

## RF Exposure Evaluation

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b)

### 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> )	Average Time
(A) Limits for Occupational /Control Exposures				
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300 – 1500	--	--	F/1500	6
<u>1500 - 100000</u>	--	--	<u>1</u>	<u>30</u>

### 1. Friis transmission formula : $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where  $P_d$  = power density in  $\text{mW/cm}^2$

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE,  $1 \text{ mW/cm}^2$ . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

*The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.*

## 2. Test Result of RF Exposure Evaluation

### 2.1. Output Power into Antenna & RF Exposure Evaluation Distance : GPRS 850

Channel	Channel Frequency (MHz)	Output Peak Power to Antenna (dBm)	Antenna Gain (dBi)	Power Density at 20cm (mW/cm <sup>2</sup> )	LIMITS (mW/cm <sup>2</sup> )
Low	824.2	26.91	-1.38	0.07	0.55
Middle	836.6	25.41	-1.38	0.05	0.56
High	848.8	26.05	-1.38	0.05	0.57

**NOTE :**

The power density Pd (4th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/ cm<sup>2</sup>.

### 2.2. Output Power into Antenna & RF Exposure Evaluation Distance : GPRS 1900

Channel	Channel Frequency (MHz)	Output Peak Power to Antenna (dBm)	Antenna Gain (dBi)	Power Density at 20cm (mW/cm <sup>2</sup> )	LIMITS (mW/cm <sup>2</sup> )
Low	1850.2	31.15	-1.50	0.18	1
Middle	1880.0	30.37	-1.50	0.15	
High	1909.8	30.36	-1.50	0.15	

**NOTE :**

The power density Pd (4th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/ cm<sup>2</sup>.