

## 5.7. RF EXPOSURE REQUIRMENTS @ SEC. 90.1217, 1.1307 & 1.1310

### 5.7.1. Limits

**FCC 90.1217:-** Licensees and manufacturers are subject to the radiofrequency radiation exposure requirements specified in §§ 1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable 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.

**FCC 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) |
|--|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| <b>(A) Limits for Occupational/Control Exposures</b>           |                               |                               |                                     |                        |
| 1500-100,000   | ...                           | ...                           | 5                                   | 6                      |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                        |
| 1500-100,000   | ...                           | ...                           | 1.0                                 | 30                     |

F = Frequency in MHz

### 5.7.2. Method of Measurements

Refer to FCC @ 1.1310, 2.1091

**Calculation Method of RF Safety Distance:**

$$S = PG/4\pi r^2 = EIRP/4\pi r^2$$

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

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

$$r = \sqrt{PG/4\pi S}$$

FCC radio frequency exposure limits may not be exceeded at distances closer than r cm from the antenna of this device.

### 5.7.3. Test Data

#### **Antennas Gain Range specified by Manufacturer: 10.5 to 29.8 dBi**

| Frequency (MHz) | Channel Spacing (MHz) | Maximum Peak EIRP Power (dBm) | Laboratory's Recommended Minimum RF Safety Distance r (cm) |
|-----------------|-----------------------|-------------------------------|--|
| 4965.0          | 20.0                  | 53.7                          | 137  |

**Note 1:** RF EXPOSURE DISTANCE LIMITS:  $r = (PG/4\pi S)^{1/2} = (EIRP/4\pi S)^{1/2}$   
 $S = 1.0 \text{ mW/cm}^2$

$$r = (PG/4\pi S)^{1/2} = (EIRP/4\pi S)^{1/2}$$

$$= (234423/4 \times 3.14 \times 1)^{1/2}$$

$$= 137 \text{ cm}$$

| Evaluation of RF Exposure Compliance Requirements   |  |
|---|--|
| RF Exposure Requirements  | Compliance with FCC Rules  |
| Minimum calculated separation distance required between antenna and any persons is:<br>137 cm | The device is fixed station and manufacturer will address the RF exposure compliance requirement at the time of licensing as required by the responsible FCC Bureau(s), including antenna co-location requirements of 1.1307(b) (3) as specified in § 90.1217. |