

**FCC§15.247 (i), §1.1310& §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

**Applicable Standard**

According to subpart 15.247(i)and 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.

**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:**

<b>Mode</b>	<b>Frequency</b>	<b>Antenna Gain</b>		<b>Output Power</b>		<b>Evaluation Distance</b>	<b>Power Density</b>	<b>MPE Limit</b>
	<b>(MHz)</b>	<b>(dBi)</b>	<b>(numeric)</b>	<b>(dBm)</b>	<b>(mW)</b>	<b>(cm)</b>	<b>(mW/cm<sup>2</sup>)</b>	<b>(mW/cm<sup>2</sup>)</b>
802.11b	2412	2.2	1.66	22	158.49	20	0.0523	1
802.11g	2412	2.2	1.66	24	251.19	20	0.0829	1
802.11n HT20	2462	2.2	1.66	23	199.53	20	0.0659	1

Note: The target output power:

802.11b: 21 ± 1dBm, which declared by the Manufacturer.

802.11g: 23 ± 1dBm, which declared by the Manufacturer.

802.11n HT20: 22 ± 1dBm, which declared by the Manufacturer.

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