IEEE P802.11  
Wireless LANs

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| D3 Comment Resolution, brianh, part 1 | | | | |
| Date: 2012-07-09 | | | | |
| Author(s): | | | | |
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##### Baseline is 11ac D3.0. Changes indicated by a mixture of Word track-changes and instructions. For equation changes, Latex notation is sometimes used. E.g. a\_{xyz}^b denotes axyzb

PHY CIDs addressed in D1: 6125, 6126, 6473, 6315, 6490, 6186, 6073

COEX CID deferred for a later draft: 6312

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| 6125 | Liwen Chu | 170.36 | 18.2.2.7 | Add the following text to the end of the note "The CH\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a VHT STA to a non-VHT STA (see 9.7.10 (Channel Width in non-HT and non-HT duplicate PPDUs))." | As in comment | Revised. See changes under CID 6125 in 12/801<motioned-Revision#>, which implement much the same as the commeter requested |
| 6126 | Liwen Chu | 170.47 | 18.2.2.8 | Add the following text to the end of the note "The DYN\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a VHT STA to a non-VHT STA (see 9.7.10 (Channel Width in non-HT and non-HT duplicate PPDUs))." | As in comment | Revised. See changes under CID 6125 in 12/801<motioned-Revision#>, which implement much the same as the commeter requested |

***Discussion:***

Agree with commenter that this is a helpful observation; I’ve just made editorial changes to not add duplicate references. The reference is complete and correct:

**9.7.10 Channel Width in non-HT and non-HT duplicate PPDUs**

A non-VHT STA shall include neither the CH\_BANDWIDTH\_IN\_NON\_HT parameter nor the

DYN\_BANDWIDTH\_IN\_NON\_HT parameter in either of the Clause 18 TXVECTOR or RXVECTOR. A

non-VHT STA shall not set the TA field to a bandwidth signaling TA. A VHT STA shall include neither the

CH\_BANDWIDTH\_IN\_NON\_HT parameter nor the DYN\_BANDWIDTH\_IN\_NON\_HT parameter in the

Clause 22 TXVECTOR of a non-HT PPDU sent to a non-VHT STA. A VHT STA shall not set the TA field

to a signaling TA in a frame sent to a non-VHT STA. A VHT STA that includes the

DYN\_BANDWIDTH\_IN\_NON\_HT parameter in the TXVECTOR shall also include the

CH\_BANDWIDTH\_IN\_NON\_HT parameter in the TXVECTOR. A VHT STA shall include both the

CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT parameters in the Clause 18

RXVECTOR.

***Change:***

**18.2.2.7 TXVECTOR CH\_BANDWIDTH\_IN\_NON\_HT**

If present, the allowed values for CH\_BANDWIDTH\_IN\_NON\_HT are CBW20, CBW40, CBW80,

CBW160 and CBW80+80. If present, this parameter is used to modify the first 7 bits of the scrambling sequence

to indicate the duplicated bandwidth of the PPDU.

NOTE—The CH\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a non-VHT

STA. The CH\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a VHT STA to a non-VHT STA (see 9.7.10 (Channel Width in non-HT and non-HT duplicate PPDUs)).

**18.2.2.8 TXVECTOR DYN\_BANDWIDTH\_IN\_NON\_HT**

If present, the allowed values for DYN\_BANDWIDTH\_IN\_NON\_HT are Static and Dynamic. If present,

this parameter is used to modify the first 7 bits of the scrambling sequence to indicate if the transmitter is

capable of Static or Dynamic bandwidth operation. If DYN\_BANDWIDTH\_IN\_NON\_HT is present, then

CH\_BANDWIDTH\_IN\_NON\_HT is also present.

NOTE—The DYN\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a non-

VHT STA. The DYN\_BANDWIDTH\_IN\_NON\_HT parameter is not present when the frame is transmitted by a VHT STA to a non-VHT STA (see 9.7.10 (Channel Width in non-HT and non-HT duplicate PPDUs)).

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| 6312 | Brian Hart | 171.14 | 18.2.3 | As written CH\_BANWIDTH\_IN\_NON\_HT doesn't return CBW160 or CBW80+80 as distinct values, it returns a single value that represents "CBW160 or CBW80+80" | Try "CBW20, CBW40, CBW80 or CBW160/CBW80+80". Ditto P171L27 with likely knock effects at P173L65. A different approach is to use the PHY's knowledge of whether it is operating in a 160 or 80+80 MHz BSS; if so, needs extra language, especially if the BSS is actually 20/40/80 MHz! | Revised. See changes under CID 6312 in 12/801<motioned-Revision#>, which implement much the same as the commeter requested |

***Discussion***:

The commenter has a valid concern. In the comment resolution below, we follow the commeter’s latter path, to keep the MAC work simple.

Residual concern: if a STA receives a class 1 frame sent within a non-HT PPDU with a 160 or 80+80 MHz bandwidth before the STA is associated to a BSS or from outside the associated BSS, then the STA cannot distinguish between 160 and 80+80 MHz. What should we do – e.g. prohibit the transmission of 80+80 to a STA outside a BSS (so then 160 MHz is always a safe assumption?)

Add prohibitionof 80+80 control frames in non-HT PPDUs if the 80+80 bandwidth of the recipient is unknown, to 9.7.6.6 Ch wid selection for control frames. Pre-existing rules? – Simone. Does receiver know your bandwidth.

9.7.5.6 Rate sel for other data + mgmt frames CBW HT OPeration eleemmt or VHT op element – “add “if unknown”

Double check TDLS channel selection more broadly – is A80+B80 (infra) + A80+C80(TDLS) disallowed? If not, it should be.

***Change***:

**Table 18-6a—Contents of the first 7 bits of the Scrambling Sequence**

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| **Parameter** | **Condition** | **First 7 bits of Scrambling Sequence** | | |
| **B0 B3** | **B4** | **B5 B6** |
| RXVECTOR | CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NOT\_HT are present in RXVECTOR | - | DYN\_BANDWIDTH\_IN\_NON\_HT | CBW\_IN\_NON\_HT\_TEMP (see Table 18-6b-yyyy) |

During reception by a VHT STA, the CBW\_IN\_NON\_HT\_TEMP variable shall be set to selected bits in the scrambling sequence as shown in Table 18-6a, then mapped as shown in Table 18-6b-yyyy to the CH\_BANDWIDTH\_IN\_NON\_HT parameter in RXVECTOR. During reception by a VHT STA, the DYN\_BANDWIDTH\_IN\_NON\_HT parameter in RXVECTOR shall be determined according to Table 18-6c using selected bits in the scrambling sequence as shown in Table 18-6a. The fields in Table 18-6a shall be interpreted as being sent LSB-first.

**Table 18-6b—TXVECTOR CH\_BANDWIDTH\_IN\_NON\_HT values**

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| --- | --- |
| **Enumerated value** | **Value** |
| CBW20 | 0 |
| CBW40 | 1 |
| CBW80 | 2 |
| CBW160 or CBW80+80 | 3 |

**Table 18-6b-yyyy—Determination of RXVECTOR CH\_BANDWIDTH\_IN\_NON\_HT**

|  |  |  |
| --- | --- | --- |
| CBW\_IN\_NON\_HT\_TEMP (see Table 18-6a) | **dot11CurrentChannelCenterFrequencyIndex1** | **RXVECTOR CH\_BANDWIDTH\_IN\_NON\_HT** |
| 0 | 0 | CBW20 |
| 1 | 0 | CBW40 |
| 2 | 0 | CBW80 |
| 3 | 0 | CBW160 |
| 3 | 1 to 200 | CBW80+80 |

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| 6473 | Mark RISON | 173.50 | 18.3.5.5 | What does "validity" mean? It can be misinterpreted as "have been set correctly by the peer" | Change to "presence of [...] presence". Similarly at 187.41 | Revised. See changes under CID 6473 in 12/801<motioned-Revision#>, which clarify both validity and presence |

***Discussion:***

Note that “validity” always characterizes the RXVECTOR parameter so there is no ambiguity. And the parameters are always present in the RXVECTOR created by a VHT PHY processing a non-HT PPDU so “presence” is not the right direction. However, this point does seem to be a subtle one that is likely to cause confusion, so let’s add further clarifying information.

***Change:***

NOTE 1—The receiving PHY cannot determine whether the CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT parameters were present in the TXVECTOR of the transmitting PHY, and so the receiving PHY in a VHT STA always includes values for the CH\_BANDWIDTH\_IN\_NON\_HT and

DYN\_BANDWIDTH\_IN\_NON\_HT parameters in the Clause 18 RXVECTOR. It is the responsibility of the MAC to determine if these parameters were present in the TXVECTOR of the transmitting PHY, and hence the validity of the CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT parameters in the RXVECTOR.

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| 6315 | Mitsuru Iwaoka | 310.04 | 22.6.4.3 | PMD\_NON\_HT\_CH\_BANDWIDTH is defined in Table 22-63. But this primitive had been removed (Ref: 11/12-0503r4). | Remove PMD\_NON\_HT\_CH\_BANDWIDTH from Table 22-63. | Accepted |
| 6490 | Mark RISON | 310.04 | 22.6.4.3 | PMD\_NON\_HT\_CH\_BANDWIDTH is not mentioned anywhere other than in the table of PMD SAP primitives | Delete the row | Accepted |

***Discussion:*** Superseded by PMD\_CBW

***Context:***

**22.6.5.13 PMD\_CBW.indication**

**22.6.5.13.1 Function**

This primitive, generated by the PMD sublayer, provides an estimate of the bandwidth of the received PPDU

to the PLCP.

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| 6186 | Youhan Kim | 311.29 | 22.6.4.4 | Elsewhere (e.g. TXVECTOR/RXVECTOR, waveform equations in Clause 22), u ranges from 0 to NUM\_USERS - 1. Any reason to differ here? | Change "u takes values 1 to NUM\_USERS" to "u takes values 0 to NUM\_USERS - 1". Ditto on P311L60. | Accepted |

***Discussion:***

Agreed – 0 to NUM\_USERS-1 is used elsewhere. Contrast:

**Table 22-1—TXVECTOR and RXVECTOR parameters**

MU indicates that the parameter is present once for an SU PPDU and present per user for an MU PPDU. Parameters

specified to be present per user are conceptually supplied as an array of values indexed by *u*, where *u* takes values

0 to NUM\_USERS-1.

with

**Table 22-64—List of parameters for PMD primitives**

NOTE—These parameters are present for one user for an SU PPDU and present per user for an MU PPDU.They are

conceptually supplied as an array of values indexed by *u*, where *u* takes values 0 to NUM\_USERS-1.

**22.6.5.2 PMD\_DATA.request**

**22.6.5.2.1 Function**

This primitive defines the transfer of data from the PLCP sublayer to the PMD entity.

**22.6.5.2.2 Semantics of the service primitive**

This primitive shall provide the following parameters: PMD\_DATA.request (TXD\_UNIT)

The TXD\_UNIT parameter shall be the n-bit combination of 0 and 1 for one symbol of OFDM modulation.

If the length of a C-PSDU is shorter than n bits, bits with value 0 are added at the end of the C-PSDU to form

an OFDM symbol. This parameter represents a single block of data that, in turn, shall be used by the PHY to

be encoded into an OFDM transmitted symbol.

The TXD\_UNIT parameter is present for one user for an SU PPDU and present per user for an MU PPDU.

It is conceptually supplied as an array of values indexed by *u*, where *u* takes values 0 to NUM\_USERS-1.

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| 6073 | Adrian Stephens | 311.54 | 22.6.5.2.2 | "If the length of a C-PSDU is shorter than n bits, bits with value 0 are added at the end of the C-PSDU to form an OFDM symbol."    Not so. Padding is done in the PLCP prior to scrambling and coding (see figure 22-32). | Remove cited sentence. | Accepted |

***Discussion:***

Agreed – see also for instance

**22.3.10.5.2 BCC encoder parsing operation**

If multiple encoders are used, the scrambled SERVICE, PSDU and PHY pad bits are divided between the

encoders by sending bits to different encoders in a round robin manner.

***Context:***

22.6.5.2 PMD\_DATA.request

22.6.5.2.1 Function

This primitive defines the transfer of data from the PLCP sublayer to the PMD entity.

22.6.5.2.2 Semantics of the service primitive

This primitive shall provide the following parameters: PMD\_DATA.request (TXD\_UNIT)

The TXD\_UNIT parameter shall be the n-bit combination of 0 and 1 for one symbol of OFDM modulation.

This parameter represents a single block of data that, in turn, shall be used by the PHY to

be encoded into an OFDM transmitted symbol.

