Prediction of MPE limit at given distance

Product Descritpion: GPRS Module with Intergrated GPS
Type: IONML1G2

1. Introduction

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

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = power density
P = power input to the 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

2. Limits for Maximum Permissible Exposure

According to FCC Part 1.1307, systems operating under the provisions of this section shall be operated in a manner the ensures that the public is not exposed to radio frequency energy level in excess of the commission's guidelines.

According to FCC Part 1.1310 RF exposure is calculated.

Limits for General Population/ Uncontrolled Exposure

Limits for General Population/ Uncontrolled Exposure			
Frequency Range (MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength (H)(A/m)	Power Density (S)(mW/cm^2)
0.3-1.34	614	1.63	(100)*
1.34-30	824/f	2.19/f	(180/f2)*
30-300	27.5	0.073	0.2
300-1500			f/1500
1500-100,000			1.0

3. Test result

GSM 850MHz

Maximum peak output power at antenna input terminal(dBm):	**31.11**
Antenna Gain (typical) (dBi):	**3**
PG(mW):	**2576**
Prediction distance(cm):	**20**
Predication frequency(MHz):	**836.5**
Power density at predication frequency at 20 cm(mW/cm^2):	**0.512**
MPE limit for RF exposure at prediction frequency(mW/cm^2):	**0.558**

GSM 1900MHz

Maximum peak output power at antenna input terminal(dBm):	**30.88**
Antenna Gain (typical) (dBi):	**3**
PG(mW):	**1225**
Prediction distance(cm):	**20**
Predication frequency(MHz):	**1880**
Power density at predication frequency at 20 cm(mW/cm^2):	**0.24**
MPE limit for RF exposure at prediction frequency(mW/cm^2):	**1.0**

4. Conclusion

Test result is passed.