IEEE P802.11
Wireless LANs

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| **LB266 CR on 9.4.1.71** |
| **Date:** 2022-07-26 |
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Abstract

This submission proposes comment resolutions for the 6 CIDs: 11628, 11687, 12365, 12595, 12596, and 12597.

All the changes are based on P802.11be D2.1.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Green-tag and add the text changes
* Rev 2: add ‘subblock’
* Rev 3: change CR on CID 11628 after discussion with Xiaogang Chen.
* Rev 4: change CR on CID 12597 after discussion with Arik Klein.

#### *CID 11628*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 11628 | 9.4.1.71 | 185.62 | Clarification of lowest and highest frequency for the MRU case should be added | Change text to "from the lowest frequency to the highest frequency (in case of MRU the lowest frequency stands for the lowest frequency of first RU and the highest frequency stands for the highest frequency of the last RU)" | RevisedAgree with the cummenter and add some reference for more clarification.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r4, below CID 11628. |

***Instructions to the editor: Please make the following changes in P187L62 of P802.11be D2.1.***

**9.4.1.71 EHT Compressed Beamforming Report field**

The EHT Compressed Beamforming Report field carries the average SNR of each spatial stream and compressed beamforming feedback matrices *V* for use by a transmit beamformer to determine steering matrices *Q*, as described in 10.34.3 (Explicit feedback beamforming) and 19.3.12.3 (Explicit feedback beamforming).

The size of the EHT Compressed Beamforming Report field depends on the values in the EHT MIMO Control field. The EHT Compressed Beamforming Report field contains EHT compressed beamforming report information or successive (possibly zero-length) portions thereof in the case of segmented EHT compressed beamforming/CQI report (see 35.7.4 (Rules for generating segmented feedback)). EHT compressed beamforming report information is included in the EHT compressed beamforming/CQI report if the Feedback Type subfield in the EHT MIMO Control field indicates SU or MU.

The EHT Compressed Beamforming Report information contains the channel matrix elements indexed, first, by matrix angles in order shown in Table 9-71 (Order of angles in the compressed beamforming feedback matrix when used in a non-S1G band), and second, by data and pilot subcarrier index from the lowest frequency to the highest frequency (in case of MRU the lowest frequency stands for the lowest frequency of first RU and the highest frequency stands for the highest frequency of the last RU) as shown in Table 9-127b (Subcarrier indices when not all bits in Partial BW Info subfield corresponding to the 80 MHz subblock are set to 1), Table 9-127c (Subcarrier indices when all bits in Partial BW Info subfield corresponding to the 80 MHz subblock are set to 1 for *N*g = 4), and Table 9-127d (Subcarrier indices when all bits in Partial BW Info subfield corresponding to the 80 MHz subblock are set to 1 for *N*g = 16). An explanation of how these angles are generated from the beamforming feedback matrix *V* is given in 19.3.12.3.6 (Compressed beamforming feedback matrix), where is the *Nc* is the number of columns in a compressed beamforming feedback matrix determined by the Nc Index subfield of the EHT MIMO Control field, and *Nr* is the number of rows in a compressed beamforming feedback matrix determined by the Nr Index subfield of the EHT MIMO Control field.

#### *CID 12365*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 12365 | 9.4.1.71 | 186.09 | Is Equation (9-1) the correct reference? In REVme1.3, equation 9-1 is for scaling factor, doesn't seem correct. Please check and correct if needed. | Please check and use the correct equation. | RevisedNow the equation number is (9-3) in REVme D1.3.And for easy search, it’s better to add the reference subcluase.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r2, below CID 12365. |

***Background Equation (9-1) and Equation (9-3) in REVme1.3:***





***Instructions to the editor: Please make the following changes in P190L36~43 of 802.11be D2.1:***

The beamforming feedback matrix *V* is formed by the beamformee as follows. The beamformer transmits an EHT sounding NDP with *NSS,NDP* spatial streams, where *NSS,NDP* takes a value between 2 and 8. Based on this EHT sounding NDP, the beamformee estimates the *NRX,BFEE* x *NSS,NDP* channel, and based on that channel it determines a *Nr* x *Nc* orthogonal matrix *V*, where *Nr* and *Nc* satisfy Equation (9-3) (see 9.4.1.49 (VHT Compressed Beamforming Report field). *NRX,BFEE* is the number of receiver chains used to receive the EHT sounding NDP at the beamformee.

#### *CID 11687, 12595, 12596 and 12597*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 11687 | 9.4.1.71 | 188.36 | Please unify the expressions of "80 MHz subblock" and "80 MHz" to "80 MHz frequency subblock". | Please refer to the comment. | RevisedAgree with the commenter.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r2, below CID 12597. |
| 12595 | 9.4.1.71 | 188.40 | The following text states that: "otherwise the compressed beamforming information related to subcarrier indices of 242-tone RU for each 20 MHz indicated by Partial BW Info subfield is included in the feedback report". However this text applies only to the case where the Sounding NDP BW is not greater than 160MHz, this the feedback resolution is 20MHz subchannel resolution.Please add this clarification to the cited text. | As in comment | RevisedAgree with the commenter and add some text for 40MHz subchannel resolution as below.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r2, below CID 12597. |
| 12596 | 9.4.1.71 | 188.40 | With regard to the following text: "otherwise the compressed beamforming information related to subcarrier indices of 242-tone RU for each 20 MHz indicated by Partial BW Info subfield is included in the feedback report" - what is the expected encoding for the case where the NDP Sounding BW is greater than 160 MHz, so the resolution is 40MHz subchannel? | Please add the following text immediately after the cited text, as follows:" In case the Sounding NDP BW is greater than 160 MHz, the compressed beamforming information related to subcarrier indices of 484-tone RU for each 40 MHz indicated by Partial BW Info subfield is included in the feedback report" | RevisedAgree with the commenter and add some text for the case of 40MHz subchannel as below.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r2, below CID 12597. |
| 12597 | 9.4.1.71 | 188.40 | With regard to the following text: "otherwise the compressed beamforming information related to subcarrier indices of 242-tone RU for each 20 MHz indicated by Partial BW Info subfield is included in the feedback report". What is the expected reported feedback in case a specific 20MHz subchannel is indicated as a disabled channel in the Disabled Subchannel bitmap in the Beacon?! | Please add the text to each of the following cases:Case 1 - the feedback resolution is 20MHz subchannel.Case 2 - the feedback resolution is 40MHz subchannel. | RevisedAgree with the commenter and add some text for the case of 40MHz subchannel as below.***Instructions to the editor:*** Please make the changes as shown in doc 11-22/1131r4, below CID 12597. |

***Background: Table right before the below paragraphs:***



***Instructions to the editor: Please make the following changes in P190L36~43 of 802.11be D2.1:***

For an EHT NDP Announcement frame of bandwidth 20 MHz or 40 MHz, the subcarrier indices of 242-tone RU for each 20 MHz indicated in the Partial BW Info subfield is included in the feedback report.

(#12597)For an EHT NDP Announcement frame of bandwidth larger than or equal to 80 MHz, in each 80 MHz frequency subblock, if the Partial BW Info subfield indicates the feedback of the entire 80 MHz (all the bits corresponding to the 80 MHz frequency subblock are set to 1), the compressed beamforming information related to subcarrier indices of the corresponding 996-tone RU is included in the feedback report; otherwise the compressed beamforming information related to subcarrier indices of 242-tone RU for each 20 MHz indicated by Partial BW Info subfield is included in the feedback report, in case the bandwidth of EHT sounding NDP is 80 MHz or 160 MHz. In case the bandwidth of EHT sounding NDP is greater than 160 MHz, the compressed beamforming information included in the feedback report is related to subcarrier indices of the corresponding 484-tone RU indicated by the Partial BW Info subfield. Any of the RUs indicated by the Partial BW Info subfield shall not be included as disabled subchannels in the Disabled Subchannel bitmap field of the most recent EHT Operation element.