

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/cm<sup>2</sup> 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/cm<sup>2</sup> 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/cm<sup>2</sup> 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/cm<sup>2</sup> at a distance of 3 meters from the exterior surface of the radiating structure.

(ii) For forward-looking vehicle-mounted field disturbance sensors operating in the band 76–77 GHz: 600 pW/cm<sup>2</sup> at a distance of 3 meters from the exterior surface of the radiating structure.

(iii) For side-looking or rear-looking vehicle-mounted field disturbance sensors operating in the band 76–77 GHz: 300 pW/cm<sup>2</sup> at a distance of 3 meters from the exterior surface of the radiating structure.

(3) For radiated emissions above 200 GHz from field disturbance sensors operating in the 76–77 GHz band: the power density of any emission shall not exceed 1000 pW/cm<sup>2</sup> at a distance of 3 meters from the exterior surface of the radiating structure.

(4) For field disturbance sensors operating in the 76–77 GHz band, the spectrum shall be investigated up to 231 GHz.

(d) The provisions in § 15.35 limiting peak emissions apply.

(e) Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range –20 to +50 degrees celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

(f) Regardless of the power density levels permitted under this section, devices operating under the provisions of this section are subject to the radio-frequency radiation exposure requirements specified in §§ 1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of devices operating under this

section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

[61 FR 14503, Apr. 2, 1996, as amended at 61 FR 41018, Aug. 7, 1996; 63 FR 42279, Aug. 7, 1998]

**§ 15.255 Operation within the band 57–64 GHz.**

(a) Operation under the provisions of this section is not permitted for the following products:

(1) Equipment used on aircraft or satellites.

(2) Field disturbance sensors, including vehicle radar systems, unless the field disturbance sensors are employed for fixed operation. For the purposes of this section, the reference to fixed operation includes field disturbance sensors installed in fixed equipment, even if the sensor itself moves within the equipment.

(b) Within the 57–64 GHz band, emission levels shall not exceed the following:

(1) For products other than fixed field disturbance sensors, the average power density of any emission, measured during the transmit interval, shall not exceed 9  $\mu\text{W}/\text{cm}^2$ , as measured 3 meters from the radiating structure, and the peak power density of any emission shall not exceed 18  $\mu\text{W}/\text{cm}^2$ , as measured 3 meters from the radiating structure.

(2) For fixed field disturbance sensors that occupy 500 MHz or less of bandwidth and that are contained wholly within the frequency band 61.0–61.5 GHz, the average power density of any emission, measured during the transmit interval, shall not exceed 9  $\mu\text{W}/\text{cm}^2$ , as measured 3 meters from the radiating structure, and the peak power density of any emission shall not exceed 18  $\mu\text{W}/\text{cm}^2$ , as measured 3 meters from the radiating structure. In addition, the average power density of any emission outside of the 61–61.5 GHz band, measured during the transmit interval, but still within the 57–64 GHz band, shall not exceed 9  $\text{nW}/\text{cm}^2$ , as measured 3 meters from the radiating structure, and the peak power density

of any emission shall not exceed 18  $\text{nW}/\text{cm}^2$ , as measured three meters from the radiating structure.

(3) For fixed field disturbance sensors other than those operating under the provisions of paragraph (b)(2) of this section, the peak transmitter output power shall not exceed 0.1 mW and the peak power density shall not exceed 9  $\text{nW}/\text{cm}^2$  at a distance of 3 meters.

(4) Peak power density shall be measured with an RF detector that has a detection bandwidth that encompasses the 57–64 GHz band and has a video bandwidth of at least 10 MHz, or using an equivalent measurement method.

(5) The average emission limits shall be calculated, based on the measured peak levels, over the actual time period during which transmission occurs.

(c) Limits on spurious emissions:

(1) The power density of any emissions outside the 57–64 GHz band shall consist solely of spurious emissions.

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

(3) Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90  $\text{pW}/\text{cm}^2$  at a distance of 3 meters.

(4) The levels of the spurious emissions shall not exceed the level of the fundamental emission.

(d) Only spurious emissions and transmissions related to a publicly-accessible coordination channel, whose purpose is to coordinate operation between diverse transmitters with a view towards reducing the probability of interference throughout the 57–64 GHz band, are permitted in the 57–57.05 GHz band.

NOTE TO PARAGRAPH (d): The 57–57.05 GHz is reserved exclusively for a publicly-accessible coordination channel. The development of standards for this channel shall be performed pursuant to authorizations issued under part 5 of this chapter.

(e) Except as specified elsewhere in this paragraph (e), the total peak transmitter output power shall not exceed 500 mW.

(1) Transmitters with an emission bandwidth of less than 100 MHz must limit their peak transmitter output power to the product of 500 mW times their emission bandwidth divided by