IEEE P802.11
Wireless LANs

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| Resolutions for mics CIDs in 7.3..4, 7.3.5, 18.3.5.5 |
| Date: 2012-03-08 |
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|  |  |  |  |  |

Abstract

This document proposes resolutions for CIDs 4151, 4152, 5057, 5058. 4153, 5056, 4278, 4279, 5028, 5050, 5060, 5318, 4471, 5100, 5101 on P802.11ac/D2.0, regarding .

## Revision History

r0: Initial revision.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4151 | Ahmadreza Hedayat | 7.3.5.11.2@23.24 | The defenition of secondary channel reappears here, while it's already defined in 3.2. It's repetitive. Ditto defenition of secondary40 and secondary80 in lines 30 and 36. | Remove the repetitive definitions. |
| 4152 | Ahmadreza Hedayat | 7.3.5.11.2@23.29 | 22.3.19.5.2. is a wrong reference. Ditto in line 35. | It should be 22.3.19.5.3 "CCA sensetivity for the signals not occupying the primary 20 MHz channel. |
| 5057 | Sigurd Schelstraete | 7.3.5.11.2@23.29 | Wrong reference | Replace 22.3.19.5.2 with 22.3.19.5.3 |
| 5058 | Sigurd Schelstraete | 7.3.5.11.2@23.35 | Wrong reference | Replace 22.3.19.5.2 with 22.3.19.5.3 |

## Discussion

The definition of the secondary channel is defined in 3.2 of REVmb D12.0 as follows:

**secondary channel:** A 20 MHz channel associated with a primary channel used by high-throughput (HT)

stations (STAs) for the purpose of creating a 40 MHz channel.

For 11ac, this definition should be revised to include very high-throughput (VHT) stations (not sure if this has been revised in other CIDs).

The secondary 40MHz channel and the secondary 80MHz channel are aready defined in 3.2.

Commenter is correct in pointing out that in Table 7-5 of 7.3.5.11.2, it is not necessary to include the definition of secondary channel, the secondary 40MHz channel, and the secondary 80MHz channel again.

Additionally, the reference 22.3.19.5.2 (CCA sensitivity for signals occupying the primary 20 MHz channel) is incorrect. The correct reference should be 22.3.19.5.3 (CCA sensitivity for signals not occupying the primary 20 MHz channel).

## Proposed changes

**7.3.5.11.2 Semantics of the service primitive**

*Instruct the editor to remove repetitive definitions in Table 7-5.*

**Table 7-5—Channel-list parameter elements**

|  |  |
| --- | --- |
| **channel-list elements** | **Meaning** |
| Primary | Indicates that the primary channel is busy for an HT station, or indicates that the primary 20 MHz channel is busy for a VHT station according to the rules specified in 22.3.19.5.2 CCA sensitivity for signals occupying the primary 20 MHz channel. |
| Secondary | Indicates that the secondary channel is busy for an HT station, or indicates that the secondary 20 MHz channel is busy for a VHT station according to the rulesspecified in 22.3.19.5.3 (CCA sensitivity for signals not occupying the primary20 MHz channel).  |
| secondary40 | Indicates that the secondary 40 MHz channel is busy according to the rulesspecified in 22.3.19.5.3 (CCA sensitivity for signals not occupying the primary20 MHz channel).  |
| secondary80 | Indicates that the secondary 80 MHz channel is busy according to the rulesspecified in 22.3.19.5.3 (CCA sensitivity for signals not occupying the primary20 MHz channel).  |

## 3.2 Definitions specific to IEEE 802.11

*Instruct the editor to include the definition of secondary 20MHz channel*

**secondary 20 MHz channel:** In an 40 MHz very high throughput (VHT) basic service set (BSS), the 20 MHz

subchannel adjacent to the primary 20 MHz channel that together form the 40 MHz channel of the 40 MHz

VHT BSS. **:** In an 80 MHz very high throughput (VHT) basic service set (BSS), the 20 MHz

subchannel adjacent to the primary 20 MHz channel that together form the primary 40 MHz channel of the 80 MHz

VHT BSS. In a 160 or 80+80 MHz VHT BSS, the 20 MHz subchannel adjacent to the primary 20 MHz

channel that together form the primary 40 MHz channel of the 160 or 80+80 MHz VHT BSS.

## Proposed resolution

REVISE. .

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4153 | Ahmadreza Hedayat | 7.3.5.11.2@24.20 | It'd be better to also clarify in the figure that "160 MHz or 80+80 MHz (if secondary80 is non-adjacent to primary 80 MHz channel" | As in comment. |

## Discussion

The purpose of Figure 7-1 is simply to illustrate the relationship between the channel-list parameter elements and the corresponding primary, secondary, secondary 40MHz, and secondary 80MHz channels within the operating channel bandwidth. There is no need to clarify the case for the non-contiguous 80+80MHz channel (since it would be the same correspondence between the secondary80 and the secondary 80MHz channel).

## Proposed resolution

REJECT.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5056 | Sigurd Schelstraete | 7.3.4.5@22.15 | The same parameter names are used in PHYCONFIG\_VECTOR as in TXVECTOR/RXVECTOR | Table 7-4 defines parameters GROUP\_ID and PARTIAL\_AID as part of PHYCONFIG\_VECTOR. Those are the same names as fields of TXVECTOR, but with a different meaning. Change the naming of the fields when used as part of PHYCONFIG\_VECTOR. |
| 4278 | Brian Hart | 7.3.4.5@22.23 | Operations should not be specified in clause 8 | Find a better reference, or change operations language to format language |

## Discussion

In CID 5056, Commenter points out that the parameters GROUP\_ID and PARTIAL\_AID in the PHYCONFIG\_VECTOR have same names as the corresponding fields in TXVECTOR but with different meanings.

GROUP\_ID parameter in the PHYCONFIG\_VECTOR indicates the membership status and the user position in the Group ID Management frame. Propose to change the naming of field to GROUP\_ID\_MANAGEMENT to avoid confusion with the name GROUP\_ID.

PARTIAL\_AID parameter in the PHYCONFIG\_VECTOR indicates the list of partial AIDs that the STA is an intended recipient of on its BSS, mesh and TDLS interfaces. Propose to change the naming to PARTIAL\_AID\_LIST to avoid confusion.

In CID 4278, commenter points out that the operation should not be specified in clause 8. Agree with the commenter that “operation” should not be specified in this clause and propose to delete the word operation.

## Proposed changes

**7.3.4.5 Vector descriptions**

*Instruct the editor to revise the Table 7-4.*

**Table 7-4—Vector descriptions**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Associate vector** | **Value** |
| GROUP\_ID\_MANAGEMENT | PHYCONFIG\_VECTOR | The GROUP\_ID\_MANAGEMENT parameter specifies membership status and STA position for each of the Group IDs as described in 8.5.23.3 (Group ID Management frame format))  |
| PARTIAL\_AID\_LIST | PHYCONFIG\_VECTOR | The PARTIAL\_AID\_LIST parameter includes the list of partial AIDs that the STA is an intended recipient of on its BSS, mesh and TDLS interfaces. The settings of thePARTIAL\_AID are specified in9.17a (Group ID and Partial AID inVHT PPDUs)). |

*In P144L53*

A STA that receives a Group ID Management frame with a RA matching its MAC address shall update

PHYCONFIG\_VECTOR parameter GROUP\_ID\_MANAGEMENT based on the content of the received Group ID Management frame.

*In P243L63*

When a STA receives a Group ID Management frame, the STA's MLME configures the following lookup

tables in the PHY via the GROUP\_ID\_MANAGEMENT parameter in PHYCONFIG\_VECTOR:

*P244L38*

The STA assigns or changes user positions corresponding to one or more Group IDs through the PHY-CONFIG.

request primitive, specifying a PHYCONFIG\_VECTOR parameter GROUP\_ID\_MANAGEMENT that indicates membership status and user position.

## Proposed resolution

REVISE.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4279 | Brian Hart | 7.3.5.2.2@22.50 | USER\_POSITION is position within PLCP header but the txvector interface really works in terms of , 0<=u<NUM\_USERS | Replace USER\_POSITION by "user index u", and in explanatory para below |

## Discussion

Note that the PPDU encoding and the description of signal in Clause 22 uses user 0<=u<Nu. The receiver expects the spatial time strams to follow the order of the space time streams as indicated by the user position array of a Group\_ID from in the Group ID Managament frame (or MU[0] NSTS, MU[1] NSTS, …, MU[3] NSTS fields in VHT-SIG-A1). For this reason, the order of the spatial time streams in the MU PPDU at the transmitter corresponding to the same Group ID should also follow the order defined by the user position array of the same group ID. In other words, user 0 should correspond to the user with postion 0 in the user position array, user 1 should correspond to the user with position 1 in the user position array, … , etc.

As described in TXVECTOR in Table 22-1 TXVECTOR and in PHY-DATA.request, the parameter USER\_POSITION is defined to be the index for user in MU transmission which corresponds to the user i (i=USER\_POSITION) with position i in the user position array, i=0, … , Nu.

Commenter proposes to change the parameter name “USER\_POSITION” in Table 22-1 TXVECTOR and in PHY-DATA.request to user index u.

## Proposed changes

*Instruct the editor to make the following changes in 7.3.5.2.2 Semantics of the service primitive.*

The primitive provides the following parameters:

PHY-DATA.request(DATA,u)

The DATA parameter is an octet of value X'00' to X'FF'.

The u parameter is optionally present and indicates the index of the user in an MU PPDU to which the accompanying DATA octet applies.

## Proposed resolution

ACCEPT.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5028 | Sandhya Patil | 7.3.5.2@22.54 | "The USER\_POSITION parameter is optionally present and indicates the index of the user in an MU PPDU | It should be clarified that USER position is mandatory for the MU transmissions |

## Discussion

The service primitive PHY-DATA.request is preceded by PHY-TXSTART.req(TXVECTOR) which already contains the USER\_POSITION parameter. Thus, the USER\_POSITION parameter is not mandatory in primitive PHY-DATA.request.

## Proposed changes

none

## Proposed resolution

REJECT

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5050 | Sigurd Schelstraete | 7.3.5.11.3@24.34 | Unclear requirement | The difference in requirements between Clause 14-21 and Clause 22 is not clear. They look exactly the same other than the timing requirement ("within aCCATime"). In section 22.3.19.5 there are timing requirements.Please clarify. |

## Discussion

The description of primitive in 7.3.5.11 PHY-CCA.indication is as follows:

“For Clause 14-21 PHYs, t~~T~~his primitive is generated within aCCATime of the occurrence of a change in the

status of the channel(s) from channel idle to channel busy or from channel busy to channel idle, or when the

channel-list parameter changes; otherwise this primitive is generated when the status of the channel(s) changes

from channel idle to channel busy or from channel busy to channel idle, or when the channel-list parameter

changes. This includes the period of time when the PHY is receiving data. Refer to specific PHY clauses for

details about CCA behavior for a given PHY.”

The description for 11ac is in the second part of the sentence as highlighted. Note that thereis no difference between that for Clause 14-21 and for Clause 22. It is therefore no need to include the the highlighted part.

## Proposed changes

**7.3.5.11.3 When generated**

*Instruct the editor to modify the description.*

“For Clause 14-21 PHYs, t~~T~~his primitive is generated within aCCATime of the occurrence of a change in the

status of the channel(s) from channel idle to channel busy or from channel busy to channel idle, or when the

channel-list parameter changes; otherwise this primitive is generated when the status of the channel(s) changes

from channel idle to channel busy or from channel busy to channel idle, or when the channel-list parameter

changes. This includes the period of time when the PHY is receiving data. Refer to specific PHY clauses for

details about CCA behavior for a given PHY.”

Note for the VHT PHY, the timing information is omitted here and is defined in Clause 22.3.19.5.

## Proposed resolution

REVISE.

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## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5060 | Sigurd Schelstraete | 7.3.5.11.3@24.49 | "SIG field" is not clear | Replace "SIG field" with "L-SIG field" |

## Discussion

The commenter points out that the use of SIG field is not clear for an NON-HT format and it should be L\_SIG. Note that for NON-HT format is defined in Clause 18 where the LENGTH field is contained in the SIGNAL field as described in 18.3.4 (or PLCP header or SIGNAL symbol) as described in 18.3.2.1. However, this change should be done in REVmB since it applies to HT STA, not to a VHT STA.

## Proposed changes

**7.3.5.11.3 When generated**

If the STA is an HT STA but not a VHT STA and the operating channel width is 20 MHz, the PHY maintains

the channel busy indication until the period indicated by the LENGTH field has expired, where the LENGTH

field is

— In a valid SIGNAL field if the format of the PPDU is NON\_HT

## — In a valid HT-SIG field if the format of the PPDU is HT\_MF or HT\_GF

If the STA is an HT STA but not a VHT STA and the operating channel width is 40 MHz, the PHY maintains

the channel busy indication until the period indicated by the LENGTH field has expired, where the LENGTH

field is

— In a valid SIGNAL field if the format of the PPDU is NON\_HT and the PPDU is received in the primary

20 MHz channel

— In a valid HT-SIG field if the format of the PPDU is HT\_MF or HT\_GF provided that the PPDU is

either a 20 MHz PPDU received in the primary channel or a 40 MHz PPDU

## Proposed resolution

REVISE.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5318 | Wei Shi | 7.3.5.11.3@24.65 | Terms like 20/40/80/160MHz PPDU are not really defined. For example is non-HT duplicate using 40MHz a 40MHz PPDU? | Please define these before their use. This applies to all sections of the document. |

## Discussion

Commenter asks to define the terms 20/40/80/160MHz PPDU. Note that 20 MHz PPDU, 40 MHz PPDU, 80 MHz PPDU, 160 MHz PPDU, 80+80 Mhz PPDU represent PPDUs with 20 MHz bandwidth, PPDU with 40 MHz bandwidth, PPDU with 80 MHz bandwidth, PPDU with 160 MHz bandwidth, and PPDU with 80+80 MHz bandwidth, respectively. These terms have been used extensively in REVmB. There is no confusion.

With respect to comment’s question, a non-HT duplicate using 40MHz is a 40MHz PPDU.

## Proposed changes

none

## Proposed resolution

REJECT

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4471 | Brian Hart | 18.3.5.5@154.4 | To minimize some confusion that Ive seen, add "Note: Descrambling of the DATA field is the same whether the TXVECTOR parameter CH\_BW\_IN\_NON\_HT was present or not present at the transmitter. The presence of CH\_BW\_IN\_NON\_HT only constrains the selection of a scrambling sequence in order to encode information | As in comment |

## Discussion

The initialization of the scrambler as described in the Table 18-6a only affects the first 7 bits of the scrambler output. Agreed with commenter, it is a good idea to add the note regarding the descrambling of the Data field to avoid confusion.

## Proposed changes

*Instruction the editor to insert the note in P153L53.*

**18.3.5.5 PLCP DATA scrambler and descrambler**

Note: The receiving PHY cannot determine whether the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT was present or not, but it does not matter since descrambling the DATA field is the same either way.

## Proposed resolution

REVISE.

## Comments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5100 | Sigurd Schelstraete | 18.3.5.5@153.35 | Requirements for RXVECTOR not clear from Table 18-6a. | It's not clear how to interpret the table for RXVECTOR. Probably, RXVECTOR should not be part of this table, since the table shows how to determine the values of the first 7 bits in the scrambling sequence when CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT are given. At RX side, the reverse needs to be done: given the first 7 bits, what values should be assigned to CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT.Either way, the columns for RXVECTOR are empty and don't convey any requirement.We propose to have a separate table for RXVECTOR to show the values of CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT as a function of the first 7 bits. |

## Discussion

In Table 18.6a, the contents of the first 7 bits of scrambling sequence for TXVECTOR is provided while the description in the last row for the RXVECTOR is left empty.



The RXVECTOR should be described based on the following conditions:

1. CH\_BANDWIDTH\_IN\_NON\_HT is present and DYN\_BANDWIDTH\_IN\_NON\_HT is present: This occurs in RTS frame transmitted by a VHT station and when the TA field is set to signalling TA (i.e. Individual/Group set to 1). In this case, the CH\_BANDWIDTH is set to CH\_BANDWIDTH\_IN\_NON\_HT. The CH\_BANDWIDTH\_IN\_NON\_HT and DYNBANDWIDTH\_IN\_NON\_HT in the first 7 bits of the scrambling sequence is described in Table 18.6a.
2. CH\_BANDWIDTH\_IN\_NON\_HT is present and DYN\_BANDWIDTH\_IN\_NON\_HT is not present: This occurs in other control frames transmitted by a VHT station and when the TA field is set to signalling TA (i.e. Individual/Group set to 1). ). In this case, the CH\_BANDWIDTH is set to CH\_BANDWIDTH\_IN\_NON\_HT. The CH\_BANDWIDTH\_IN\_NON\_HT in the first 7 bits of the scrambling sequence is described in Table 18.6a.

## Proposed changes

|  |  |  |
| --- | --- | --- |
| Parameter | Condition | First 7 bits of the Scrambling Sequence |
| B0 B3Transmit Order | B4 | B5 B6 |
| TXVECTOR | CH\_BANDWIDTH\_IN\_NON\_HT is present andDYN\_BANDWIDTH\_IN\_NOT\_HT is notpresent in TXVECTOR | 5 bit pseudo-random nonzero integer ifCH\_BANDWIDTH\_IN\_NON\_HT equals CBW20 and a 5 bit pseudo-random integer otherwise | CH\_BANDWIDTH\_IN\_NON\_HT |
| TXVECTOR | CH\_BANDWIDTH\_IN\_NON\_HT is present andDYN\_BANDWIDTH\_IN\_NOT\_HT is presentin TXVECTOR | 4 bit pseudo-random nonzero integer ifCH\_BANDWIDTH\_IN\_NON\_HT equals CBW20andDYN\_BANDWIDTH\_IN\_NON\_HT equals Static,and a 4 bit pseudo-randominteger otherwise | DYN\_BANDWIDTH\_IN\_NON\_HT |
| RXVECTOR | For a control frame transmitted by a VHT STA that is not a RTS frame in a non-HT-duplicate or non-HT formats with the TA field set to a signalling TA | 5 bit pseudo-random nonzero integer ifCH\_BANDWIDTH\_IN\_NON\_HT equals CBW20 and a 5 bit pseudo-random integer otherwise | CH\_BANDWIDTH\_IN\_NON\_HT |
| RXVECTOR | For a RTS frame transmitted by a VHT STA in a non-HT-duplicate and non-HT formats with TA field set to a signalling TA |  | DYN\_BANDWIDTH\_IN\_NON\_HT |

## Proposed resolution

REVISE. Instruct the editor to make the changes in 11/926r1 under heading CID 2198.

## Comments

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| --- | --- | --- | --- | --- |
| 5101 | Sigurd Schelstraete | 18.3.5.5@154.30 | Text in Figure 18-7 is confusing | The labeling of the switch "CH\_BANDWIDTH\_IN\_NON\_HT is present and within first 7 bits" is not clear. Replace with "During bits 0-6 of scrambling sequence when CH\_BANDWIDTH\_IN\_NON\_HT is present".Also replace "First 7 bits of scrambling sequence" with "First 7 bits of scrambling sequence as in Table 18-6a" |

## Discussion

Agreed with the commenter that the text is confusing.

## Proposed changes

 During bits 0-6 of scrambling sequence when CH\_BANDWIDTH\_IN\_NON\_HT is present

 First 7 bits of scrambling sequence as in Table 18-6a



## Proposed resolution

REVISE.