

# FCC §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 Data:

Predication of MPE limit at a given distance

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

S = PG/4πR<sup>2</sup> = 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);

<b>Mode</b>	<b>Frequency Range (MHz)</b>	<b>Antenna Gain</b>		<b>Output Power</b>		<b>Evaluation Distance (cm)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>MPE Limit (mW/cm<sup>2</sup>)</b>
		<b>(dBi)</b>	<b>(numeric)</b>	<b>(dBm)</b>	<b>(mW)</b>			
802.11b	2412~2462	-1.38	0.73	17.00	50.12	20	0.0073	1.00
802.11g		-1.38	0.73	16.00	39.81	20	0.0058	1.00
802.11n-HT20		-1.38	0.73	16.00	39.81	20	0.0058	1.00

Note:

1. The target output powers were declared by the manufacturer.
2. To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 20cm from nearby persons.

**Result: Compliance**