

9. RF EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

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

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
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.

CALCULATIONS

EIRP is converted to Power Density using the equation:

$$P_D = \text{EIRP} / (4 * \pi * D_s^2)$$

where:

P_D = power density in W/m²

EIRP = Equivalent Isotropic Radiated Power in W

D_s = separation distance in m

Power density in units of W/m² is converted to units of mW/cm² by dividing by 10.

RESULTS**RFEM0**

Channel 1

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
23.5	0.224	20	0.04	1

Channel 2

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
25.5	0.355	20	0.07	1

Channel 3

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
24.5	0.282	20	0.06	1

RFEM1

Channel 1

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm²)	FCC Limit (mW/cm²)
22.1	0.162	20	0.03	1

Channel 2

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm²)	FCC Limit (mW/cm²)
24.3	0.269	20	0.05	1

Channel 3

Average EIRP (dBm)	Average EIRP (W)	Separation Distance (cm)	Power Density (mW/cm²)	FCC Limit (mW/cm²)
23.9	0.245	20	0.05	1