

## **FCC §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### **Applicable Standard**

According to subpart 1.1310 and 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

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 (minutes)
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

### **Calculated Formulary:**

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

### **Calculated Data (worst case):**

Mode	Frequency Range (MHz)	Antenna Gain		Target Output Power		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)	(dBm)	(mW)			
WCDMA Band II	1850.0-1910.0	3.0	2.0	22.00	158.49	20	0.0631	1.0
WCDMA Band V	824.0-849.0	3.0	2.0	23.00	199.53	20	0.0794	0.55
FDD (Band 2)	1850.0-1910.0	3.0	2.0	21.50	141.25	20	0.0561	1.0
FDD (Band 4)	1710.0-1755.0	3.0	2.0	22.50	177.83	20	0.0706	1.0
FDD (Band 5)	824.0-849.0	3.0	2.0	22.50	177.83	20	0.0707	0.55
FDD (Band 12)	699.0-716.0	3.0	2.0	24.00	251.19	20	0.0997	0.47

**Note:** The target output power was declared by the manufacturer.

**Conclusion:** The device meets MPE at distance 20cm.