IEEE P802.11
Wireless LANs

|  |
| --- |
| CRs on Miscellaneous PHY CIDs |
| Date: 2017-05-05 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Bin Tian | Qualcomm | 5775 Morehouse Dr. San Diego, CA, USA |  | btian@qti.qualcomm.com |
|  |  |  |  |  |
|  |  |  |  |  |

This document provides PHY resolutions for the following CIDs. The baseline for this comment resolution document is 802.11ax Draft 1.2.

* CIDs: 10117,9015,9016,9017,9019,9199,9020,9075,4875,6995,6911,7444,10180,6912,6913

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 TGax Draft. This introduction is not part of the adopted material.

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

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **P** | **L** | **Comment** | **Proposed Change** | **Resolution** |
| 10117 | 28.3.7 | 257 | 61 | If there is no use of "THE-LTF-SYM" through the spec, remove the unnecessary paramter in th table. | As in the comment. | RevisedTgax editor: please remove the defintion of parameter THE-LTF-SYM in D1.2 P286L23 Table 28-9 |
| 9015 | 28.3.11.13 | 330 | 54 | Pilot indices are already listed in Table 28-7. It is better not to duplicate this information. | Remove Table 28-29 and replace with reference to Table 28-7.Similar comment for Tables 28-31, 28-33, 28-34, 28-36, 28-37 | RejectedWhile there is overlapping information, Table 28-29 clearly spells out the the pilot indices for each of the ith RU26. They are helpful to understand the equations that follow.  |
| 9016 | 28.3.11.13 | 331 | 19 | Notation P^KR26i\_n is not clear, since the superscript elsewhere denotes a single tone index. Replace with P^k\_n and specify that k belongs to K\_R26i.Similar for indices that do not belong to K\_R26i.(Also occurs in many other places in this section) | See comment | RejectedThe notation is clear. The samilar notation is used in VHT clause 21.3.10.10 |
| 9017 | 28.3.11.13 | 331 | 49 | Typo: PPD BW. Replace with "PPDU BW" | See comment.Also in Tables 28-33, 28-34, 28-36, 28-37 | Revised.Tgax editor: please change PPD BW" to "PPDU BW" in D1.2 Table 28-31, 28-33, 28-34, 38-36 and 28-37 |
| 9019 | 28.3.11.13 | 334 | 30 | "For a 996-tone RU transmission, the pilot mapping for its 16 pilots is the same as the mapping for 484-tone RU transmission.". How can this be? This does not sound correct. | Clarify or correct. | RejectedBoth RU996 and RU484 have the same number of pilots, 16, and the pilot tone mapping are indeed the same. The text followed this sentence provides the details of the tone mapping of RU996.  |
| 9199 | 28.3.11.14 | 335 | 55 | RU range r is from 0 to N\_RU in Eq (28-109) | Change the range of r from 0 to NRU-1 in Eq (28-109) based on P802.11ax D1.0 | Revised.Tgax editor: In D1.2 Eq 28-107 the 1st term after "=" please change the summation range of r from '1 to N\_Ru' to "0 to N\_Ru-1'  |
| 9020 | 28.3.11.14 | 336 | 55 | "Q is a spatial mapping/steering matrix with NTX rows and NSTS,r,total columns". The number of columns does not need to be NSTS,r,total for a trigger-based PPDU. | add "for HE PPDUs that are not Trigger-based" | RejectThe comment is no longer applicable in D1.2 since the original sentence has been removed.  |
| 9075 | 28.3.11.14 | 336 | 30 | <= NSD,r should actually be < NSD,r | Change <= to < | Revised.Agreed in principle of the comment. Tgax editor: please make the changes as shown in 11-17/0698r2 for CID 9075 |
| 4875 | 28.17.6.4 | 349 | 21 | One variable, OBSS\_PD is used in the equation to compuate the CCA threshold for sec20, sec40 and sec80. Need to clarify that this OBSS\_PD variable have differnt values in different BW. | as in comment | RejectedThe problem has been resloved in D1.2 with CID 5875,5876 etc. |
| 6995 | 28.3.17.6.3 | 349 | 1 | .... in the primary 20 MHz channel within a period of aCCATime after the signal arrives at the receiver's antenna(s); then the receiver shall not issue a PHY-CA.indication(BUSY,{secondary}),PHYCCA.indication(BUSY,{secondary40}), PHY-CCA.indication(BUSY,{secondary80}), or PHYCCA.indication(IDLE) primitive while the threshold continues to be exceeded. | Question: this seems to restrict reporting on any other available frequency resource when the primary is busy - I know it was decided to do this in n and ac , but I thought this restriction was being lifted in HE? If this restriction was removed please up date the text so that it is clear that reporting on non-primary channels is allowed even if the primary is busy. | Revised.When the dot11HECCAIndicationMode is equal to either 0 (singleelement) or 1 (per20bitmap), secondary channels are set to busy if primary channel is busy. When the dot11HECCAIndicationMode is equal to 2, busy/idle are set per 20MHz, independent of primary 20MHz busy/idle status. Tgax editor: please make the changes as shown in 11-17/0698r2 for CID 6995 |
| 6911 | 3.2 | 4 | 53 | The definition is not complete as is should be defined as a PPDU | Replace the text "One of the following" with "One of the following PPDUs: | RevisedTGax editor: in D1.2 subcaluse 3.2 P2L43, please change "One of the following" to "One of the following PPDUs". |
| 7444 | 3.2 | 4 | 41 | The following 40MHz mask PPDUs is missing: A 40 MHz HE PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) transmitted using the 40 MHz transmit spectral mask defined in Clause 28 (High Efficiency (HE) PHY specification). | As per comment | Reject.It is already included as the bullet j) |
| 10180 | 3.2 | 4 | 9 | Some conditions for an HE PHY to transmit 20 MHz non-HT/HT/VHT PPDUs applying 20 MHz spectral mask defined in Clause 28 may be needed as well as 40/80/160/80+80 MHz mask PDUs. Because the 20 MHz spectral mask for HE PHY is different from that for non-HT/HT/VHT╥╟╟PHY. | If needed, add some conditions. | Revised.A HE STA transmiting 20MHz non-HT/HT/VHT PPDU should apply the mask defined in the Clause 21 (VHT) instead of Clause 28 (HE mask) since the HE mask is specifically defined for the 4x numberology (FFT size) of the HE portion of a HE PPDU. Samilar discussion applies to 40/80/160/80+80MHz.Tgax editor: please make the changes as shown in 11-17/0698r2 for CID 10180 |
| 6912 | 3.2 | 5 | 29 | The definition is not complete as is should be defined as a PPDU | Replace the text "One of the following" with "One of the following PPDUs: | RevisedTGax editor: in D1.2 subcaluse 3.2 P3L16, please change "One of the following" to "One of the following PPDUs". |
| 6913 | 3.2 | 6 | 8 | The definition is not complete as is should be defined as a PPDU | Replace the text "One of the following" with "One of the following PPDUs: | Revised.TGax editor: in D1.2 subcaluse 3.2 P3L57, please change "One of the following" to "One of the following PPDUs". |

***To TGax editor: Please make the following changes in D1.2 P364L62 subclause 28.3.11.14 (#CID 9075)***

NOTE – *Mr*(*k*) translates a subcarrier index *k* (−*NSR* ≤ *k* ≤ *NSR*) into the index of data symbols in a transmission over the rth RU (0 ≤ *Mr*(*k*) <*NSD,r*). The subcarrier index *k* for the data tone is first offset by the minimum value of subcarrier index *Kr,min* (for the lower edge tone) in this RU, and then subtracted by the number of pilot subcarriers falling in between the data tone and the edge tone.

***To TGax editor: Please make the following changes in D1.2 P377L31 subclause 28.3.17.6.3 (#CID 6995)***

When the dot11HECCAIndicationMode is equal to either 0 (singleelement) or 1 (per20bitmap), the receiver shall issue a PHY-CCA.indication(BUSY, {primary}) primitive for any signal that exceeds a threshold equal to 20 dB above the minimum modulation and coding rate sensitivity (82 + 20 = 62 dBm) in the primary 20 MHz channel within a period of aCCATime after the signal arrives at the receiver's antenna(s); then the receiver shall not issue a PHY-CCA.indication(BUSY,{secondary}), PHYCCA.indication(BUSY,{secondary40}), PHY-CCA.indication(BUSY,{secondary80}), or PHYCCA.indication(IDLE) primitive while the threshold continues to be exceeded.

***To TGax editor: Please make the following changes in D1.2 P17L9 subclause 3.2 (#CID 10180)***

**20 MHz mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:

* A Clause 17 PPDU transmitted using the 20 MHz transmit spectral mask defined in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification).
* A Clause 18 orthogonal frequency division multiplexing (OFDM) PPDU transmitted using the transmit spectral mask defined in Clause 18 (Extended Rate PHY (ERP) specification).
* A high throughput (HT) PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW20 and the CH\_OFFSET parameter equal to CH\_OFF\_20 transmitted using the 20 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A very high throughput (VHT) PPDU with TXVECTOR parameter CH\_BANDWIDTH equal to CBW20 transmitted using the 20 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A Clause 17 PPDU transmitted by a VHT STA using the transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* An HT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW20 and the CH\_OFFSET parameter equal to CH\_OFF\_20 transmitted by a VHT STA using the 20 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* An high efficiency (HE) PPDU with with TXVECTOR parameter CH\_BANDWIDTH equal to CBW20 transmitted using the 20 MHz transmit spectral mask defined in Clause 28 (HE Efficiency (HE) PHY specification).
1. A Clause 17 PPDU transmitted by an HE STA using the transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification)..
2. A Clause 18 PPDU transmitted by an HE STA using the transmit spectral mask defined in Clause 18 (Extended Rate PHY (ERP) specification)..
3. An HT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW20 and the CH\_OFFSET parameter equal to CH\_OFF\_20 transmitted by an HE STA using the 20 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
4. A VHT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to CBW20 transmitted by an HE STA using the 20 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).

**40 MHz mask physical layer (PHY) protocol data unit (PPDU):** One of the following PPDUs:

* A 40 MHz high throughput (HT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW40) transmitted using the 40 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A 40 MHz non-HT duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to NON\_HT\_CBW40) transmitted by a non-very high throughput (non-VHT) STA and non-HE STA using the 40 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A 40 MHz non-HT duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) transmitted by a very high throughput (VHT) STA using the 40 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A 20 MHz HT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW20 and the CH\_OFFSET parameter equal to either CH\_OFF\_20U or CH\_OFF\_20L transmitted using the 40 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A 20 MHz VHT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to CBW20 transmitted using the 40 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A 40 MHz VHT PPDU with the TXVECTOR parameter CH\_BANDWIDTH equal to CBW40 transmitted using the 40 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A 40 MHz HT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW40) transmitted by a VHT STA using the 40 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A 20 MHz non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW20) transmitted using the 40 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A 20 MHz non-HT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW20) transmitted by a VHT STA using the 40 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).
* A 40 MHz high efficiency (HE) PPDU with with TXVECTOR parameter CH\_BANDWIDTH equal to CBW40 transmitted using the 40 MHz transmit spectral mask defined in Clause 28 (High Efficiency (HE) PHY specification).
* A 40 MHz HT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to HT\_CBW40) transmitted by an HE STA using the 40 MHz transmit spectral mask defined in Clause 19 (High Throughput (HT) PHY specification).
* A 40 MHz VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) transmitted by an HE STA using the 40 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).
* 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 19 (High Throughput (HT) PHY specification).

**80 MHz mask physical layer (PHY) protocol data unit (PPDU):** ~~A PPDU that is transmitted using the 80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification) and that is one~~ One of the following PPDUs:

* An 80 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) using the 80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* An 80 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) using the 80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 20 MHz non-HT, high throughput (HT), or VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW20) using the 80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 40 MHz non-HT duplicate, HT, or VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) using the 80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* An 80 MHz high efficiency (HE) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) using the 80 MHz transmit spectral mask defined in Clause 28.
* An 80 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) transmitted by an HE STA using the 80 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).
* An 80 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) transmitted by an HE STA using the 80 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).

**160 MHz mask physical layer (PHY) protocol data unit (PPDU):** ~~A PPDU that is transmitted using the 160 MHz transmit spectral mask defined in Clause 21 and that is one~~ One of the following PPDUs:

* A 160 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW160) using the 160 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 160 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW160) using the 160 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 20 MHz non-HT, high throughput (HT), or VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW20) using the 160 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 40 MHz non-HT duplicate, HT, or VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW40) using the 160 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* An 80 MHz non-HT duplicate or VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80) using the 160 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* A 160 MHz high efficiency (HE) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW160) using the 160 MHz transmit spectral mask defined in Clause 28
* A 160 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW160) transmitted by an HE STA using the 160 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).
* A 160 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW160) transmitted by an HE STA using the 160 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).

**80+80 MHz mask physical layer (PHY) protocol data unit (PPDU):** A ~~PPDU that is transmitted using the 80+80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification) and that is one~~ One of the following:

* An 80+80 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80+80) using the 80+80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* An 80+80 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80+80) using the 80+80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification)
* An 80+80 MHz high efficiency (HE) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80+80) using the 80+80 MHz transmit spectral mask defined in Clause 28
* An 80+80 MHz very high throughput (VHT) PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80+80) transmitted by an HE STA using the 80+80 MHz transmit spectral mask defined in Clause 21(Very High Throughput (VHT) PHY specification).
* An 80+80 MHz non-high throughput (non-HT) duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH equal to CBW80+80) transmitted by an HE STA using the 80+80 MHz transmit spectral mask defined in Clause 21 (Very High Throughput (VHT) PHY specification).