

5 §1.1307(b) (1) & §2.1091 - RF EXPOSURE

5.1 Applicable Standard

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 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

f = frequency in MHz

* = Plane-wave equivalent power density

5.2 MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of 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

CDMA

Uplink:

Maximum peak output power at antenna input terminal (dBm): 22.07

Maximum peak output power at antenna input terminal (mW): 161.06

Prediction distance (cm): 25

Prediction frequency (MHz): 836.4

Antenna Gain, typical (dBi): 9

Maximum Antenna Gain (numeric): 7.943

Power density at predication frequency and distance (mW/cm²): 0.163

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

Downlink:

Maximum peak output power at antenna input terminal (dBm):	<u>22.84</u>
Maximum peak output power at antenna input terminal (mW):	<u>192.31</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>881.4</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.195</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5876</u>

GSM**Uplink:**

Maximum peak output power at antenna input terminal (dBm):	<u>26.38</u>
Maximum peak output power at antenna input terminal (mW):	<u>434.51</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>824.2</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.440</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5576</u>

Downlink:

Maximum peak output power at antenna input terminal (dBm):	<u>26.85</u>
Maximum peak output power at antenna input terminal (mW):	<u>484.17</u>
Prediction distance (cm):	<u>25</u>
Prediction frequency (MHz):	<u>893.8</u>
Antenna Gain, typical (dBi):	<u>9</u>
Maximum Antenna Gain (numeric):	<u>7.943</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.490</u>
MPE limit for uncontrolled exposure at predication frequency (mW/cm ²):	<u>0.5877</u>

5.3 Test Result

The device is compliant with the requirement MPE limit for uncontrolled exposure at predication frequency 0.5877 mW/cm². The maximum power density at the distance of 25 cm was 0.490 mW/cm². Thus, the requirement of at least 25 cm required by the manufacturer is in compliance with the MPE requirement.