Appendix A: RF Exposure FCC Rules and Regulations Part 1.1307, 1.1310, 2.1091, 2.1093

1. General Information

Environment: General Population/Uncontrolled Exposure
Device category: Level Probing Radar
Modulation Type/Mode: Pulsed Radar

2. List of Antennas Operating Configurations and Test Conditions

FCC 15.256 Antenna	Antenna Gain (dBi)
82mm Encapsulated Plastic Horn Antenna	25.07

Note: * Worst-case antenna gain used for RF Exposure calculations in the tables below.

Antenna Type	Worst-case EIRP Antenna Gain (dBi)	Numeric Gain	Highest 50 MHz EIRP Power (dBm)	Bandwidth Power Integrated Factor	Antenna Terminal Power (millWatt)
82mm Encapsulated Plastic Horn Antenna	25.07	321.4	-6.7	34.9	6.7E-4

Note: Power integrated factor over bandwidth = bandwidth/ 50 MHz RBW= 1745 MHz/50MHz = 34.9; therefore, integrated EIRP multiply by bandwidth power integrated factor = 0.000214 W x 34.9 = 0.0075 W.

3. MPE Calculation

The maximum distance from the antenna at which MPE is met or exceeded d, in centimeters, is calculated from the power density S, in mW/cm^2, transmit power P in mW, and the transmit antenna numeric gain G. The limit for general population/uncontrolled exposure from 1500-100000 MHz is 1mW/cm^2.

S = EIRP (mW)/(4*PI*d^2)

d = SQRT ((EIRP (mw)/S*4PI)

where: S = Power density (mW/cm^2); EIRP = Effective Isotropic Radiated Power (mW); d = distance

MPE Calculation solving for distance (d) for 82mm Encapsulated Plastic Horn Antenna (25.07 dBi) antenna using worst-case power of 0.0075W:

Linear	Log
Gain = 321.4 Numeric	25.07 dBi
Antenna Terminal Power = 6.7E-4 mW	-31.8 dBm
Duty % = 100	0 dB
Integrated EIRP = 0.0075 W	8.7 dBm
d (cm) = 0.77 cm	S (20cm) = 0.0014844 mW/cm^2