

## 10 FCC §1.1307(b)(1), §2.1091 & IC RSS-102 - RF Exposure

### 10.1 Applicable Standards

According to §1.1310 and §2.1091 (Mobile Devices) RF exposure is calculated.

#### 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 (minute)
<b>Limits for General Population/Uncontrolled Exposure</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

Note: f = frequency in MHz

\* = Plane-wave equivalent power density

According to IC RSS-102 Issue 4 section 4, RF limits used for general public will be applied to the EUT.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f <sup>0.25</sup>	0.1540/ f <sup>0.25</sup>	8.944/ f <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f <sup>0.3417</sup>	0.008335 f <sup>0.3417</sup>	0.02619 f <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f <sup>1.2</sup>
150000-300000	0.158 f <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> f <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> f	616000/ f <sup>1.2</sup>
<b>Note:</b> f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

## 10.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

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

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

## 10.3 Test Results

### Downlink

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>39.99</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>9977.001</u>
<u>Prediction distance (cm):</u>	<u>79</u>
<u>Prediction frequency (MHz):</u>	<u>891.6</u>
<u>Antenna Gain, typical (dBi):</u>	<u>3</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>1.995</u>
<u>Power density at predication frequency and distance (mW/cm<sup>2</sup>):</u>	<u>0.2538</u>
<u>MPE limit for uncontrolled exposure at predication frequency (mW/cm<sup>2</sup>):</u>	<u>0.594</u>
<u>Power density at predication frequency and distance (W/m<sup>2</sup>):</u>	<u>2.538</u>
<u>MPE limit for uncontrolled exposure at predication frequency (W/m<sup>2</sup>):</u>	<u>2.718</u>

### Uplink

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>17.99</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>62.951</u>
<u>Prediction distance (cm):</u>	<u>79</u>
<u>Prediction frequency (MHz):</u>	<u>826.4</u>
<u>Antenna Gain, typical (dBi):</u>	<u>3</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>1.995</u>
<u>Power density at predication frequency and distance (mW/cm<sup>2</sup>):</u>	<u>0.0016</u>
<u>MPE limit for uncontrolled exposure at predication frequency (mW/cm<sup>2</sup>):</u>	<u>0.551</u>
<u>Power density at predication frequency and distance (W/m<sup>2</sup>):</u>	<u>0.016</u>
<u>MPE limit for uncontrolled exposure at predication frequency (W/m<sup>2</sup>):</u>	<u>2.581</u>

## Results

For uplink and downlink, the highest power density levels at **79 cm** are below the MPE uncontrolled exposure limit.