

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

**Applicable Standard**

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (V/m)</b>	<b>Magnetic Field Strength (A/m)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>Averaging Time (minutes)</b>
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;

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

**Calculation formula:**

Prediction of power density at the distance of the applicable MPE limit

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

Mode	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)	(dBm)	(mW)			
GPRS/EDGE 850	824-849	0.5	1.12	32.1	1621.81	20.00	0.362	0.55
GPRS/EDGE 1900	1850-1910	0.5	1.12	29.5	891.25	20.00	0.199	1.0
WCDMA Band 2	1850-1910	0.5	1.12	23	199.53	20.00	0.045	1.0
WCDMA Band 5	824-849	0.5	1.12	22.5	177.83	20.00	0.040	0.55
LTE Band 2	1850-1910	0.5	1.12	23	199.53	20.00	0.045	1.0
LTE Band 4	1710-1755	0.5	1.12	22.5	177.83	20.00	0.040	1.0
LTE Band 5	824-849	0.5	1.12	23	199.53	20.00	0.045	0.55
LTE Band 7	2500-2570	0.5	1.12	23	199.53	20.00	0.045	1.0
LTE Band 12	699-716	0.5	1.12	23	199.53	20.00	0.045	0.47
LTE Band 17	704-716	0.5	1.12	23	199.53	20.00	0.045	0.47
LTE Band 38	2570-2620	0.5	1.12	23	199.53	20.00	0.045	1.0
LTE Band 66	1710-1780	0.5	1.12	22.5	177.83	20.00	0.040	1.0

**Result:** The device meet FCC MPE at 20 cm distance