

## **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**

<b>Limits for General Population/Uncontrolled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (V/m)</b>	<b>Magnetic Field Strength (A/m)</b>	<b>Power Density (mw/cm<sup>2</sup>)</b>	<b>Averaging Time (Minutes)</b>
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>3</sup> )	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/cm<sup>2</sup>)

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 <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
			(dBm)	(mW)				
GSM 850 (GPRS Multi-solt class 8)	3	2	32.48	1770.1 1	12.5%	20	0.088	0.549
GSM 850 (GPRS Multi-solt class 10)	3	2	32.40	1737.8 0	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**