IEEE P802.11
Wireless LANs

|  |
| --- |
| **CC50 Comment Resolutions for 38.3.4 Transmission of DRU** |
| **Date:** 2025-04-07 |
| **Author(s):** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Affiliation** | **Address** | **Phone** | **Email** |
| Eunsung Park | LG Electronics | 19, Yangjae-daero 11gil, Seocho-gu, Seoul 137-130, Korea  |   | esung.park@lge.com |
| Dongguk Lim |  | dongguk.lim@lge.com |
| Insik Jung |  | insik0618.jung@lge.com |
| Jinsoo Choi |  | js.choi@lge.com |

Abstract

This submission proposes resolutions for comments of TGbn D0.2 with the following 7 CIDs:

574 889 2259 2261 2262 2263 2265

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revision based on discussion and 8 CIDs deferred
* Rev 2: Resolution for some of the deferred CIDs (highlighted in green)

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 TGbn D0.2 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbn D0.2 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

#### *CIDs 2176 306 2706 2258*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2176 | 38.3.4 | 117.54 | Is the description for why DRU is used (or for what purpose) needed in the spec? | remove the first sentence in this paragraph | Accepted. |
| 306 | 38.3.4 | 117.54 | "Distributed tone RUs (DRU) are defined in UHR to overcome PSD limitations and boost the transmit power by spreading its tones in a certain distribution bandwidth (DBW) (...)".This would fit better in an introductory section on DRUs | See comment | Revised.Agree in principle with the commenter. Suggest to delete the sentence.TGbn editor: Resolution is the same as CID2176 in 11-25/0570r1. |
| 2706 | 38.3.4 | 117.54 | There is no clear definition/explanation what does it mean "overcome PSD Limitation". PSD Limitations are not defined by the spec and thus functionality of this feature is not clear | Suggest to add a tools that allows to recognize when PSD Limitations prevent to reach target throughput and assist DRU feature to be applied | Revised.Agree in principle with the commenter. Suggest to delete the sentence.TGbn editor: Resolution is the same as CID2176 in 11-25/0570r1. |
| 2258 | 38.3.4 | 117.57 | Change "A DRU transmission is allowed only inan OFDMA UHR TB PPDU to maximize the power boost gain of each DRU and UL MU MIMO isdisallowed for a DRU transmission." to "A DRU transmission is allowed only ina UHR OFDMA TB PPDU to maximize the power boost gain of each DRU, and disallowed in a UHR MU-MIMO TB PPDU". | As in comment | Revised.Agree in principle with the commenter. The terms “UHR OFDMA TB PPDU” and “UHR MU-MIMO TB PPDU” are not generally used in the baseline spec. Thus, suggest to use the terms, “UL OFDMA transmission” and “UL MU-MIMO”.TGbn editor: Please make the changes shown in 11-25/0570r1. |

#### *CIDs 1771*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 1771 | 38.3.4 | 118.01 | From the context of the text, it sounds like this paragraph is talking about 80 MHz UHR TB PPDU but not 80MHz frequency subblock. This paragraph is redundant, since the next paragraph explicitly describes 80 MHz UHR TB PPDU, and later paragraphs explicitly describes 160 MHz and 320 MHz UHR TB PPDU. | Remove the paragraph. | Accepted. |

#### *CIDs 2689 1020 2177*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2689 | 38.3.4 | 118.14 | I don't think we use the term 'preamble puncturing' for TB PPDU. | Don't have a specific suggestion, but please check whether the term 'preamble puncturing' is appropriate for TB PPDUs. |  |
| 1020 | 38.3.4 | 118.05 | The term "DBW mode" is not defined | Define "DBW mode" | Revised.Agree in principle with the commenter. Suggest to add a meaning of “DBW mode”.TGbn editor: Please make the changes shown in 11-25/0570r1. |
| 2177 | 38.3.4 | 118.06 | rephrase the sentence starting with 'One mode...' | change to "In one mode, 20 MHz DBWs are applied to the ...In the other mode, the 20 MHz DBWs are applied to the ..." | Accepted. |

#### *CIDs 2723 2259*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2723 | 38.3.4 | 118.14 | Change from "a DBW mode" to "four DBW modes" | see comments | Revised.Agree in principle with the commenter.TGbn editor: Please make the changes shown in 11-25/0570r1. |
| 2259 | 38.3.4 | 118.14 | Paragraph 3 on page 110 can be simiplified to "For an 80 MHz UHR TB PPDU with 20 MHz preamble puncturing, a DBW mode combining one 20 MHz DBW and one 40 MHz DBW is allowed where 40 MHz DBW is applied to the non-punctured 40 MHz subchannel and 20 MHz DBW is applied to the non-punctured 20 MHz subchannel,". | It is better to have concise spec text. If the details is needed, the original texts can be put in Annex for example. | Revised.Agree in principle with the commenter. Suggest to make the text consice and add a table to clarify the DBW modes.TGbn editor: Please make the changes shown in 11-25/0570r2. |

#### *CIDs 1772*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 1772 | 38.3.4 | 118.30 | It's strange and unreasonable that for an 80 MHz UHR TB PPDU with the highest 20 MHz preamble puncturing, 60 MHz DBW is allowed, but for an 80 MHz UHR TB PPDU with the lowest 20 MHz preamble puncturing, 60 MHz DBW is not allowed. | Add text to also allow 60 MHz DBW for an 80 MHz UHR TB PPDU with the lowest 20 MHz preamble puncturing.Or disallow the 60 MHz DBW in all the cases. | Rejected.60 MHz DBW has been defined to obtain a better power boosting gain than the 20+40 MHz DBW mode. To reduce the signaling overhead and implementation burden, only one 60 MHz DBW mode has been adopted. |

#### *CIDs 2261*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2261 | 38.3.4 | 118.33 | Change "For a 160 MHz UHR TB PPDU and a 320 MHz UHR TB PPDU, in a certain 80 MHz frequency subblock without preamble puncturing, 80 MHz DBW is allowed and the 80 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices." to "For a 160 MHz or 320 MHz UHR TB PPDU, 80 MHz DBW is allowed in an 80 MHz frequency subblock without preamble puncturing. The 80 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.". | As in comment | Revised.Agree in principle with the commenter. Suggest to modify the text and add a table to clarify the DBW modes.TGbn editor: Please make the changes shown in 11-25/0570r2. |

#### *CIDs 574 889*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 574 | 38.3.4 | 118.33 | In 160 MHz and 320 MHz, 20+20+40 DBW is allowed in the primary 80 MHz channel. Add a text for this DBW mode. | See the comment. | Revised.Agree in principle with the commenter.TGbn editor: Please make the changes shown in 11-25/0570r2. |
| 889 | 38.3.4 | 118.33 | The text corresponding to the motion #237 is missing | Please add text to reflect the motion #237: For 160 MHz and 320 MHz PPDUs, in only the non-punctured primary 80 MHz subblock, the following distribution bandwidth mode is allowed for DRU20 MHz + 20 MHz + 40 MHz (or 40 MHz + 20 MHz + 20 MHz) | Revised.Agree in principle with the commenter.TGbn editor: Resolution is the same as CID574 in 11-25/0570r2. |

#### *CIDs 2262 2724*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2262 | 38.3.4 | 118.40 | Paragraph 6 on page 110 can be simplified. It has too much repeating text as in paragraph 3.Change to "For a 160 MHz or 320 MHz UHR TB PPDU, a DBW mode combining one 20 MHz DBW and one 40 MHz DBW is allowed in an 80 MHz frequency subblock with 20 MHz preamble puncturing, where 40 MHz DBW is applied to the non-punctured 40 MHz subchannel and 20 MHz DBW is applied to the non-punctured 20 MHz subchannel." | As in comment | Revised.Agree in principle with the commenter. Suggest to make the text consice and add a table to clarify the DBW modes.TGbn editor: Please make the changes shown in 11-25/0570r2. |
| 2724 | 38.3.4 | 118.40 | Change from "a DBW mode" to "four DBW modes" | see comments | Revised.Agree in principle with the commenter.TGbn editor: Please make the changes shown in 11-25/0570r1. |

#### *CIDs 2263*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2263 | 38.3.4 | 118.60 | Change "For a 160 MHz UHR TB PPDU and a 320 MHz UHR TB PPDU, in a certain 80 MHz frequency subblock with the highest 20 MHz preamble puncturing, 60 MHz DBW is allowed and the 60 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices." to "For a 160 MHz or 320 MHz UHR TB PPDU, 60 MHz DBW is allowed in an 80 MHz frequency subblock with the highest 20 MHz unallocated, and the 60 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices". This is in PHY motion 64. | As in comment | Revised.Agree in principle with the commenter. Suggest to modify the text and add a table to clarify the DBW modes.TGbn editor: Please make the changes shown in 11-25/0570r2. |

#### *CIDs 2265*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 2265 | 38.3.4 | 119.01 | Rephrase paragraph 1 on page 111 to "For a 160 MHz or a 320 MHz UHR TB PPDU, 40 MHz DBW is applied to the non-punctured 40 MHz subchannel of the 80 MHz frequency subblock with 40 MHz preamble puncturing, and 40 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used byapplying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.". | As in comment | Revised.Agree in principle with the commenter. Suggest to modify the text and add a table to clarify the DBW modes.TGbn editor: Please make the changes shown in 11-25/0570r2. |

*TGbn Editor: Please make the following changes in Section 38.3.4 of D0.2:*

**38.3.4 Transmission of DRU**

(#2176)(#306)(#2706)A DRU transmission is allowed only in an UL OFDMA transmission to maximize the power boost gain of each DRU, and disallowed in a UL MU-MIMO transmission.(#2258) Also, the maximum number of spatial streams allowed in a DRU transmission is two.

For a 20 MHz TB PPDU, the DBW is 20 MHz only.

For a 40 MHz TB PPDU, the DBW is 40 MHz only.

(#1771)

For an 80 MHz UHR TB PPDU without preamble puncturing, (#2259)80 MHz DBW and two DBW modes combining two 20 MHz DBWs and one 40 MHz DBW are allowed (#2259)as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU). (#1020)The DBW mode is an allowed combination of DBWs for a DRU transmission. (#2177)In one mode, 20 MHz DBWs are applied to the lowest and the second lowest 20 MHz subchannels and 40 MHz DBW is applied to the highest 40 MHz subchannel. (#2177)In the other mode, 20 MHz DBWs are applied to the highest and the second highest 20 MHz subchannels and 40 MHz DBW is applied to the lowest 40 MHz subchannel. In these DBW modes, 20 MHz and 40 MHz DRU tone plans (see 38.3.2.1 (Tone plan for DRUs)) are used for 20 MHz and 40 MHz DBWs, respectively, by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For an 80 MHz UHR TB PPDU with 20 MHz preamble puncturing, (#2723)four DBW modes(#2723) combining one 20 MHz DBW and one 40 MHz DBW (#2723)are allowed (#2259)where 40 MHz DBW is applied to the non-punctured 40 MHz subchannel and 20 MHz DBW is applied to the non-punctured 20 MHz subchannel as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU). In these DBW modes, 20 MHz and 40 MHz DRU tone plans (see 38.3.2.1 (Tone plan for DRUs)) are used for 20 MHz and 40 MHz DBWs, respectively, by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For an 80 MHz UHR TB PPDU with the highest 20 MHz preamble puncturing, 60 MHz DBW is allowed (#2259)as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU) and the 60 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used.

For a 160 MHz (#2261)or 320 MHz UHR TB PPDU, 80 MHz DBW is allowed in an 80 MHz frequency subblock without preamble puncturing as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU). The 80 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

(#574)(#889) For a 160 MHz or 320 MHz UHR TB PPDU, two DBW modes combining two 20 MHz DBWs and one 40 MHz DBW are allowed only in the primary 80 MHz channel without preamble puncturing as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU). In these DBW modes, 20 MHz and 40 MHz DRU tone plans (see 38.3.2.1 (Tone plan for DRUs)) are used for 20 MHz and 40 MHz DBWs, respectively, by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For a 160 MHz (#2262)or 320 MHz UHR TB PPDU, (#2724)four DBW modes(#2724) combining one 20 MHz DBW and one 40 MHz DBW (#2724)are allowed (#2262)in an 80 MHz frequency subblock with 20 MHz preamble puncturing where 40 MHz DBW is applied to the non-punctured 40 MHz subchannel and 20 MHz DBW is applied to the non-punctured 20 MHz subchannel as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU). In these DBW modes, 20 MHz and 40 MHz DRU tone plans (see 38.3.2.1 (Tone plan for DRUs)) are used for 20 MHz DBWs and 40 MHz DBW, respectively, by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For a 160 MHz (#2263)or 320 MHz UHR TB PPDU, 60 MHz DBW is allowed in an 80 MHz frequency subblock with the highest 20 MHz preamble puncturing as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU), and the 60 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For a 160 MHz (#2265)or 320 MHz UHR TB PPDU, 40 MHz DBW is applied to the non-punctured 40 MHz subchannel in an 80 MHz frequency subblock with 40 MHz preamble puncturing as described in the Table 38-xx (DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU), and 40 MHz DRU tone plan (see 38.3.2.1 (Tone plan for DRUs)) is used by applying constant tone shifts (see 38.3.2.1 (Tone plan for DRUs)) to align tone indices.

For a 160 MHz UHR TB PPDU and a 320 MHz UHR TB PPDU, a hybrid mode where DRUs and Regular RUs (RRUs) are simultaneously used in one UHR TB PPDU is allowed. For a UHR TB PPDU with the hybrid mode, either DRU or RRU are used within each 80 MHz frequency subblock and DRUs and RRUs are not mixed within a certain 80 MHz frequency subblock. The minimum RRU size is 242 in the hybrid mode.

(#2259)(#2261)(#574)(#889)(#2262)(#2263)(#2265) Table 38-xx—DBW modes allowed in an 80 MHz frequency subblock for an 80 MHz, 160 MHz, or 320 MHz UHR TB PPDU

|  |  |
| --- | --- |
|  | DBW modes |
| Non-punctured cases | {DBW80},{DBW20-DBW20-DBW40} (see NOTE 1), {DBW40-DBW20-DBW20} (see NOTE 1) |
| Punctured cases | {[gap-20]-DBW20-DBW40}, {DBW20-[gap-20]-DBW40},{DBW40-[gap-20]-DBW20}, {DBW40-DBW20-[gap-20]},{DBW60-[gap-20]},{[gap-40]-DBW40} (see NOTE 2), {DBW40-[gap-40]} (see NOTE 2) |
| DBW*x* and [gap-*y*] mean *x* MHz DBW and *y* MHz preamble puncturing, respectivelyNOTE 1—These two DBW modes are allowed only in the primary 80 MHz channel without preamble puncturing in case of a 160 MHz or 320 MHz UHR TB PPDU.NOTE 2—These two DBW modes are allowed only in a 160 MHz or 320 MHz UHR TB PPDU |