

5.7. RF Exposure

5.7.1. Limit

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

(B) Limits for General Population/Uncontrolled Exposures				
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

5.7.2. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

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

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

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.

Note:

1. Manufacturer declared that the maximum antenna gain is 3.0 dBi.
2. Manufacturer declared that the nearest distance between human and the EUT is 0.25m.
3. Only record worst case data.

GSM 850 Downlink

Max Peak output Power at antenna input terminal	24.99	dBm
Max Peak output Power at antenna input terminal	315.5	mW
Prediction distance	25	cm
Prediction frequency	881.6	MHz
Antenna Gain(typical)	3.00	dBi
Antenna Gain(numeric)	2.00	
Power density at prediction frequency(S)	0.080	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.588	mW/cm ²

GSM 850 Uplink

Max Peak output Power at antenna input terminal	22.98	dBm
Max Peak output Power at antenna input terminal	198.6	mW
Prediction distance	25	cm
Prediction frequency	836.6	MHz
Antenna Gain(typical)	3.00	dBi
Antenna Gain(numeric)	2.00	
Power density at prediction frequency(S)	0.051	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.558	mW/cm ²

5.7.3 Test Results

The power density level worst case at 25 cm downlink middle Channel is 0.080mW/cm² (GSM 850), which is below the uncontrolled exposure limit for Cellular band.