

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

5.6.1. 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

5.6.2. 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/cm²
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

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

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All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.6.3. Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, $P_{\text{conducted}}[\text{dBm}] = 46.53$ (rated power)

Maximum Antenna Gain, $G[\text{dBi}] = 0$

Maximum EIRP, $P_{\text{EIRP}}[\text{dBm}] = 46.53$

User-based time-average for PTT = 50%

MPE Limit for Occupational/Controlled Exposure, $S_{\text{controlled}}[\text{mW/cm}^2] = 450/300 = 1.50$

MPE Limit for General Population/Uncontrolled Exposure, $S_{\text{uncontrolled}}[\text{mW/cm}^2] = 450/1500 = 0.30$

Calculated RF Safety Distance for Occupational/Controlled Exposure, $r_{\text{safety_controlled}}[\text{cm}] = 34.55$

Calculated RF Safety Distance for General Population/Uncontrolled Exposure, $r_{\text{safety_uncontrolled}}[\text{cm}] = 77.25$