

## §1.1307 and §2.1093-RF EXPOSURE EVALUATION

### 1.1 Limit

§ 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
<b>30 - 300</b>	<b>61.4</b>	<b>0.163</b>	<b>1.0</b>	<b>6</b>
300 - 1500	--	--	f/300	6
(B) Limits for General Population/Uncontrolled Exposure				
<b>30 - 300</b>	<b>27.5</b>	<b>0.073</b>	<b>0.2</b>	<b>30</b>
300 - 1500	--	--	f/1500	30

Note: f is frequency in MHz

## 1.2 Method of Measurements

### Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi \cdot r^2} = \frac{EIRP}{4\pi \cdot r^2}$$

Where,

P: power input to the antenna in mW

EIRP: Equivalent (effective) isotropic radiated power.

S: power density mW/cm<sup>2</sup>

G: numeric gain of antenna relative to isotropic radiator

r: distance to centre of radiation in cm

$$r = \sqrt{\frac{PG}{4\pi \cdot S}} = \sqrt{\frac{EIRP}{4\pi \cdot S}}$$

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device.

### 1.3 Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, P [dBm] = 34.59

Maximum Antenna Gain, G[dBi] = 1.5

Maximum EIRP, P [dBm] = 36.09

User-based time-average for PTT = 50%

Peak EIRP = 34.59 dBm + 1.5 dBi = 36.09 dBm = 4064.43 mWatts (worst case)

Average EIRP = 50% \* EIRP = 2,890.48 mWatts

MPE Limit for Occupational/Controlled Exposure, S [mW/cm<sup>2</sup>] = 1.0

MPE Limit for General Population/Uncontrolled Exposure, S [mW/cm<sup>2</sup>] = 0.2

#### **Calculation of Minimum RF Safety Distance Limits:**

Calculated RF Safety Distance for Occupational/Controlled Exposure,

r [cm] = 3.56

Calculated RF Safety Distance for General Population/Uncontrolled Exposure,

r[cm] = 17.99

**Results:** Manufacturer declares RF Safety Distance of 4 cm for Occupational/Controlled Exposure and 18 cm for General Population/Uncontrolled Exposure which met the FCC Limits. Please refer to Users Manual for details of RF Exposure Information.