

## 5 - §1.1307(b) (1) & §2.1091 - RF EXPOSURE

### 5.1 Applicable Standard

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

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 (minute)
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 <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

### 5.2 MPE Prediction

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 Band

Maximum peak output power at antenna input terminal (dBm): 32.52

Maximum peak output power at antenna input terminal (mW): 1786.49

Predication distance (cm): 25

Predication frequency (MHz): 836.6

Antenna Gain, typical (dBi): 3

Maximum Antenna Gain (numeric): 1.995

Power density at predication frequency at 25 cm (mW/cm<sup>2</sup>): 0.454

MPE limit for uncontrolled exposure at predication frequency (mW/cm<sup>2</sup>): 0.560

**Result: Compliant** -- the device's power density at predication frequency at 25 cm was 0.448 mW/cm<sup>2</sup> which was less than the MPE limit of 0.56 mW/cm<sup>2</sup>.

**PCS Band**

Maximum peak output power at antenna input terminal (dBm): 29.22  
Maximum peak output power at antenna input terminal (mW): 835.60  
Predication distance (cm): 1880  
Predication frequency (MHz): 1880  
Antenna Gain, typical (dBi): 3.0  
Maximum Antenna Gain (numeric): 1.995  
Power density at predication frequency at 20 cm (mW/cm<sup>2</sup>): 0.332  
MPE limit for uncontrolled exposure at predication frequency (mW/cm<sup>2</sup>): 1.0

**5.3 Test Result**

The EUT is a mobile device. The power density level at 25 cm is 0.454 mW/cm<sup>2</sup>, which is below the uncontrolled exposure limit of 0.560 mW/cm<sup>2</sup> at 836.580 MHz for GSM band. The power density level at 20 cm is 0.332 mW/cm<sup>2</sup>, which is below the uncontrolled exposure limit of 1mW/cm<sup>2</sup> at 1880 MHz for PCS band.