

§ 15.249

47 CFR Ch. I (10-1-00 Edition)

(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hops to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

NOTE: Spread spectrum systems are sharing these bands on a noninterference basis with systems supporting critical Government requirements that have been allocated the usage of these bands, secondary only to ISM equipment operated under the provisions of part 18 of this chapter. Many of these Government systems are airborne radiolocation systems that emit a high EIRP which can cause interference to other users. Also, investigations of the effect of spread spectrum interference to U. S. Government operations in the 902-928 MHz band may require a future decrease in the power limits allowed for spread spectrum operation.

[54 FR 17714, Apr. 25, 1989, as amended at 55 FR 28762, July 13, 1990; 62 FR 26242, May 13, 1997; 65 FR 57561, Sept. 25, 2000]

EFFECTIVE DATE NOTE 1: At 65 FR 57561, Sept. 25, 2000, § 15.247 was amended by adding a new paragraph (a)(1)(iii), and revising paragraph (b)(1), effective Oct. 25, 2000. For the convenience of the user, the superseded text is set forth as follows:

§ 15.247 **Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.**

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(b) * * *

(1) For frequency hopping systems operating in the 2400-2483.5 MHz or 5725-5850 MHz band and for all direct sequence systems: 1 watt.

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§ 15.249 **Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.**

(a) The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

(b) Field strength limits are specified at a distance of 3 meters.

(c) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

(d) As shown in § 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

(e) Parties considering the manufacture, importation, marketing or operation of equipment under this section should also note the requirement in § 15.37(d).

[54 FR 17714, Apr. 25, 1989, as amended at 55 FR 25095, June 20, 1990]

§ 15.251 **Operation within the bands 2.9-3.26 GHz, 3.267-3.332 GHz, 3.339-3.3458 GHz, and 3.358-3.6 GHz.**

(a) Operation under the provisions of this section is limited to automatic vehicle identification systems (AVIS) which use swept frequency techniques for the purpose of automatically identifying transportation vehicles.

(b) The field strength anywhere within the frequency range swept by the signal shall not exceed 3000 microvolts/meter/MHz at 3 meters in any direction. Further, an AVIS, when in its operating position, shall not produce a field strength greater than 400 microvolts/meter/MHz at 3 meters in any direction within ±10 degrees of the horizontal plane. In addition to the provisions of § 15.205, the field strength of radiated emissions outside the frequency range swept by the signal shall be limited to a maximum of 100 microvolts/meter/MHz at 3 meters, measured from 30 MHz to 20 GHz for the complete system. The emission

limits in this paragraph are based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

(c) The minimum sweep repetition rate of the signal shall not be lower than 4000 sweeps per second, and the maximum sweep repetition rate of the signal shall not exceed 50,000 sweeps per second.

(d) An AVIS shall employ a horn antenna or other comparable directional antenna for signal emission.

(e) Provision shall be made so that signal emission from the AVIS shall occur only when the vehicle to be identified is within the radiated field of the system.

(f) In addition to the labeling requirements in §15.19(a), the label attached to the AVIS transmitter shall contain a third statement regarding operational conditions, as follows:

* * * and, (3) during use this device (the antenna) may not be pointed within \pm^{**} degrees of the horizontal plane.

The double asterisks in condition three (**) shall be replaced by the responsible party with the angular pointing restriction necessary to meet the horizontal emission limit specified in paragraph (b).

(g) In addition to the information required in subpart J of part 2, the application for certification shall contain:

(1) Measurements of field strength per MHz along with the intermediate frequency of the spectrum analyzer or equivalent measuring receiver;

(2) The angular separation between the direction at which maximum field strength occurs and the direction at which the field strength is reduced to 400 microvolts/meter/MHz at 3 meters;

(3) A photograph of the spectrum analyzer display showing the entire swept frequency signal and a calibrated scale for the vertical and horizontal axes; the spectrum analyzer settings that were used shall be labelled on the photograph; and,

(4) The results of the frequency search for spurious and sideband emissions from 30 MHz to 20 GHz, exclusive of the swept frequency band, with the

measuring instrument as close as possible to the unit under test.

[54 FR 17714, Apr. 25, 1989; 54 FR 32340, Aug. 7, 1989]

§ 15.253 Operation within the bands 46.7–46.9 GHz and 76.0–77.0 GHz.

(a) Operation within the bands 46.7–46.9 GHz and 76.0–77.0 GHz is restricted to vehicle-mounted field disturbance sensors used as vehicle radar systems. The transmission of additional information, such as data, is permitted provided the primary mode of operation is as a vehicle-mounted field disturbance sensor. Operation under the provisions of this section is not permitted on aircraft or satellites.

(b) The radiated emission limits within the bands 46.7–46.9 GHz and 76.0–77.0 GHz are as follows:

(1) If the vehicle is not in motion, the power density of any emission within the bands specified in this section shall not exceed 200 nW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.

(2) For forward-looking vehicle-mounted field disturbance sensors, if the vehicle is in motion the power density of any emission within the bands specified in this section shall not exceed 60 μW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.

(3) For side-looking or rear-looking vehicle-mounted field disturbance sensors, if the vehicle is in motion the power density of any emission within the bands specified in this section shall not exceed 30 μW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.

(c) The power density of any emissions outside the operating band shall consist solely of spurious emissions and shall not exceed the following:

(1) Radiated emissions below 40 GHz shall not exceed the general limits in §15.209.

(2) Radiated emissions outside the operating band and between 40 GHz and 200 GHz shall not exceed the following:

(i) For vehicle-mounted field disturbance sensors operating in the band 46.7–46.9 GHz: 2 pW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.