

## RF EXPOSURE EVALUATION (FCC ID: OPJWCR101)

### Limit

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 Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (Minute)
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#### Limits for Occupational / Controlled Exposure

0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100 000	/	/	5	6

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (Minute)
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#### Limits for General population / Uncontrolled Exposure

0.3 – 3.0	614	1.63	(100)*	30
3.0 – 30	842/f	2.19/f	(180/f)*	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

### Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

Where:

S=power density

P=power input to antenna

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

R=distance to the center of radiation of the antenna

**GSM 850:**

Maximum peak output power at antenna input terminal: **11.27 (dBm)**

Maximum peak output power at antenna input terminal: **13.4 (mW)**

Prediction distance: **150 (cm)**

Predication frequency: **893.2 (MHz)**

Antenna Gain (Max): **9(dBi)**

Power density at predication frequency (GSM 850) at 150 cm: **0.0042 (mW/cm<sup>2</sup>)**

MPE limit for controlled exposure at prediction frequency: **3.0 (mW/cm<sup>2</sup>)**

MPE limit for uncontrolled exposure at prediction frequency: **0.6 (mW/cm<sup>2</sup>)**

**PCS 1900:**

Maximum peak output power at antenna input terminal: **11.31 (dBm)**

Maximum peak output power at antenna input terminal: **13.5 (mW)**

Prediction distance: **150 (cm)**

Predication frequency: **1989.8 (MHz)**

Antenna Gain (Max): **9(dBi)**

Power density at predication frequency (PCS 1900) at 150 cm: **0.0043 (mW/cm<sup>2</sup>)**

MPE limit for controlled exposure at prediction frequency: **5 (mW/cm<sup>2</sup>)**

MPE limit for uncontrolled exposure at prediction frequency: **1.0 (mW/cm<sup>2</sup>)**

**Test Result: Pass**