

## 10 §1.1307(b) (1) & §2.1091 - RF EXPOSURE INFORMATION

### 10.1 Applicable Standard

According to FCC §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

### 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

#### 850 MHz Cellular Band Downlink (LTE):

Maximum peak output power at antenna input terminal (dBm): 15.38

Maximum peak output power at antenna input terminal (mW): 34.51

Prediction distance (cm): 20

Prediction frequency (MHz): 881.5

Antenna Gain, typical (dBi): 3

Maximum Antenna Gain (numeric): 2

Power density at predication frequency and distance (mW/cm<sup>2</sup>): 0.01374

MPE limit for uncontrolled exposure at predication frequency (mW/cm<sup>2</sup>): 0.588

**PCS 1900 MHz Band Downlink (LTE):**

Maximum peak output power at antenna input terminal (dBm):	<u>15.37</u>
Maximum peak output power at antenna input terminal (mW):	<u>34.43</u>
Prediction distance (cm):	<u>20</u>
Prediction frequency (MHz):	<u>1960</u>
Antenna Gain, typical (dBi):	<u>3</u>
Maximum Antenna Gain (numeric):	<u>2</u>
Power density at predication frequency and distance (mW/cm <sup>2</sup> ):	<u>0.01371</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm <sup>2</sup> ):	<u>1.00</u>

**Test Result**

For Downlink, the highest power density level at 20 cm is 0.01374 mW/cm<sup>2</sup>, which is below the uncontrolled exposure limit of 0.588 mW/cm<sup>2</sup> at 881.5 MHz.

So the indoor antenna prediction distance should be greater then 20 cm, and outdoor antenna prediction distance should be greater then 20 cm.