

## FCC §1.1307 (b)(1) & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### Applicable Standard

According to FCC Part 2.1091 and §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.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f <sup>2</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 at a given distance, equation from OET Bulletin 65, Edition 97-01

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

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 = gain of the antenna in the direction of interest relative to an isotropic radiator

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

Band	Antenna Gain		Conducted Power			Time-Averaged Transmit Power (mW)	Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )	
	(dBi)	(numeric)	Slot No.	(dBm)	(mW)					
GSM850	2.0	1.58	1 slot	33.1	2042	1/8	255.25	20	0.08	0.55
	2.0	1.58	2 slot	33.1	2042	1/4	510.5	20	0.16	0.55
PCS1900	2.0	1.58	1 slot	30.5	1122	1/8	140.25	20	0.04	1.0
	2.0	1.58	2 slot	30.3	1072	1/4	268	20	0.08	1.0

### Result:

The MPE meets FCC limit at 20 cm distance.