

FCC §1.1307 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mw/cm ²)	Averaging Time (Minutes)
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

MPE Calculation

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where:

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally *numeric* gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Table: Maximum Permissible Exposure (MPE) Calculations

Band	Ant. Gain (dBi)	Ant. Gain (numeric)	Max Conducted Power		Duty Cycle	Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
			(dBm)	(mW)				
GSM 850 (GPRS Multi-solt class 8)	3	2	32.48	1770.11	12.5%	20	0.088	0.549
GSM 850 (GPRS Multi-solt class 10)	3	2	32.40	1737.80	25%	20	0.173	0.549
PCS 1900 (GPRS Multi-solt class 8)	3	2	29.55	901.57	12.5%	20	0.045	1.0
PCS 1900 (GPRS Multi-solt class 10)	3	2	29.50	891.25	25%	20	0.089	1.0

Result: EUT meets the mobile device 20cm separation distance as specified in section 2.1091 of the FCC rules. An appropriate RF exposure compliance statement will be placed in the User's Guide.

Result: Compliance