IEEE P802.11  
Wireless LANs

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| LB189 D2.0 11af Comment Resolutions on MCS Table | | | | |
| Date: 2012-09-12 | | | | |
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*Abstract: Resolutions of D2.0 comments on MCS Table: CIDs 10, 11, 69*

##### CID 69 (Data rate)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 69 | Osama Aboulmagd | 23.5 | 258.17 | For Table 23-19 and MCS index 0, I computed the data rate for 6 and 7 MHz to be 2.25 Mbps (108/2/24usec). | Clarify and change data rates values if necessary. | **Rejected** |

**Discussions:**The current data rate is correct, for example the calculation for Long GI and BW=6/7MHz should be: Ndbps/Tsym = 54/30usec = 1.8Mbps.

**Proposal: Reject CID 69**

##### CIDs 10, 11 (N\_ES)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 10 | Hongyuan Zhang | 23.5 | 257.37 | Need to add NES column in all the MCS tables, as in 11n and 11ac. | Add Nes column in all MCS tables, will bring a proposal | **Accepted** |
| 11 | Hongyuan Zhang | 23.5 | 265.28 | In Table 23-30, for modes 4N, 4C, 4SS, if we use the same rule as in 11ac to determine NES, then MCS8 should be excluded (Nes=5), according to 11ac rules. | Either exclude MCS8, or make Nes=6 and still allow this MCS, will bring a proposal along with the previous comment. | **Revised** |

**Discussions:**Current draft specifies that Nes = 1 for all 11af rates, as a result, depending on the maximum supported bandwidth, Nss and MCS for a device, the receiver may have to run the clock faster than directly downclocking the 11n or 11ac clock rates. Therefore, the current Nes=1 restriction is not fair for a device targeting for high maximum data rate, which may have to run higher clock rate solely because of the single Viterbi deocer requirement.

Note that in 23.1.1, there is a statement “ **All TVHT transmissions in one frequency segment shall use the 40 MHz VHT PHY defined in subclauses 22.3 (VHT PLCP sublayer), 22.4 (VHT PLME), 22.5 (Parameters for HT MCSs), and 22.6 (VHT PMD sublayer) with a sampling clock change to fit into each of the basic channel unit bandwidths.**”, this is incorrect if we force Nes=1, because in 11ac 40MHz, there are cases where Nes=2 for MCS 8,9 and Nss=4.

Propose to follow the 11ac practice, add Nes column in all MCS tables. Nes is derivated using the same general rule as in 11ac, i.e. one more BCC encoder is needed if the equivalent short-GI data rate when sampled using the 11ac clock rate goes beyond multiple of 600Mbps. For Table 23-30, in Nss=4 and MCS8, make Nes=6 so that MCS8 can still be allowed.

**Proposal: Revised for CIDs 10 and 11. The proposed editorial instructions are included in this document as shown below.**

*TGaf Editor: Pls make the following change on page 257 line 58:*

…. *NES* values were chosen to yield an integer number of punctured blocks per OFDM symbol. ~~Note that NES values are 1 for all Clause 23 modulations.~~

*TGaf Editor: Pls add a “NES” column in Tables 23-19 ~ 23-30 as below:*

**Table 23-19—TVHT MCSs for TVHT\_MODE\_1 *NSS* = 1**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 1 |
| 9 | … | 1 |

**Table 23-20—TVHT MCSs for TVHT\_MODE\_1 *NSS* = 2**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 1 |
| 9 | … | 1 |

**Table 23-21—TVHT MCSs for TVHT\_MODE\_1 *NSS* = 3**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 1 |
| 9 | … | 1 |

**Table 23-22—TVHT MCSs for TVHT\_MODE\_1 *NSS* = 4**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 2 |
| 9 | … | 2 |

**Table 23-23—TVHT MCSs for TVHT\_MODE\_2C and TVHT\_MODE\_2N, *NSS* = 1**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 1 |
| 9 | … | 1 |

**Table 23-24—TVHT MCSs for TVHT\_MODE\_2C and TVHT\_MODE\_2N, *NSS* = 2**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 2 |
| 9 | … | 2 |

**Table 23-25—TVHT MCSs for TVHT\_MODE\_2C and TVHT\_MODE\_2N, *NSS* = 3**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 2 |
| 6 | … | 2 |
| 7 | … | 2 |
| 8 | … | 2 |
| 9 | … | 2 |

**Table 23-26—TVHT MCSs for TVHT\_MODE\_2C and TVHT\_MODE\_2N, *NSS* = 4**

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 2 |
| 5 | … | 2 |
| 6 | … | 2 |
| 7 | … | 2 |
| 8 | … | 3 |
| 9 | … | 3 |

##### Table 23-27—TVHT MCSs for TVHT\_MODE\_4C and TVHT\_MODE\_4N, N*SS* = 1

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 1 |
| 5 | … | 1 |
| 6 | … | 1 |
| 7 | … | 1 |
| 8 | … | 2 |
| 9 | … | 2 |

##### Table 23-28—TVHT MCSs for TVHT\_MODE\_4C and TVHT\_MODE\_4N, N*SS* = 2

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 1 |
| 4 | … | 2 |
| 5 | … | 2 |
| 6 | … | 2 |
| 7 | … | 2 |
| 8 | … | 3 |
| 9 | … | 3 |

##### Table 23-29—TVHT MCSs for TVHT\_MODE\_4C and TVHT\_MODE\_4N, N*SS* = 3

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 1 |
| 3 | … | 2 |
| 4 | … | 2 |
| 5 | … | 3 |
| 6 | … | 3 |
| 7 | … | 3 |
| 8 | … | 4 |
| 9 | … | 4 |

##### Table 23-30—TVHT MCSs for TVHT\_MODE\_4C and TVHT\_MODE\_4N, N*SS* = 4

|  |  |  |
| --- | --- | --- |
| MCS | … | NES |
| 0 | … | 1 |
| 1 | … | 1 |
| 2 | … | 2 |
| 3 | … | 2 |
| 4 | … | 3 |
| 5 | … | 4 |
| 6 | … | 4 |
| 7 | … | 4 |
| 8 | … | 6 |
| 9 | … | 6 |