

§22.917

(ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.

(iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.

(2) For base stations, these signals shall be attenuated, relative to the level at 1 kHz, as follows:

(i) In the frequency range of 3 to 15 kHz, signals must be attenuated by at least $40 \log (f+3)$ dB, where f is the frequency of the signal in kHz.

(ii) In the frequency range above 15 kHz, signals must be attenuated by at least 28 dB.

(3) Filtering is not required for the supervisory audio tones, signaling tones or wideband data signals.

§22.917 Emission limitations for cellular.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) *Analog radiotelephony emissions.* F3E emissions must be used only on the communication channels.

(b) *F3E/F3D emission mask for use with audio filter.* For F3E and F3D emissions, except as provided in paragraph (c) of this section, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier wave (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB;

(2) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency: at least 60 dB or $43 + 10 \log P$ dB, whichever is the lesser attenuation.

(c) *Alternative F3E/F3D emission mask.* For F3E and F3D emissions, transmitters may comply with the emission limitations in this paragraph in lieu of compliance with paragraph (b) of this section and the audio filter requirement of §22.915.

(1) The mean power of any emission removed from the carrier frequency by a displacement frequency (f_d in kHz) must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(i) On any frequency removed from the carrier frequency by more than 12 kHz but not more than 20 kHz:

at least $117 \log (f_d+12)$ dB;

(ii) On any frequency removed from the carrier frequency by more than 20 kHz, up to the first multiple of the carrier frequency:

at least $100 \log (f_d+11)$ dB or 60 dB or $43 + 10 \log P$ dB, whichever is the lesser attenuation;

(2) For mobile stations, modulating signals other than the supervisory audio tone in the frequency range of 5.9 to 6.1 kHz must be attenuated, relative to the level at 1 kHz, at least 35 dB.

(d) *F1D emission mask.* For F1D emissions, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) as follows:

(1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz:

at least 26 dB;

(2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz:

at least 45 dB;

(3) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency:

at least 60 dB or $43+10 \log P$ dB, whichever is the lesser attenuation.

(e) *Out of band emissions.* The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by:

at least $43+10 \log P$ dB.

(f) *Mobile emissions in base frequency range.* The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80 dBm at the transmit antenna connector.

(g) *Interference from spurious emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

(h) *Measurement procedure.* The following spectrum analyzer bandwidth settings should be used for measurement of spurious emissions:

(1) When operating in the radiotelephony mode or the supervisory audio tone mode:

(i) For any emission not more than 45 kHz removed from the carrier frequency: 300 Hz;

(ii) For any emission more than 45 kHz removed from the carrier frequency: 30 kHz.

(2) When operating in the wideband data mode or the signaling tone mode:

(i) For any emission not more than 60 kHz removed from the carrier frequency: 300 Hz;

(ii) For any emission more than 60 kHz removed from the carrier frequency: 30 kHz.

§ 22.919 Electronic serial numbers.

The Electronic Serial Number (ESN) is a 32 bit binary number that uniquely identifies a cellular mobile transmitter to any cellular system.

(a) Each mobile transmitter in service must have a unique ESN.

(b) The ESN host component must be permanently attached to a main circuit board of the mobile transmitter and the integrity of the unit's operating software must not be alterable. The ESN must be isolated from fraudulent contact and tampering. If the ESN host component does not contain other information, that component must not be removable, and its electrical connections must not be accessible. If the ESN host component contains other information, the ESN must be encoded using one or more of the following techniques:

(1) Multiplication or division by a polynomial;

(2) Cyclic coding;

(3) The spreading of ESN bits over various non-sequential memory locations.

(c) The ESN must be factory set and must not be alterable, transferable, removable or otherwise able to be manipulated. Cellular mobile equipment must be designed such that any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by

the manufacturer will render the mobile transmitter inoperative.

§ 22.921 911 Call Processing Procedures; 911-Only Calling Mode.

All mobile phones manufactured after February 13, 2000, and capable of operating in an analog mode, i.e., in compliance with "Cellular System Mobile Station—Land Station Compatibility Specification" (April 1981 Ed.) Office of Engineering and Technology Bulletin No. 53, referenced in § 22.933 must incorporate a special procedure for processing "9-1-1" calls. Such procedure must recognize when a "9-1-1" call is made and, at such time, must override any programming in the mobile unit that determines the handling of a non-911 call and permit the call to be handled by other analog carriers. This special procedure must incorporate any one or more of the 9-1-1 call system selection processes endorsed or approved by the Commission.

[64 FR 34568, June 28, 1999]

EFFECTIVE DATE NOTE: At 64 FR 34568, June 28, 1999, § 22.921 was added. This section contains information collection and record-keeping requirements and will not become effective until approval has been given by the Office of Management and Budget.

§ 22.923 Cellular system configuration.

Mobile stations communicate with and through base transmitters only. Base transmitters communicate with mobile stations directly or through cellular repeaters. Auxiliary test stations may communicate with base or mobile stations for the purpose of testing equipment.

§ 22.925 Prohibition on airborne operation of cellular telephones.

Cellular telephones installed in or carried aboard airplanes, balloons or any other type of aircraft must not be operated while such aircraft are airborne (not touching the ground). When any aircraft leaves the ground, all cellular telephones on board that aircraft must be turned off. The following notice must be posted on or near each cellular telephone installed in any aircraft:

"The use of cellular telephones while this aircraft is airborne is prohibited by FCC rules, and the violation of this