

6.6. RF EXPOSURE REQUIREMENTS @ 1.1310 & 2.1091

MPE EVALUATION

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).

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30–300 | 61.4 | 0.163 | 1.0 | 6 |
| 300–1500 | | | f/300 | 6 |
| 1500–100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | | | f/1500 | 30 |
| 1500–100,000 | | | 1.0 | 30 |

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Calculation Method of RF Safety Distance:

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

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 center of radiation in cm

| Evaluation of RF Exposure Compliance Requirements | |
|--|---|
| RF Exposure Requirements | Compliance with FCC Rules |
| Minimum calculated separation distance between antenna and persons required: 33.2 cm | Manufacturer' instruction for separation distance between antenna and persons required: 50 cm . Please refer to Users Manual and FCC RF Exposure folder for details. |
| Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement | Please refer to User Manual for details. |
| Caution statements and/or warning labels that are necessary in order to comply with the exposure limits | Please refer to User Manual and FCC RF Exposure folder for RF Exposure Information. |
| Any other RF exposure related issues that may affect MPE compliance | None. |

Note 1: RF Exposure Distance Limits: $r = (PG/4\pi S)^{1/2} = (EIRP/4\pi S)^{1/2}$

$P = 29.70 \text{ dBm} = 933.25 \text{ mW}$ (maximum RF power measured at antenna terminal)

$G = 9.5 \text{ dBi} = 10^{9.5/10} \text{ numeric}$ (maximum antenna gain specified by the manufacturer)

$EIRP = 39.2 \text{ dBm} = 10^{39.5/10} \text{ mW}$

$S = 903/1500 \text{ mW/cm}^2$ (Limits for General Population/Uncontrolled Exposure)

$$r = (EIRP/4\pi S)^{1/2} (10^{39.5/10} \text{ mW}) / 4\pi(903/1500 \text{ mW/cm}^2) = 33.2 \text{ cm}$$