IEEE P802.11  
Wireless LANs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | LB270 PHY Miscellaneous Comments | | | | | | Date: 2023-3-13 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Youhan Kim | Qualcomm Technologies, Inc. |  |  | [youhank@qti.qualcomm.com](mailto:youhank@qti.qualcomm.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

This submission proposes resolutions for the following comments from comment collection on P802.11-REVme D2.0:

3478, 3772

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.

# CID 3478

|  |  |  |
| --- | --- | --- |
| **CID**  **Clause**  **Page.Line** | **Comment** | **Proposed Change** |
| 3478  8.3.5.14.3  570.15 | "When reception is completed without error, the primitive is generated after the PHY has delivered the last bit of the received PSDU to the MAC. When reception of two or more UL MU transmissions completes without error, the primitive is generated at or after the PHY has delivered the last bit of each correctly received PSDU to the MAC. When a signal extension is present, the primitive is generated at or after the end of the signal extension." -- first two sentences clash, and also "generated at or after the PHY has..." is grammatically suspect | Change to "When SU reception is completed without error, the primitive is generated when or after the PHY has delivered the last bit of the received PSDU to the MAC. When reception of two or more MU transmissions completes without error, the primitive is generated when or after the PHY has delivered the last bit of each correctly received PSDU to the MAC. When a signal extension is present, the primitive is generated at or after the end of the signal extension." |

## Discussion

Following is the proposed change by the commenter in red-line format. (The background colors are not part of the suggestion from the commenter but used to help the subsequent discussion.)

REVme D2.1 P571L14

|  |
| --- |
| **8.3.5.14 PHY-RXEND.indication**  **8.3.5.14.3 When generated**  This primitive is generated by the PHY for the local MAC entity after the receive state machine has completed a reception with or without errors. When SU reception is completed without error, the primitive is generated after the PHY has delivered the last bit of the received PSDU to the MAC. When reception of two or more UL MU transmissions completes without error, the primitive is generated when or after the PHY has delivered the last bit of each correctly received PSDU to the MAC. When a signal extension is present, the primitive is generated at or after the end of the signal extension. |

While the commenter is correct that the green sentence and blue sentence overlap with each other, the change proposed by the commenter leaves out the case of receiving DL MU-MIMO and DL OFDMA.

The blue portion, although not part of the comment, is confusing as well. Strictly speaking, it could refer to the case of a receiver receiving multiple, say, UL OFDMA PPDUs separated in time. That sentence is probably referring to the case of receiving multiple PSDUs in a single UL MU PPDU.

Furthermore, neither the green nor the blue sentences cover the case of receiving a UL OFDMA PPDU with assigned to a single user only.

On a separate note, the phrase “correctly received PSDU” is not accurate. There are no ‘checks’ in the PSDU performed by PHY. For example, there are no CRC bits in the PSDU which the PHY checks for the validity of a PSDU. The MPDU delimiter CRC and FCS are done by MAC. All the ‘error’ cases in the PHY receive state machine are related to the “PPDU”, not PSDU. For example, various SIG field checks are not specific to any particular PSDU. And the ‘carrier lost’ error is also common to all PSDUs. Therefore, it is not accurate to say that there are ‘correctly’ received PSDUs. If the PHY is configured to receive PSDUs, then all the PSDUs will be received without checking whether the PSDU is ‘correct’ or not.

Regarding the phrase “at or after”, the green sentence simply uses the phrase “after” which is clear enough to the readers. Hence, the proposal is to use “after” in all cases.

One proposed option for the text update is the following:

Option 1

|  |
| --- |
| This primitive is generated by the PHY for the local MAC entity after the receive state machine has completed a reception with or without errors. When reception is completed without error and only one PSDU is received, the primitive is generated after the PHY has delivered the last bit of the received PSDU to the MAC. When reception completes without error and more than one PSDUs are received, the primitive is generated after the PHY has delivered the last bit of all received PSDUs to the MAC. When a signal extension is present, the primitive is generated after the end of the signal extension. |

However, there really is no need to differentiate the case of receiving one PSDU vs. multiple PSDUs. Hence, the following text update is also reasonable.

Option 2

|  |
| --- |
| This primitive is generated by the PHY for the local MAC entity after the receive state machine has completed a reception with or without errors. When reception is completed without error, the primitive is generated after the PHY has delivered the last bit of all received PSDUs to the MAC. When a signal extension is present, the primitive is generated after the end of the signal extension. |

The proposed resolution below goes with option 2 which is more concise and yet accurate.

## Proposed Resolution: CID 3478

**REVISED**

**Instruction to TGme Editor:**

Implement the proposed text updates for CID 3478 in <https://mentor.ieee.org/802.11/dcn/23/11-23-0392-00-000m-lb270-phy-misc-comments.docx>

**Note to Commenter:**

Proposed text updates cleans up the language on the PHY-RXEND.indication primitive generation.

## Proposed Text Update: CID 3478

*Instruction to TGme Editor: Update REVme D2.1 P571L15 as shown below.*

**8.3.5.14 PHY-RXEND.indication**

…

**8.3.5.14.3 When generated**

This primitive is generated by the PHY for the local MAC entity after the receive state machine has completed a reception with or without errors. When reception is completed without error, the primitive is generated after the PHY has delivered the last bit of all received PSDUs to the MAC. When a signal extension is present, the primitive is generated after the end of the signal extension.

# CID 3772

|  |  |  |
| --- | --- | --- |
| **CID**  **Clause**  **Page.Line** | **Comment** | **Proposed Change** |
| 3772  3.2  236.13 | The TVHT "mask" PPDU definitions contain redundancy in the sense that they are defined in terms of the transmit mask bandwidth and then enumerate all possibilities with that mask. | Change the definitions to something like the following: TVHT\_X mask PPDU: A Clause 22 PPDU transmitted using the TVHT\_X transmit spectral mask defined in the same clause." |

## Discussion

Background:

REVme D2.1 P235L49:

|  |
| --- |
| **TVHT\_2W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:   * A Clause 22 TVHT\_2W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_2W transmit spectral mask defined in 22.3.17.1.   **TVHT\_2W+2W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:   * A Clause 22 TVHT\_2W+2W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W+2W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W+2W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W+2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1.   **TVHT\_4W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:   * A Clause 22 TVHT\_4W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_4W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_4W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_4W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_2W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1. |

REVme D2.1 P237L44:

|  |
| --- |
| **TVHT\_W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:   * A Clause 22 TVHT\_W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_W transmit spectral mask defined in 22.3.17.1.   **TVHT\_W+W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:   * A Clause 22 TVHT\_W+W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W+W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_W+W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W+W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W+W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_W+W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT) transmitted using the TVHT\_W+W transmit spectral mask defined in 22.3.17.1. * A Clause 22 TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM) transmitted using the TVHT\_W+W transmit spectral mask defined in 22.3.17.1. |

Note that not all PPDUs defined in Clause 22 can use an arbitrary mask. For example, the current definition of TVHT\_W mask PPDU does now allow a TVHT\_2W VHT PPDU to use the TVHT\_W transmit spectral mask.

However, the proposed text by the commenter:

|  |
| --- |
| TVHT\_X mask PPDU: A Clause 22 PPDU transmitted using the TVHT\_X transmit spectral mask defined in the same clause |

would remove such prohibition, and could allow some implementation transmitting a TVHT\_2W VHT PPDU with half of its spectrum severely attenuated to claim that it is a TVHT\_W mask PPDU.

Therefore, one possibility for this CID 3772 to reject it.

Another possibility is to clean up the language a bit to avoid repeating the same phrase “A Clause 22 … PPDU … transmitted using the XYZ transmit spectral mask defined in 22.3.17.1”

The proposed resolution below takes the latter approach.

## Proposed Resolution: CID 3772

**REVISED**

**Instruction to TGme Editor:**

Implement the proposed text updates for CID 3772 in <https://mentor.ieee.org/802.11/dcn/23/11-23-0392-00-000m-lb270-phy-misc-comments.docx>

**Note to Commenter:**

It is necessary to list out each PPDU allowed to use a certain bandwidth mask. The proposed text update cleans up some redundant language while still keeping an explicit list of PPDUs allowed for each bandwidth mask.

## Proposed Text Update: CID 3772

**3. Definitions, acronyms, and abbreviations**

**3.2 Definitions specific to IEEE Std 802.11**

*Instruction to TGme Editor: Update REVme D2.1 P235L49 as shown below.*

**TVHT\_2W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs in Clause 22 transmitted using the TVHT\_2W transmit spectral mask defined in 22.3.17.1:

* A TVHT\_2W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_2W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).

**TVHT\_2W+2W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs in Clause 22 transmitted using the TVHT\_2W+2W transmit spectral mask defined in 22.3.17.1:

* A TVHT\_2W+2W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W+2W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_2W+2W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W+2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_2W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_2W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).

**TVHT\_4W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs in Clause 22 transmitted using the TVHT\_4W transmit spectral mask defined in 22.3.17.1:

* A TVHT\_4W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_4W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_4W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_4W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_2W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_2W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_2W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).

*Instruction to TGme Editor: Update REVme D2.1 P237L44 as shown below.*

**TVHT\_W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs in Clause 22 transmitted using the TVHT\_W transmit spectral mask defined in 22.3.17.1:

* A TVHT\_W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).

**TVHT\_W+W mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs in Clause 22 transmitted using the TVHT\_W+W transmit spectral mask defined in 22.3.17.1:

* A TVHT\_W+W very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W+W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W+W non-high-throughput (non-HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W+W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).
* A TVHT\_W VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W and TXVECTOR parameter FORMAT set to VHT).
* A TVHT\_W non-HT PPDU(#238) (TXVECTOR parameter CH\_BANDWIDTH set to TVHT\_W, TXVECTOR parameter FORMAT set to NON\_HT, and TXVECTOR parameter NON\_HT\_MODULATION set to NON\_HT\_DUP\_OFDM).

[End of File]