

**FCC §1.1307(b) & §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.

**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:**

Mode	Frequency Band(MHz)	Antenna Gain		Cable Loss dB	Maximum Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)		(dBm)	(mW)			
Uplink	824-849	10.00	10.00	0.7	21.00	125.89	20.00	0.21317	0.55
	698-716	10.00	10.00	0.7	21.00	125.89	20.00	0.21317	0.47
	776-787	10.00	10.00	0.7	21.00	125.89	20.00	0.21317	0.52
	1850-1910	10.00	10.00	1	21.00	125.89	20.00	0.19894	1.00
	1710-1755	10.00	10.00	1	21.00	125.89	20.00	0.19894	1.00
Downlink	869-894	10.00	10.00	0.7	2	1.58	20.00	0.00268	0.58
	728-746	10.00	10.00	0.7	2	1.58	20.00	0.00268	0.49
	746-757	10.00	10.00	0.7	2	1.58	20.00	0.00268	0.50
	1930-1990	10.00	10.00	1	2	1.58	20.00	0.00250	1.00
	2110-2155	10.00	10.00	1	2	1.58	20.00	0.00250	1.00

Note: the power was used for evaluation is rated power including tolerance.

The worst antenna kitting, please refer the user manual.

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