IEEE P802.11  
Wireless LANs

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| D1.0 Comment Resolution, | | | | |
| Date: 2011-08-29 | | | | |
| Author(s): | | | | |
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##### Changes are based on text from 11ac D1.0. Changes indicated by a mixture of Word track-changes and instructions.

PHY CIDs addressed: **2662, 2672, 3044, 3174, 3175, 3397**

***PHY***

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 2662 | Kim, Joonsuk | 8.4.1.40 | 47 | 40 | T | Description on 'Max Nss for SU Present' in Table 8-ac12 is confusing. For example, "when feedback\_type=1…". Feedback\_type of what? Beamforming feedback report? | Clarify it | |  |  |  |  |  |  |  |

**Proposed resolution: Agree**

**Discussion**: When Max Nss For SU Present is set to 1, the Rx Nss is used to indicate to the beamformer the maximum number of spatial streams the beamformee can receive during SU-beamformed transmission when a BF report with feedback type = 1 (i.e. an MU type feedback) was used to form the transmission.

***Change:***

##### 11ac editor to change 8.4.1.40 (P47L19-45) as per highlighted text below.

Table 8-ac12—Subfield values of the VHT Operating Mode field

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| **Field** | **Description** |
| Channel Width | If Max Nss For SU Present is set to 0, indicates the supported channel  width:  Set to 0 for 20 MHz  Set to 1 for 40 MHz  Set to 2 for 80 MHz  Set to 3 for 160 MHz or 80+80 MHz  Reserved if Max Nss For SU Present is set to 1. |
| Rx Nss | If Max Nss For SU Present is set to 0, indicates ~~T~~the maximum ~~supported~~ number of spatial streams supported by the STA. ~~can receive interpreted according to the Max~~ ~~Nss For SU Present setting:~~  If Max Nss For SU Present is set to 1, indicates the maximum number of spatial streams the STA can receive as a beamformee in a single user beamformed transmission.  Set to 0 for *NSS* = 1  Set to 1 for *NSS* = 2  …  Set to 7 for *NSS* = 8 |
| Max Nss For SU  Present | ~~Set to 0 if Rx Nss indicates the supported number of spatial streams.~~  Is this subfield is 0, the Rx Nss refers to the maximum number of spatial streams supported by the STA.  If this subfield is 1, the Rx Nss refers to ~~indicates~~ the maximum number of spatial streams the STA can receive as a beamformee in a single user beamformed transmission when a BF report with feedback type = 1 (i.e. an MU type feedback) was used to form the transmission. |

##### PHY

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| 2672 | Kim, Youhan | 8.4.2.101 | 55 | 39 | T | Channel Center Frequency Segment X' defines the center 'frequency', but the Encoding says 'channel number'. For example, suppose the BSS uses 80 MHz BW centered at 5210 MHz. What is the exact value to be put in this field? Note that Table 22-18 and Equation (22-89) define PLME MIBs (and their encoding) which basically correspond to the fields in the VHT Operation information field. In Table 22-18 and Equation (22-89), the 'dot11CurrentChannelCenterFrequencyIndex1' is the offset (in 5 MHz units) of the center frequency from 5.0 GHz. | Suggest to refrain from using the word 'channel number' from the 'Encoding' column for 'Channel Center Frequency Segment 1' and 'Channel Center Frequency Segment 2'. Clarify that the actual value to be inserted in these fields is the offset (in 5 MHz) of the center frequency from 5.0 GHz. Or perhaps have some link to Table 22-18 and Equation (22-89)? |

**Proposed resolution: Agree in Principle**

**Discussion**: For 80MHz, 160MHz, or 80+80MHz, channel center frequency index instead of channel number should be used as shown in Table E1~E4 of Annex E. Please refer to 11-11-1048-00-00ac Comments Resolution for CID 2949 for discussion on the 20, 40 MHz VHT BSS.

***Change:***

##### 11ac editor to change 8.4.2.101 (P55L27~L48) as per highlighted text below.

Table 8-ac15 – VHT Operation Information subfields

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| **Field** | **Definition** | **Encoding** |
| Channel Width | This field, together with the HT  Operation element STA Channel  Width field, defines the BSS operat-  ing channel width (see 10.25.1  (Basic VHT BSS functionality)). | Set to 0 for 20 MHz or 40 MHz operating channel  width.  Set to 1 for 80 MHz operating channel width.  Set to 2 for 160 MHz operating channel width.  Set to 3 for 80+80 MHz operating channel width.  Values in the range 4 to 255 are reserved. |
| Channel Center Fre-  quency Segment 1 | Defines the channel center frequency  for an ~~20, 40,~~ 80 and 160 MHz VHT  BSS and the segment 1 channel cen-  ter frequency for an 80+80 MHz  VHT BSS. See 22.3.14 (Channeliza-  tion). | Set to the channel ~~number~~ center frequency index corresponding to the  channel center frequency of an ~~20, 40,~~ 80 or 160  MHz VHT BSS or the channel ~~number~~ center frequency index corresponding to the channel center frequency of segment 1 of an 80+80 MHz VHT BSS.  Set to 0 for 20MHz or 40MHz operating channel width. |
| Channel Center Fre-  quency Segment 2 | Defines the segment 2 channel center frequency for an 80+80 MHz VHT BSS. See 22.3.14 (Channelization). | Set to the channel ~~number~~ center frequency index corresponding to the channel center frequency of segment 2 for 80+80 MHz VH BSS.  Reserved otherwise. |

##### PHY Quote 8.22 for all field for reserved conditions:

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 3044 | Malinen, Jouni | 8.4.1.40 | 47 | 32 | T | Table 8-ac12 does not include the Reserved subfield. While this is not really used now, it would be better to explicitly define how it is to be set and ignored to allow for future extensions. | Add following row to Table 8-ac12: “Reserved | Set to 0 on transmission. Ignored on reception.” | |  |  |  |  |  |

**Proposed resolution: Disagree**

**Discussion**: In Section 8.2.2 (P288L49) of RevMb D8.01, the convention of the Reserved field and subfield is described (i.e., set to 0 upon transmission and are ignored upon reception).There is no need to specify the use of reserved subfield for this instance.

***Change:***

##### None

##### PHY

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 3174 | Perahia, Eldad | 8.4.1.40 | 47 | 31 | T | why is Channel Width dependent on Max Nss For SU Present? | please clarify | |  |  |  |  |  |  |  |
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**Proposed resolution: Agree in Principle**

**Discussion**: The VHT Operating Mode Field is used for sending RX Nss only, when Max Nss For SU Present is set to 1, to indicate to the beamformer the maximum number of spatial streams the beamformee can receive in a single user beamformed transmission using the feedback information = 1 (i.e. an MU type feedback) to calculate the beamforming steering matrix. The Channel Width field is reserved in this case to avoid confusion. To change the channel width, the VHT Operating Mode Notification frame can be sent with the new Channel Width, Rx Nss, and with Max Nss for SU present=0.

***Change:***

##### 11ac editor to change 8.4.2.101 (P46L51~L54) as per highlighted text below.

The VHT Operating Mode field is used in the VHT Operating Mode Notification frame (see 8.5.16.4 (VHT Operating Mode Notification frame format)) to indicate the operating channel width and *NSS* on which the sending STA is able to receive. When Max Nss For SU Present is set to 1, the VHT Operating Mode Field is used for sending RX Nss only. The length of the field is 1 octet.

##### PHY

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| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 3175 | Perahia, Eldad | 8.4.1.40 | 47 | 49 | T | Which subfield does "this threshold" refer to? | please clarify | |  |  |  |  |  |  |  |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 3397 | Seok, Yongho | 8.4.1.40 | 47 | 49 | T | The meaning of the sentence is not clear. What is the definition of "threshold" here? | Clarify the sentence. | |  |  |  |  |  |  |  |

**Proposed resolution: Agree**

**Discussion**: When Max Nss For SU Present is set to 1, the Rx Nss is used to indicate to beamformer the maximum number of spatial streams the beamformee can receive in a single user beamformed transmission using the feedback information in the MU Exclusive Beamforming Report field to calculate the beamforming steering matrix. The threshold should be changed to limit. The limit refers to the maximum number of spatial streams the STA can receive, i.e. Rx Nss.

***Change:***

##### 11ac editor to change 22.3.4.7 (P47L49) as per highlighted text below.

##### A beamformer may ignore ~~this threshold~~ this limit, defined by Rx Nss, if SU type feedback is used to form a single user beamformed transmission.

Straw Poll: Do you agree to comment resolution presented in 0966r2