

1 FCC § 1.1307 (b) (1)& § 2.1091–RF EXPOSURE

1.1 Applicable Standard

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

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Power Density (mW/cm ²)
Limits for General Population/Uncontrolled Exposure	
0.3-1.34	*(100)
1.34-30	*(180/f ²)
30-300	0.2
300 – 1,500	f/1500
1,500 – 100,000	1

Note: f= frequency in MHz

*=Plane-wave equivalent power density

1.2 MPE Prediction

1.2.1 Calculation of MPE at 20 cm 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= maximum power gain of the antenna in the direction of interest relative to an isotropic radiator, subtract antenna's cable loss, (result is in numeric form)

R=distance to the center of radiation of the antenna (20cm in the following calculation)

1.2.2 Calculation formula of G (numeric)

$$G(\text{numeric}) = 10^{\frac{\{\text{Maximum Antenna Gain (dBi)} - \text{Cable Loss (dB)}\}}{10}}$$

Where: G (numeric) = Maximum power gain of the antenna in the direction of interest relative to an isotropic radiator, subtract antenna's cable loss, (result is converted from decibel into numeric form with above equation)

1.3 Test Result

Outdoor Antenna		
Outdoor Antenna	Outdoor Antenna Gain	
	At 1900MHz(dBi)	At 800MHz(dBi)
CM303	8	5
Outdoor Cable: No outdoor cable		

Indoor Antenna		
Indoor Antenna	Indoor Antenna Gain	
	At 1900MHz(dBi)	At 800MHz(dBi)
CM302W	5	3
Indoor Cable		
Indoor Cable	Indoor Cable Loss	
	At 1900MHz(dB)	At 800MHz(dB)
CM240-50NN 50Feet	8	4.83

Cellular Band UL:	
Maximum peak output power at antenna input terminal(dBm):	19.02
Maximum peak output power at antenna input terminal(mW):	79.80
Prediction distance(cm):	20
Prediction frequency(MHz):	838.40
Maximum Antenna Gain (dBi):	5
Cable Loss(dB):	0
G (numeric) :	3.16
Power density at predication frequency and distance(mW/cm ²) :	0.0502
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²) :	0.5589

Cellular Band DL:	
Maximum peak output power at antenna input terminal(dBm):	-0.02
Maximum peak output power at antenna input terminal(mW):	1.00
Prediction distance(cm):	20
Prediction frequency(MHz):	879.00
Maximum Antenna Gain (dBi):	3
Cable Loss(dB):	4.83
G (numeric) :	0.66
Power density at predication frequency and distance(mW/cm ²):	0.0001
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.5860

PCS Band UL:	
Maximum peak output power at antenna input terminal(dBm):	20.16
Maximum peak output power at antenna input terminal(mW):	103.75
Prediction distance(cm):	20
Prediction frequency(MHz):	1867.30
Maximum Antenna Gain (dBi):	8
Cable Loss(dB):	0
G (numeric) :	6.31
Power density at predication frequency and distance(mW/cm ²):	0.1303
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	1.0000

PCS Band DL:	
Maximum peak output power at antenna input terminal(dBm):	0.62
Maximum peak output power at antenna input terminal(mW):	1.15
Prediction distance(cm):	20
Prediction frequency(MHz):	1959.70
Maximum Antenna Gain (dBi):	5
Cable Loss(dB):	8
G (numeric) :	0.50
Power density at predication frequency and distance(mW/cm ²):	0.0001
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	1.0000