

§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 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

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/cm²

G: numeric gain of antenna relative to isotropic radiator

r: distance to centre of radiation in cm

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

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] = 14.61

Maximum Antenna Gain, G[dBi] = 2.47

Maximum EIRP, P [dBm] = 17.08

Peak EIRP = 14.61 dBm + 2.47 dBi = 17.08 dBm = 51.05 mWatts (worst case)

Average EIRP = 50% * EIRP = 25.53 mWatts

MPE Limit for Occupational/Controlled Exposure, S [mW/cm²] = 0.32

MPE Limit for General Population/Uncontrolled Exposure, S [mW/cm²] = 0.11

Calculation of Minimum RF Safety Distance Limits:

Calculated RF Safety Distance for Occupational/Controlled Exposure,

r [cm] = 1.72

Calculated RF Safety Distance for General Population/Uncontrolled Exposure,

r[cm] = 2.07

Results: Manufacturer declares RF Safety Distance of 1.72 cm for Occupational/Controlled Exposure and 2.07 cm for General Population/Uncontrolled Exposure which met the FCC Limits. Please refer to Users Manual for details of RF Exposure Information.