IEEE P802.11
Wireless LANs

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| LB 271 CR for 35.7.2 Part II |
| Date: 2023-04-05 |
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Abstract

##### This submission present proposed resolutions for the following 17 CIDs:

##### 17273, 17046, 17047, 17048, 18011, 17981, 17982, 17049, 15576, 17050, 17052, 15577, 17054, 17983, 17984, 17053, 17055

##### The proposed changes are based on 802.11be/D3.1.

##### Revision history:

##### r0 – initial version

r1 – changes based on suggestions of Mark and Youhan

r2 – Add SP for CID 17048 based on Youhan’s suggestions

## CID 17273, 17046

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| **CID** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 17273 | 35.7.2 | 600.10 | Why "242-tone RU" is emphasized? | An EHT NDP Announcement frame shall not request partial bandwidth feedback on any RU outside of the beamformee's operating channel width. | Revised. Agree with the commenter in principle.According to 9.3.1.19.4, The Resolution subfield in the Partial BW Info subfield indicates the resolution bandwidth for each bit in the Feedback Bitmap subfield. When the bandwidth of the PPDU carrying the EHT NDP Announcement frame is less than 320 MHz, the Resolution bit B0 is set to 0 to indicate a resolution of 20 MHz. When the bandwidth of the PPDU carrying the EHT NDP Announcement frame is equal to 320 MHz, set the Resolution bit B0 to 1 to indicate a resolution of 40 MHz. Therefore, to be accurate, the sentence is changed to: “An EHT NDP Announcement frame shall not request partial bandwidth feedback on any RU outside of the beamformee’s operating channel width.Similarly, the sentence above this one is not accurate (P600L6 in 802.11be 3.0). Similar change is applied.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17273 |
| 17046 | 35.7.2 | 600.15 | “ In an EHT non-TB sounding sequence case” – spurious “case” | Delete “case" | Accepted |

***TGbe editor: please make the following change in subclause 35.7.2***

***P606L31***

An EHT NDP Announcement frame shall not request feedback on (#17273) any RU that is signaled as punctured in the U-SIG field of the EHT sounding NDP that follows the EHT NDP Announcement frame.

***P606L35***

An EHT NDP Announcement frame shall not request partial bandwidth feedback on (#17273) any RU outside of the beamformee’s operating channel width.

***P606L41***

In an EHT non-TB sounding sequence (#17046), the occupied subchannel(s) indicated by the BW and Puncturing Channel Information fields in the U-SIG field of the EHT sounding NDP shall be the same as the requested subchannel(s) indicated in the Partial BW Info subfield of the immediately preceding EHT NDP Announcement frame.

## CID 17047, 17048, 18011, 17981, 17982

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| **CID** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 17047 | 35.7.2 | 601.10 | This " in the STA Info field " is unnecessary (already on previous line) | Delete the cited text | Accepted |
| 17048 | 35.7.2 | 601.27 | "An EHT beamformee shall set the Beamformee SS (â¤ 80 MHz) subfield to indicate a maximum number ofspatial streams of 4 or greater.An EHT beamformee shall set the Beamformee SS (= 160 MHz) subfield to indicate a maximum number ofspatial streams of 4 or greater.An EHT beamformee shall set the Beamformee SS (= 320 MHz) subfield to indicate a maximum number ofspatial streams of 4 or greater." duplicates Clause 9 ("The mini-mum value of this field is 3.") | Delete the cited text | RevisedAgree with the comment in principle. However, it is necessary to emphasize that the setting of the maximum number of spatial streams in the Beamformee SS (<= 80 MHz), the Beamformee SS ( = 160 MHz) and Beamformee SS ( = 320 MH) respectively. Therefore, to be more concise, the 2nd sentence and the 3rd sentence are moved to the following paragraphs respectively. Please refer to CIDs 18011, 17981 and 17982.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17048 |
| 18011 | 35.7.2 | 601.27 | The 3 paragraphs starting from this line look a little out of place. Pls move them downwards, after line 46. | As in comment | Revised. Agree with the comment in principle. The first paragraph indicated in the comment is kept in the original place as the previous paragraph addressed the setting of the Beamformee SS (<= 80 MHz) subfield. Following this logic, the 2nd paragraph indicated in the comment is moved to the paragraph addressing the setting of the Beamformee SS (=160 MHz) subfield; the 3rd paragraph indicated in the comment is moved to the paragraph addressing the setting of the Beamformee SS (=320 MHz) subfield. Please refer to CIDs 17981, 17982.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 18011. |
| 17981 | 35.7.2 | 601.31 | Move paragraph on lines 31-32 to after the paragraph that discusses the Beamformee SS (= 160 MHz) subfield (lines 38-41). | See comment | Accepted |
| 17982 | 35.7.2 | 601.35 | Move paragraph on lines 35-36 to after the paragraph that discusses the Beamformee SS (= 320 MHz) subfield (lines 43-46). | See comment | Accepted |

Discussions on CID 17048:

There are two options to modify the following texts as the resolution of CID 17048.

**P278**

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**P607**

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**P608**

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**Option 1:**

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| At D3.1 P278L10, P278L20, P278L30, change“The minimum value of this field is 3.”to“<Line Change>NOTE – The minimum value of this field is 3 when the SU Beamformee subfield is 1 (see 35.7.2).<Line Change>”In D3.1, move the sentence at P607L54-56 to P607L65.In D3.1, move the sentence at P607L58-60 to P608L4. |

**Option 2:**

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| At D3.1 P278L10, P278L20, P278L30, change“The minimum value of this field is 3.”to“<Line Change>NOTE – The minimum value of this field is 3 when the SU Beamformee subfield is 1  (see 35.7.2).<Line Change>”Delete the paragraph at D3.1 P607L46-48.Delete the two paragraphs at D3.1 P607L62-P608L3. |

SP: Which option do you prefer as the resolution of CID 17048

1. Option 1
2. Option 2
3. Abs

**End of discussion**

***Tgbe editor: please make the following change in subclause 35.7.2***

***P607L32***

The Feedback Type And Ng subfield and Codebook Size subfield in the STA Info field indicate MU, the Codebook Size subfield (#17047) indicates codebook resolution $\left(ϕ, ψ\right)=\{7,5\}$ , and the Codebook Size $\left(ϕ, ψ\right)=\{7,5\}$ MU Feedback subfield in the EHT PHY Capabilities Information field is 0.

 ***P607L54***

 (#17048)

 (#17048)

An EHT beamformee indicates the maximum number of spatial streams it can receive in a 160 MHz EHT sounding NDP in the Beamformee SS (= 160 MHz) subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits.

 (#17048)

An EHT beamformee indicates the maximum number of spatial streams it can receive in a 320 MHz EHT sounding NDP in the Beamformee SS (= 320 MHz) subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits.

 (#17048)

## CID 17049, 15576, 17050, 17052

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| **CID** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 17049 | 35.7.2 | 602.06 | "An EHT beamformer indicates the maximum number of spatial streams it might transmit in a 20 MHz,40 MHz, or 80 MHz EHT sounding NDP in the Number Of Sounding Dimensions (â¤ 80 MHz) subfield.An EHT beamformer indicates the maximum number of spatial streams it might transmit in a 160 MHz EHTsounding NDP in the Number Of Sounding Dimensions (= 160 MHz) subfield.An EHT beamformer indicates the maximum number of spatial streams it might transmit in a 320 MHz EHTsounding NDP in the Number Of Sounding Dimensions (= 320 MHz) subfield." is essentially duplicated in the next 3 paras | Delete the cited text | Accepted. |
| 15576 | 35.7.2 | 602.08 | Add "in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits".Do the same in the next 5 paragraphs. | As in comment | RevisedCID 17049 suggests removing the first 3 paragraphs. The changes are only applied to 2 paragraphs.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 15576. |
| 17050 | 35.7.2 | 602.37 | "sent by the EHT beamformee" should be just "it sends" | As it says in the comment | Accepted |
| 17052 | 35.7.2 | 602.50 | "An EHT NDP Announcement frame carried by a PPDU of bandwidth larger than 40 MHz shall not solicitfrom an EHT beamformee with 40 MHz operating channel width." -- solicit what? Any feedback? Partial-bw feedback? | Clarify | Revised. Agree with the commenter in principle. As indicated in Table 9-45b, no feedback is allowed to be solicited by the EHT NDP Announcement frame carried by a PPDU of BW larger than 40 MHz if the beamformee’s operating BW is 40 MHz.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17052. |

***Tgbe editor: please make the following change in subclause 35.7.2***

***P608L30***

An EHT beamformer shall not transmit a 20 MHz, 40 MHz, or 80 MHz EHT sounding NDP where the number of spatial streams exceeds the value indicated in the Number Of Sounding Dimensions (≤ 80 MHz) subfield (#15576) in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits.

An EHT beamformer shall not transmit a 160 MHz EHT sounding NDP where the number of spatial streams exceeds the value indicated in the Number Of Sounding Dimensions (= 160 MHz) subfield (#15576) in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits.

An EHT beamformer shall not transmit a 320 MHz EHT sounding NDP where the number of spatial streams exceeds the value indicated in the Number Of Sounding Dimensions (= 320 MHz) subfield (#15576) in the EHT PHY Capabilities Information field in the EHT Capabilities element it transmits.

***P608L57***

An EHT beamformee indicates the maximum supported data rate used in the EHT TB PPDU carrying the EHT compressed beamforming/CQI report in the TB Sounding Feedback Rate Limit subfield in the EHT PHY Capabilities Information field in the EHT Capabilities element (#17050) it transmits.

***P609L8***

An EHT NDP Announcement frame carried by a PPDU of bandwidth larger than 40 MHz shall not solicit (#17052) any feedback from an EHT beamformee with 40 MHz operating channel width.

## CID 15577, 17054, 17983,17984, 17053

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| **CID** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 15577 | 35.7.2 | 603.25 | The sentence should be removed, since it is covered by the previous three bullets. | As in comment | Accepted |
| 17054 | 35.7.2 | 603.25 | "242-tone and 484-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU ofbandwidth of 20 MHz and 40 MHz." is missing its bullet | As it says in the comment | Revised. Agree with the comment in principle. However, since the first three bullets cover the case shown in this sentence, the sentence is removed from the text.Please refer to CID 15577.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17054. |
| 17983 | 35.7.2 | 603.25 | Sentence on lines 25-27 looks out of place or is a left-over segment from editing previous text. It may be already covered in the bullets above. | See comment | Revised. Agree with the comment in principle.This sentence is removed as the previous three bullets cover the case indicated in this sentence.Please refer to CID 15577.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17983. |
| 17984 | 35.7.2 | 603.29 | "A 40 MHz operating EHT beamformee shall support MU feedback ...". This is specifc for EHT TB sounding sequence, but that information is missing (for comparison - lines 5, 14, 41, 56, ... all explicitly refer to the sounding type when stating the requirements) | Add "In an EHT TB sounding sequence, " in front of the sentence.Make the same change on P603L38, P603L63, P604L13, P604L54, P605L7, P605L62, P606L15. | Revised.Similar problems are existing on P602L63 and P603L1. The resolutions also include the modifications shown in P602L63 and P603L1 (802.11be D3.0).TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17984. |
| 17053 | 35.7.2 | 0.00 | "for 242-tone RU" missing article (5x) | Add missing article (suspect other subclauses too) | Revised. Agree with the commenter in principle. Add “a” between “for” and “242-tone RU” in five locations (P609L12, P609L17, P609L21, P609L25, P609L62) in 35.7.2.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17053. |

***Tgbe editor: please make the following change in subclause 35.7.2***

***P609L49***

(#15577, 17054, 17983)

***P609L12***

In an EHT non-TB sounding sequence, a 20 MHz operating EHT beamformee shall support SU feedback for (#17053) a 242-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.

***P609L17***

In an EHT TB sounding sequence, a 20 MHz operating EHT beamformee may support SU feedback for (#17053) a 242-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz, 40 MHz, 80 MHz, and 160 MHz.

***P609L21***

(#17984) In an EHT TB sounding sequence, a 20 MHz operating EHT beamformee shall support MU feedback for (#17053) a 242-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.

(#17984) In an EHT TB sounding sequence, a 20 MHz operating EHT beamformee may support MU feedback for (#17053) a 242-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz, 80 MHz, and 160 MHz.

***P609L53***

(#17984) In an EHT TB sounding sequence, a 40 MHz operating EHT beamformee shall support MU feedback for the combinations of RU size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.
* 484-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.

***P609L61***

(#17984) In an EHT TB sounding sequence, a 40 MHz operating EHT beamformee may support MU feedback for (#17053) a 242-tone RU solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.

***P610L22***

(#17984) In an EHT TB sounding sequence, an 80 MHz operating EHT beamformee shall support MU feedback for the combinations of RU or MRU (if the MRU is full bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.
* 484-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 996-tone RU and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz or 160 MHz.
* 996-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

***P610L37***

(#17984) In an EHT TB sounding sequence, an 80 MHz operating EHT beamformee may support MU feedback for the combinations of RU or MRU (if the MRU is partial bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 242-tone and 484-tone RU, and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz or 160 MHz.
* 484-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

***P611L14***

(#17984) In an EHT TB sounding sequence, a 160 MHz operating EHT beamformee shall support MU feedback for the combinations of RU or MRU (if the MRUs are full bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.
* 484-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 996-tone RU and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz.
* 2$×$996-tone RU, 996+484-tone and 996+484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 160 MHz.
* 2$×$996-tone RU and 996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

***P611L32***

(#17984) In an EHT TB sounding sequence, a 160 MHz operating EHT beamformee may support MU feedback for the combinations of RU or MRU (if the MRUs are partial bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 242-tone and 484-tone RU, and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz.
* 242-tone, 484-tone, and 996-tone RU, and 484+242-tone and 996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 160 MHz.
* 484-tone and 996-tone RU, and 996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

***P612L22***

(#17984) In an EHT TB sounding sequence, a 320 MHz operating EHT beamformee shall support MU feedback for the combinations of RU or MRU (if the MRUs are full bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 20 MHz.
* 484-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 96-tone RU and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz.
* 2$×$996-tone RU, 996+484-tone and 996+484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 160 MHz.
* 4$×$996-tone RU and 2$×$996+484-tone, 3$×$996-tone, and 3$×$996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

***P612L39***

(#17984) In an EHT TB sounding sequence, a 320 MHz operating EHT beamformee may support MU feedback for the combinations of RU or MRU (if the MRUs are partial bandwidth feedback) size and NDP announcement bandwidth below:

* 242-tone RU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 40 MHz.
* 242-tone and 484-tone RU, and 484+242-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 80 MHz.
* 242-tone, 484-tone, and 996-tone RU, and 484+242-tone and 996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 160 MHz.
* 484-tone, 996-tone, and 2$×$996-tone RU, and 996+484-tone, 2$×$996+484-tone, 3$×$996-tone, and 3$×$996+484-tone MRU feedback solicited with an EHT NDP Announcement frame carried by a PPDU of bandwidth of 320 MHz.

## CID 17055

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| **CID** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 17055 | 35.7.2 | 607.01 | "Informative summary" -- a while ago there was an extensive discussion in TGm, and I think the conclusion was that nothing in a non-Annex could be informative (apart from NOTEs, etc.) | Move to an annex | Revised. Agree with the comment in principle. It is particularly useful to include this summary in the end of 35.7.2 for a clearer and better understanding of mandatory and optional support of RU/MRU feedback in different sounding modes. Therefore, this table is kept in this subclause. The title of the table is changed to “Summary of Supported RU or MRU sizes for sounding feedback”.TGbe editor: please incorporate changes shown in 11-23/0630r1 under the tag 17055. |

***Tgbe editor: please make the following change in subclause 35.7.2***

***P612L55***

Table 35-3 ((#17055) Summary of supported RU or MRU sizes for sounding feedback) summarizes the supported sounding bandwidth for the various sounding modes and feedback types.

***P613L1***

**Table 35-3—(#17055) Summary of supported RU or MRU sizes for sounding feedback**