IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Draft text for TX Masks | | | | |
| Date: 2016-12-15 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| C. Hansen | Peraso |  |  | chris@covariantcorp.com |
|  |  |  |  |  |

Abstract

Draft text for Section 6.3.5 TX Masks.

X.YY Transmit spectrum mask

NOTE 1—In the presence of additional regulatory restrictions, the device shall meet both the regulatory requirements and the mask defined in this subclause.

NOTE 2—Transmit spectral mask figures in this subclause are not drawn to scale.

NOTE 3—For rules regarding TX center frequency leakage levels, see X.Y.Z. The spectral mask requirements in this subclause do not apply to the RF LO.

A PPDU transmission shall comply with the TX masks defined in this section. A PPDU transmission that partially occupies a channel shall comply with the TX mask defined for the wider channel. For example, a 2.16 GHz bandwidth transmission that partially occupies a bonded 4.32 GHz channel shall not exceed the 4.32 GHz mask.

For a 2.16 GHz mask PPDU of DMG or EDMG format, the (interim?) transmit spectral mask shall have a 0 dBr (dB relative to the maximum spectral density of the signal) bandwidth of 1.88 GHz, –17 dBr at 1.20 GHz frequency offset, –22 dBr at 2.70 GHz frequency offset, and –30 dBr at 3.06 GHz frequency offset and above. The (interim?) transmit spectral mask for frequency offsets in between 0.94 and 1.20 GHz, 1.20 and 2.70 GHz, and 2.70 and 3.06 GHz shall be linearly interpolated in decibels (dB domain) from the requirements for 0.94 GHz, 1.20 GHz, 2.70 GHz, and 3.06 GHz frequency offsets. The transmit spectrum shall not exceed the maximum of the (interim) transmit spectral mask and –TBD (53) dBm/MHz (TBD – need to review this level for 60 GHz) at any frequency offset. Figure 1 (Example transmit spectral mask for a 2.16 GHz mask PPDU) shows an example of the resulting overall spectral mask when the –30 dBr spectrum level is above –TBD (53) dBm/MHz.

|  |
| --- |
|  |
| **Figure 1 - Example transmit spectral mask for a 2.16 GHz mask PPDU(11ac)** |

For a 4.32 GHz mask PPDU of EDMG format, the (interim) transmit spectral mask shall have a 0 dBr (dB relative to the maximum spectral density of the signal) bandwidth of 4.04 GHz, –17 dBr at 2.40 GHz frequency offset, –22 dBr at 5.40 GHz frequency offset, and –30 dBr at 6.12 GHz frequency offset and above. The (interim) transmit spectral mask for frequency offsets in between 2.02 and 2.40 GHz, 2.40 and 5.40 GHz, and 5.40 and 6.12 GHz shall be linearly interpolated in decibels (dB domain) from the requirements for 2.02 GHz, 2.40 GHz, 5.40 GHz, and 6.12 GHz frequency offsets. The transmit spectrum shall not exceed the maximum of the interim transmit spectral mask and –TBD (56) dBm/MHz at any frequency offset greater than 2.02 GHz. Figure 2 (Example transmit spectral mask for a 4.32 GHz mask PPDU) shows an example of the resulting overall spectral mask when the –30 dBr spectrum level is above –TBD (56) dBm/MHz.

|  |
| --- |
|  |
| **Figure 2 - Example transmit spectral mask for a 4.320 GHz mask PPDU(11ac)** |

For a 6.48 GHz mask PPDU of EDMG format, the (interim) transmit spectral mask shall have a 0 dBr (dB relative to the maximum spectral density of the signal) bandwidth of 6.20 GHz, –17 dBr at 3.60 GHz frequency offset, –22 dBr at 8.10 GHz frequency offset, and –30 dBr at 9.18 GHz frequency offset and above. The (interim) transmit spectral mask for frequency offsets in between 3.10 and 3.60 GHz, 3.60 and 8.10 GHz, and 8.10 and 9.18 GHz shall be linearly interpolated in decibels (dB domain) from the requirements for 3.10 GHz, 3.60 GHz, 8.10 GHz, and 9.18 GHz frequency offsets. The transmit spectrum shall not exceed the maximum of the interim transmit spectral mask and –TBD (56) dBm/MHz at any frequency offset greater than 3.10 GHz. Figure 3 (Example transmit spectral mask for a 6.48 GHz mask PPDU) shows an example of the resulting overall spectral mask when the –30 dBr spectrum level is above –TBD (56) dBm/MHz.



**Figure 3 - Example transmit spectral mask for a 6.48 GHz mask PPDU(11ac)**

For an 8.64 GHz mask PPDU of EDMG format, the (interim) transmit spectral mask shall have a 0 dBr (dB relative to the maximum spectral density of the signal) bandwidth of 8.36 GHz, –17 dBr at 4.80 GHz frequency offset, –22 dBr at 10.80 GHz frequency offset, and –30 dBr at 12.24 GHz frequency offset and above. The (interim) transmit spectral mask for frequency offsets in between 4.18 and 4.80 GHz, 4.80 and 10.80 GHz, and 10.80 and 12.24 GHz shall be linearly interpolated in decibels (dB domain) from the requirements for 4.18 GHz, 4.80 GHz, 10.80 GHz, and 12.24 GHz frequency offsets. The transmit spectrum shall not exceed the maximum of the (interim) transmit spectrum mask and –TBD dBm/MHz at any frequency offset. Figure 4 (Example transmit spectral mask for an 8.64 GHz mask PPDU) shows an example of the resulting overall spectral mask when the –30 dBr spectrum level is above –TBD dBm/MHz.

|  |  |
| --- | --- |
|  | |
| **Figure 4 - Example transmit spectral mask for an 8.64 GHz mask PPDU(11ac)** | |
|  |

For Non-contiguous channel aggregation mask PPDU of EDMG format, the overall transmit spectral mask is constructed in the following manner. First, the 2.16 (or 4.32) GHz (interim) spectral mask is placed on each of the two 2.16 (or 4.32) GHz segments. Then, for each frequency at which both of the 2.16 (or 4.32) GHz (interim) spectral masks have values greater than –30 dBr and less than –17 dBr, the sum of the two (interim) mask values (summed in power) shall be taken as the overall spectral mask value. Next, for each frequency at which neither of the two 2.16 (or 4.32) GHz interim masks have values greater than or equal to –17 dBr and less than or equal to 0 dBr, the higher value of the two interim masks shall be taken as the overall (interim) spectral value. Finally, for any frequency region where the mask value has not been defined yet, linear interpolation (in decibels) between the nearest two frequency points with the (interim) spectral mask value defined shall be used to define the (interim) spectral mask value. The transmit spectrum shall not exceed the maximum of the (interim) transmit spectrum mask and –TBD dBm/MHz at any frequency offset. Figure 5 (Example transmit spectral mask for a 2.16 GHz + 2.16 GHz mask PPDU) shows an example of a transmit spectral mask for a noncontiguous transmission using two 2.16 GHz channels where the center frequency of the two 2.16 GHz channels are separated by 4.32 GHz and the –30 dBr spectrum level is above –TBD dBm/MHz.

|  |
| --- |
|  |
| **Figure 5 - Example transmit spectral mask for a 2.16 + 2.16 MHz mask PPDU(11ac)** |

Different center frequency separation between the two 2.16 GHz frequency segments of the spectral mask as well as different peak levels of each 2.16 GHz frequency segment of the spectral mask are possible, in which case a similar procedure in determining the spectral mask as in Figure 5 (Example transmit spectral mask for a 2.16+2.16 GHz mask PPDU) is followed.

The transmit spectral mask for noncontiguous transmissions using two nonadjacent channels is applicable only in regulatory domains that allow for such transmissions.

Measurements shall be made using a TBD MHz resolution bandwidth and a TBD kHz video bandwidth.