TB PPDU where the HE TB PPDU is optionally followed after SIFS by an acknowledgment

*TGax Editor: Update D4.1 P343L56 as shown below.*

An AP shall not transmit an A-MPDU to a non-AP STA that includes an Ack or BlockAck frame together with a triggering frame unless both the AP and the non-AP STA have indicated support by setting the MU Cascading Support subfield to 1 in the MAC Capabilities Information field in the HE Capabilities element they transmit.

*TGax Editor: Update D4.1 P395L27 as shown below.*

An OMI initiator that is a non-AP STA may indicate changes in its transmit parameters by sending a frame that contains the OM Control subfield to the OMI responder. The OMI initiator shall set:

— The UL MU Disable subfield to 1 to indicate suspension to response to a triggering frame (see 26.5.2).

*TGax Editor: Update D4.1 P396L15 as shown below.*

NOTE—A device might have multiple radios that can create difficult in-device coexistence challenges. The device might set UL MU Disable subfield to 1 and the UL MU Data Disable subfield to 0 if it has trouble responding to a triggering frame because the timing or high transmit power would cause interference with another radio in the device.

*TGax Editor: Update D4.1 P478L39 as shown below.*

UL MU transmissions are preceded by a triggering frame from the AP.

*TGax Editor: Update D4.1 P493L42 as shown below.*

This format is used for a transmission that is a response to a triggering frame from an AP.

# CID 21471

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| **CID** | **Clause** | **Page.Line** | **Comment** | **Proposed Change** |
| 21471 |  |  | PPE and PE. Are they the same or different? It looks like PPE is used only when the discussion of the threshold. | Clarify. If they are identical, remove one and change its occurences with the other |

**Proposed Resolution: CID 21471**

**Rejected**.

The term PPE is used to indicate how much padding, including “both” post-FEC padding and PE (packet extension) field, the receiver requires at a minimum. Then for a given transmission, the transmitter first decides the post-FEC padding factor, based on which the post-FEC padding “duration” can be computed. After this, the transmitter can determine the minimum PE duration that needs to be transmitted in order to meet the receiver’s requirement.

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