IEEE P802.11
Wireless LANs

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| Miscellaneous TGmc CID resolutions |
| Date: 2/23/2016 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Sigurd Schelstraete | Quantenna |  |  | sigurd@quantenna.com |
|  |  |  |  |  |

Abstract

This document discusses the following CIDs:

7403, 7404, 7412, 7422, 7294, 7295, 7296, 7386, 7387, 7526, 7587, 7701, 7702, 7451, 7452, 7474, 7700, 7166, 7167, 7168, 7169

CID 166

# CID 7403

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7403 | 21.2.5.2 | 2505 | 1 | There is no SECONDARY\_CHANNEL\_OFFSET in the vector | Change SECONDARY\_CHANNEL\_OFFSET to CHANNEL\_WIDTH. Also at 2505.39 |

The comment is correct: the parameters in PHYCONFIG\_TXVECTOR for a VHT PHY are highlighted below. “SECONDARY\_CHANNEL\_OFFSET” is a parameter for HT, but not VHT. It appears that “CHANNEL\_WIDTH” is intended instead.





# Proposed resolution:

Revised: Accept resolution as proposed (including the occurrence on page 2505.39)

In addition:

PHYCONFIG.request(PHYCONFIG\_VECTOR) should be PHY-CONFIG.request(PHYCONFIG\_VECTOR), i.e.: hyphen between “PHY” and “CONFIG”. This typo appears in about 5 places in the text. Editor to make the replacement.

# CID 7404

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7404 | 21.2.5.2 | 2504 | 30 | You need to use 20U if the prim is above the sec | Change < to > |

The comment is about the paragraph below:



The first paragraph of 21.2.5.2 seems to be an almost exact copy of the text in 19.2.5 for HT (see below).

 The problem appears to start there. A 20 MHz non-HT PPDU should be sent in the primary 20 MHz channel. If the SECONDARY\_CHANNEL\_OFFSET parameter of the PHYCONFIG\_VECTOR is set to SECONDARY\_CHANNEL\_ABOVE, it means that the secondary channel is above the primary in frequency (see below):



In that case, CH\_OFFSET should be set to CH\_OFF\_20L instead of CH\_OFF\_20U as incorrectly stated in 19.12.5



So the comment is correct insofar as it applies to 19.2.5.

The problem with 21.2.5.2 is different however. In copying from 19.2.5, it references fields in TXVECTOR that does not exist for VHT. In VHT, only the CH\_BANDWIDTH needs to be set to 20. It’s understood that any 20 MHz transmission in a BSS with wider bandwidth must occur in the primary 20 MHz (see for instance Table 21-7). Reference to CH\_OFFSET is unnecessary. It is more natural to use the VHT parameters. This will also cover all bandwidths in a more straightforward manner.

## Proposed resolution

Revised.

1. Change text on page 2230, starting at line 36 as follows:

**19.2.5 Support for NON\_HT formats**

In order to transmit a non-HT PPDU, the MAC shall set the CH\_BANDWIDTH and CH\_OFFSET in the

TXVECTOR to achieve the required non-HT PPDU format (see Table 19-2 (PPDU format as a function of

CH\_BANDWIDTH and CH\_OFFSET parameters)); for 20 MHz bandwidth transmissions in a 40 MHz

channel, the CH\_OFFSET shall be ~~CH\_OFF\_20U~~ CH\_OFF\_20L if the SECONDARY\_CHANNEL\_OFFSET parameter of the PHYCONFIG\_VECTOR was SECONDARY\_CHANNEL\_ABOVE, or ~~CH\_OFF\_20L~~ CH\_OFF\_20U otherwise.

1. Change text on page 2504, starting at line 24 as follows:

**21.2.5.2 Support for NON\_HT format when NON\_HT\_MODULATION is OFDM**

In order to transmit a non-HT PPDU, the MAC shall set the CH\_BANDWIDTH ~~and CH\_OFFSET in the~~

~~TXVECTOR~~ to achieve the required non-HT PPDU format (see Table ~~19-2~~ 21-7~~(PPDU format as a function of~~

~~CH\_BANDWIDTH and CH\_OFFSET parameters)~~); ~~for 20 MHz bandwidth transmissions in a 40 MHz~~

~~channel, the CH\_OFFSET shall be CH\_OFF\_20U if~~ *~~f~~*~~P20,idx <~~ *~~f~~*~~S20,idx, or CH\_OFF\_20L otherwise. The quantities~~ *~~f~~*~~P20,idx and~~ *~~f~~*~~S20,idx are defined in 21.3.7.3 (Channel frequencies).~~

This also resolves CID 7408.

# CID 7412

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7412 | 21.2.5.3 | 2505 | 60 | "PHY-TXSTART.request(TXVECTOR) primitive is issued" -- to what? There is no OFDM PHY | Use "as if" wording, as above |



Comment is not clear. The wording is similar to what is used for NON-HT (page 2504):



NOTE: The reference to Table 20-1 in the first piece of cited text is wrong and should be Table 19-1.

## Proposed resolution:

Revised. At 2505.59 insert “PHY operates as if a” before “Clause 19”. At 2505.60 change “is” to “was”.

Editor to change the reference to Table 20-1 on page 2505, line 59 (should be Table 19-1).

# CID 7422

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7422 | 21.3.17.4.3 | 2583 | 51 | It says "The relative constellation RMS error, calculated by first averaging over subcarriers, frequency segments, OFDM PPDUs, and spatial streams" but this is the VHT PHY | Change "OFDM" to "VHT" |



## Proposed resolution:

Accept

# CID 7294

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7294 | 17.4.4 | 2306 | 23 | These values are not correct. The time to the start of the DATA field is 20 us (see F17-4) | Change the values to 20, 40 and 80 (microseconds) |



Assuming F17-4 refers to Figure 17-4, this shows the following:



The length of the preamble until the data field is 20 usec.

aRxPHYStartDelay is defined on page 534 as:



The value is used to parametrize various durations and timeouts in the channel access. It is not clear that the value is linked to the length of the preamble until data reception.

## Proposed resolution:

Reject – submission required to justify changing these established values. BRC assumes the current values include some implementation overhead in addition to preamble length.

# CID 7295

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7295 | 18.5.4 | 2318 | 57 | This value is not correct. The time to the start of the DATA field is 20 us (see F17-4) | Change the value to 20 (microseconds) |

Similar to 7294

## Proposed resolution:

Reject – submission required to justify changing these established values. BRC assumes the current values include some implementation overhead in addition to preamble length.

# CID 7296

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7296 | 19.4.4 | 2415 | 62 | This value is not correct. The time to the start of the DATA field is at least 36 us for MF and can be as little as 28 us for GF (see F19-1) | Change to "36 <micro>s for MF and 28 <micro>s for GF" |

Similar to 7294

## Proposed resolution:

Reject – submission required to justify changing these established values. BRC agrees that minimal preamble length for MF is larger than 33, but there is no consensus on a correct modified value.

# CID 7386

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7386 | 15.2.2.7 | 2208 | 4 | "The number of available antennas shall be determined from the MIB table parameters aSuprtRxAntennas and aSuprtTxAntennas." -- - there are no such things, whatever "MIB table parameters" might mean | Delete the cited sentence |

The names aSuprtRxAntennas and aSuprtTxAntennas only appear in the following places:

Page 2208, line 4 and page 2248, line 6. No further references or definition exist.

## Proposed resolution:

Accept

# CID 7387

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7387 | 16.3.5 | 2248 | 6 | "The number of available antennas is determined from the MIB table parameters, aSuprtRxAntennas and aSuprtTxAntennas" -- - there are no such things, whatever "MIB table parameters" might mean | Delete the cited sentence |

See CID 7386

## Proposed resolution:

Accept

# CID 7526

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7526 | 19.2.4 | 2330 | 7 | Under NON\_HT\_CBW20, why is the CH\_OFF\_20 case about "a non-HT format packet according to [OFDM] or [ERP]" while CH\_OFF\_20U/L is about "non-HT packet of type ERP-DSSS, ERP-CCK, ERP-OFDM, or OFDM". Is the former not intended to cover ERP-DSSS/CCK? | Change to "The STA transmits a non-HT packetof type ERP-DSSS, ERP-CCK, ERP-OFDM, or OFDM in a 20 MHz channel". Canonicalise at 2329.39 and 2329.54 too |

The comment is about the inconsistent use of words in what should be the same wording in all three cases.





## Proposed resolution:

Revise:

On Page 2330, Line 7:

Change “A STA that has a 20 MHz operating channel

width transmits a non-HT format packet according to Clause 17 (Orthogonal

frequency division multiplexing (OFDM) PHY specification) or Clause 18

(Extended Rate PHY (ERP) specification) operation.”

To:

“A STA that has a 20 MHz operating channel

width transmits a non-HT packet

of type ERP-DSSS, ERP-CCK, ERP-OFDM, or OFDM.”

Change the sentence on page 2329.54 as follows:

CH\_OFF\_40: *40 MHz HT format*—~~A PPDU of this format occupies a 40 MHz~~

~~channel to transmit an HT-mixed or HT-greenfield format packet of 40 MHz~~

~~bandwidth with one to four spatial streams.~~ The STA transmits an HT-mixed or HT-greenfield

format packet of 40 MHz bandwidth with one to four spatial streams.

# CID 7587

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7587 | 16.2.2.3 | 2233 | 25 | Some bits of the spec state/imply "HR/DSSS/short" is included in "HR/DSSS", others exclude it.Here are some contradictions:55.6:HR/DSSS high rate direct sequence spread spectrum using the long preamble and headerHR/DSSS/short high rate direct sequence spread spectrum using the optional short preamble andheader modeHere HR/DSSS and HR/DSSS/short are non-overlapping.2231.32:Another optional mode is provided that allows data throughput at the higher rates (2, 5.5, and 11 Mb/s) to besignificantly increased by using a shorter PHY preamble. This mode is called HR/DSSS/short. This shortpreamble mode can coexist with DSSS, HR/DSSS under limited circumstances, such as on differentchannels or with appropriate CCA mechanisms.Here too the two are non-overlapping.2233.25:The short PHY preamble and header (HR/DSSS/short) is defined as optional for HR/DSSS.Here though HR/DSSS/short seems to be a subset of HR/DSSS.2239.16:The 8-bit SIGNAL field of the short header indicates to the PHY the data rate that shall be used fortransmission (and reception) of the PSDU. A PHY operating with the HR/DSSS/short option supports threemandatory rates given by the following 8-bit words, where the LSB shall be transmitted first in time and thenumber represents the rate in units of 100 kBit/s:No problem here.2240.49:The transmit procedures for a high rate PHY using the long PHY preamble and header are the same as thetransmit procedures described in 16.3.6 (Transmit PHY) and 16.3.7 (Receive PHY) and do not change apartfrom the ability to transmit 5.5 Mb/s and 11 Mb/s.The procedures for a transmitter employing HR/DSSS/short are the same except for length and rate changes.The decision to use a long or short PHY is beyond the scope of this standard.Here again the two are non-overlapping. | At 2233.25 change the first sentence to "The short PHY preamble and header (HR/DSSS/short) is optional. " |

## Proposed resolution:

Accept

# CID 7701

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7701 | 16.3.8.5 | 2259 | 10 | "is being received at the antenna" -- where else? | Delete "at the antenna" |

The words “at the antenna” are being used frequently throughout the document to refer to observed power. The use appears correct and there is no reason to remove it in a single place.

## Proposed resolution:

Revised.

Keeping “at the antenna” is consistent with other places in the document, however the sentence can be clarified as follows:

Change :

“A combination of CS and energy above threshold. CCA shall report busy at least while a HR/DSSS PPDU with energy above the ED threshold is being received at the antenna.”

To:

“A combination of CS and energy above threshold. CCA shall report busy at least while a HR/DSSS PPDU is being received with energy above the ED threshold at the antenna.”

# CID 7702

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7702 | 18.3.4 | 2313 | 23 | "is being received at the antenna" -- where else? | Delete "at the antenna" |

See CID 7701

## Proposed resolution:

Revised.

Keeping “at the antenna” is consistent with other places in the document, however the sentence can be clarified as follows:

Change :

“CCA shall report busy at least while a PPDU with energy above the ED threshold is being received at the antenna.”

To:

“CCA shall report busy at least while a PPDU is being received at the antenna with energy above the ED threshold.”

# CID 7451

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7451 | 8.3.5.13.2 | 559 | 40 | "The RXVECTOR represents a list of parameters that the PHY provides the local MAC entity upon receipt of a valid PHY header or upon receipt of the last PSDU data bit in the received frame." -- the PHY-RXSTART.ind is potentially only sent at the end of the PSDU?! This makes no sense, and contradicts the next subclause | Delete "or upon receipt of the last PSDU data bit in the received frame" |



This looks correct. In other places in the PHY clauses, the PHY-RXSTART.ind is also shown at the end of the preamble (see e.g. Figure 19-25, Figure 20-21, Figure 21-36).

## Proposed resolution:

Accept

# CID 7452

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7452 | 8.3.5.14.2 | 559 | 40 | "The RXVECTOR represents a list of parameters that the PHY provides the local MAC entity upon receipt of a valid PHY header or upon receipt of the last PSDU data bit in the received frame." -- can't be sent before the end, by definition. I'm not sure why the values in the PHY-RXSTART.ind can't be used, either | Delete this sentence |

Probably means page 560, line 39, based on the subclause number:



It’s not clear why the commenter is proposing a different resolution for this comment.

## Proposed resolution:

Revised

To make the description of RXVECTOR consistent in 8.3.5.13.2 and 8.3.5.14.2, replace the paragraph at Page 560, Line 39 with:

The RXVECTOR represents a list of parameters that the PHY provides the local MAC entity upon receipt of a valid PHY header. The required parameters are listed in 8.3.4.4 (Vector descriptions).

# CID 7474

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7474 |  |  |  | When is PHY-TXBUSY.indication(IDLE) issued? The spec only discusses PHY-TXBUSY.indication(BUSY) | Add a statement that it is issued when the conditions for the BUSY are no longer met |

No clause or page number provided. Not clear where the comment belongs.

Needs submission.

## Proposed resolution:

Reject – insufficient detail to resolve comment

# CID 7700

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7700 | 8.3.5.10.4 | 555 | 12 | "The effect of receipt of this primitive by the PHY entity is to reset the PHY CS/CCA timers to the stateappropriate for the end of a received frame and to initiate a new CCA evaluation cycle." -- what PHY CS/CCA timers? | Change to "The effect of receipt of this primitive by the PHY entity is to reset the PHY to the stateappropriate for the end of a received frame and to initiate a new CCA evaluation cycle." |



Since PHY CS/CCA timers are not defined, it is clearer to talk about resetting the PHY, rather than resetting the PHY CS/CCA timers.

## Proposed resolution:

Accept

# CID 7166-7169

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7166 | 9.4.2.158.2 | 1050 | 49 | The meaning of the "Beamformee STS Capability" field was changed during the comment resolution of 11mc/D4.0 sponsor ballot based on comment CID 5879, regarding decoupling MU Beamformee Sounding capability from MU PPDU reception capability. During the discussions in the 11mc group, concerns have been raised about the AP side processing issue for the beamforming matrix for the data with more streams (say 8 streams) than the training streams done with the STA (say 4 streams), when using NDP frame with less number streams than MU PPDU.In addition, the original description is technically correct, nothing needs to be fixed. That is, the changes proposed by CID 5879 resolution do not belong to technical corrections, as for 11mc project. | Change the definition box for " "Beamformee STS Capability" field back to 11mc/D4.0, i.e., to the following:The maximum number of space-time streams that the STA can receive in a VHT NDP, themaximum value for NSTS,total that can be sent to the STA in a VHT MU PPDU if the STA isMU beamformee capable, and the maximum value of Nr that the STA transmits in a VHTCompressed Beamforming frame. |

The commenter is asking to revert changes resulting from CID 5879, which is shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5879 | 8.4.2.157.2 | 1040 | 49 | "Beamformee STS Capability" links the sounding feedback capability of a STA with the total number of streams that a STA can receive in an MU PPDU. There is no reason these values should be the same and they should be decoupled to be future-safe.The issue is explained in more detail in document IEEE 802.11-15/0057. |

CID 5879 was duly discussed and agreed during comment resolution. The issue was shared and discussed with the group in at least four different submissions:

* MU Beamformee capabilities indication in VHT, IEEE document 802.11-15/0057
* Text proposal for Beamformee STS Capabilities , IEEE document 802.11-15/0058
* Discussion of CID 5879, IEEE document 802.11-15/0668
* CID 5879, , IEEE document 802.11-15/1509

The proposed modification is purely a capability indication and no change in functionality is required. Moreover, it was shown explicitly that the change is fully backwards compatible with current devices.

In the second part of the comment, the commenter appears to argue that the 11mc project can only deal with technical corrections and that the implementation of CID 5879 goes beyond that *(“In addition, the original description is technically correct, nothing needs to be fixed. That is, the changes proposed by CID 5879 resolution do not belong to technical corrections, as for 11mc project.”*). This is not correct. TGmc has made substantial changes and additions to the base document in addition to the incorporation of approved amendments and fixing errors. As such, this is insufficient motivation for reverting CID 5879.

The first part of the argument revolves around the processing of the beamforming matrix at AP side. The changes made in CID 5879 have no bearing on this and the exact determination of the beamforming matrix by the AP has always been outside the scope of the standard. Moreover, the AP controls the number of streams that a STA will feed back. As such, it can continue to operate as it did before and no extra processing or complexity results from the changes made with the resolution of CID 5879, contrary to what is suggested in the comment.

## Proposed resolution:

Reject – insufficient technical motivation

Same resolution for CIDs 7166-7169