

3 dB) of the transmitter shall not exceed 4.5 kHz and the lower limit shall be 150 Hz, with lower frequencies attenuated at a slope of 6 dB per octave.

(3) *Modulation processing.* If audio-frequency signal processing is used, the dynamic range of the modulating signal shall be not less than 20 dB.

(4) *Necessary bandwidth.* The necessary bandwidth shall not exceed 9 kHz.

[70 FR 46677, Aug. 10, 2005]

**§ 73.757 System specifications for single-sideband (SSB) modulated emissions in the HF broadcasting service.**

(a) *System parameters*—(1) *Channel spacing.* In a mixed DSB, SSB and digital environment (see Resolution 517 (Rev.WRC-03)), the channel spacing shall be 10 kHz. In the interest of spectrum conservation, it is also permissible to interleave SSB emissions midway between two adjacent DSB channels, *i.e.*, with 5 kHz separation between carrier frequencies, provided that the interleaved emission is not to the same geographical area as either of the emissions between which it is interleaved. In an all inclusive SSB environment, the channel spacing and carrier frequency separation shall be 5 kHz.

(2) *Equivalent sideband power.* When the carrier reduction relative to peak envelope power is 6 dB, an equivalent SSB emission is one giving the same audio-frequency signal-to-noise ratio at the receiver output as the corresponding DSB emission, when it is received by a DSB receiver with envelope detection. This is achieved when the sideband power of the SSB emission is 3 dB larger than the total sideband power of the DSB emission. (The peak envelope power of the equivalent SSB emission and the carrier power are the same as that of the DSB emission.)

(b) *Emission characteristics*—(1) *Nominal carrier frequencies.* Nominal carrier frequencies shall be integral multiples of 5 kHz.

(2) *Frequency tolerance.* The frequency tolerance shall be 10 Hz.

NOTE 1 TO PARAGRAPH (b)(2): The ITU suggests that administrations avoid carrier frequency differences of a few hertz, which cause degradations similar to periodic fading.

This could be avoided if the frequency tolerance were 0.1 Hz, a tolerance which would be suitable for SSB emissions.

NOTE 2 TO PARAGRAPH (b)(2): The SSB system adopted for the bands allocated exclusively to HF broadcasting does not require a frequency tolerance less than 10 Hz. The degradation mentioned in Note 1 occurs when the ratio of wanted-to-interfering signal is well below the required protection ratio. This remark is equally valid for both DSB and SSB emissions.

(3) *Audio-frequency band.* The upper limit of the audio-frequency band (at—3 dB) of the transmitter shall not exceed 4.5 kHz with a further slope of attenuation of 35 dB/kHz and the lower limit shall be 150 Hz with lower frequencies attenuated at a slope of 6 dB per octave.

(4) *Modulation processing.* If audio-frequency signal processing is used, the dynamic range of the modulating signal shall be not less than 20 dB.

(5) *Necessary bandwidth.* The necessary bandwidth shall not exceed 4.5 kHz.

(6) *Carrier reduction (relative to peak envelope power).* In a mixed DSB, SSB and digital environment, the carrier reduction shall be 6 dB to allow SSB emissions to be received by conventional DSB receivers with envelope detection without significant deterioration of the reception quality.

(7) *Sideband to be emitted.* Only the upper sideband shall be used.

(8) *Attenuation of the unwanted sideband.* The attenuation of the unwanted sideband (lower sideband) and of intermodulation products in that part of the emission spectrum shall be at least 35 dB relative to the wanted sideband signal level. However, since there is in practice a large difference between signal amplitudes in adjacent channels, a greater attenuation is recommended.

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**§ 73.758 System specifications for digitally modulated emissions in the HF broadcasting service.**

(a) For digitally modulated emissions, the Digital Radio Mondiale (DRM) standard shall be employed. Both digital audio broadcasting and datacasting are authorized. The RF requirements for the DRM system are specified in paragraphs (b) and (c), of this section.