5.5. RF EXPOSURE REQUIREMENTS [§§ 1.1310 & 2.1091]

5.5.1. Limits

§ **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^2)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
(B) Limits for General Population/Uncontrolled Exposure				
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30

Note: f is frequency in MHz

5.5.2. 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^2
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.

5.5.3. Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, $\mathbf{P_{conducted}[dBm]}$ = 33.19 at 769.5 MHz

Maximum Antenna Gain, **G[dBi]** = 3

Maximum EIRP, $\mathbf{P_{EIRP}[dBm]}$ = 36.19

MPE Limit for Occupational/Controlled Exposure, $\mathbf{S_{controlled}[mW/cm^2]}$ = 769.5/300 = 2.57

MPE Limit for General Population/Uncontrolled Exposure, $\mathbf{S_{uncontrolled}[mW/cm^2]}$ = 769.5/1500 = 0.51

Calculated RF Safety Distance for Occupational/Controlled Exposure, $\mathbf{r_{safety\_controlled}[cm]}$ = 11.36

Calculated RF Safety Distance for General Population/Uncontrolled Exposure, $\mathbf{r_{safety\_uncontrolled}[cm]}$ = 25.40