

11 FCC §1.1307(b)(1) & §2.1091 – RF Exposure Information

11.1 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 ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	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

11.2 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

Cellular 850 Band Downlink

Maximum peak output power at antenna input terminal (dBm): 26.61

Maximum peak output power at antenna input terminal (mW): 458.14

Prediction distance (cm): 20

Prediction frequency (MHz): 893.8

Antenna Gain, typical (dBi): 15

Cable Loss (dB): 8.0

Maximum Antenna Net Gain (numeric): 5.01

Power density at predication frequency and distance (mW/cm²): 0.457

MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 0.5576

PCS 1900 Band Downlink

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>26.45</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>441.57</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>1960</u>
<u>Antenna Gain, typical (dBi):</u>	<u>15</u>
<u>Cable Loss (dB)</u>	<u>8.0</u>
<u>Maximum Antenna Net Gain (numeric):</u>	<u>5.01</u>
<u>Power density at predication frequency and distance (mW/cm²):</u>	<u>0.440</u>
<u>MPE limit for uncontrolled exposure at predication frequency (mW/cm²):</u>	<u>1.0</u>

700UC LTE Band Downlink

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>19.96</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>99.08</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>754</u>
<u>Antenna Gain, typical (dBi):</u>	<u>15</u>
<u>Cable Loss (dB)</u>	<u>8.0</u>
<u>Maximum Antenna Net Gain (numeric):</u>	<u>5.01</u>
<u>Power density at predication frequency and distance (mW/cm²):</u>	<u>0.099</u>
<u>MPE limit for uncontrolled exposure at predication frequency (mW/cm²):</u>	<u>0.503</u>

Results

For Downlink; the highest power density level at 20 cm is below the MPE uncontrolled exposure limit.