

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 LTE-A & LTE-V (698-787MHz) (dBi)	At 800MHz (dBi)	At 1900MHz (dBi)	At 1700MHz (dBi)	At 2100MHz (dBi)
SC288W	3	3	4	4	4
SC230W	10	10	10	10	10
SC230W-L	11	11	12	12	12
MAX GAIN	11	11	12	12	12
Outdoor Cable					
Outdoor Cable	Outdoor Cable Loss				
	At LTE-A & LTE-V (698-787MHz) (dB)	At 800MHz (dB)	At 1900MHz (dB)	At 1700MHz (dB)	At 2100MHz (dB)
SC240-40FN 40Feet	3.52	3.98	6.52	6.12	6.92
SC400-30NN 30Feet	2.05	2.12	2.83	2.68	2.98
MIN LOSS	2.05	2.12	2.83	2.68	2.98
Indoor Antenna					
Indoor Antenna	Indoor Antenna Gain				
	At LTE-A & LTE-V (698-787MHz) (dBi)	At 800MHz (dBi)	At 1900MHz (dBi)	At 1700MHz (dBi)	At 2100MHz (dBi)
SC248W	7	7	10	10	10
SC222W	3	3	6	6	6
SC120W	1.2	1.2	3	3	3
SC302W	2.5	3	5	4	5
MAX GAIN	7	7	10	10	10
Indoor Cable					
Indoor Cable	Indoor Cable Loss				
	At LTE-A & LTE-V (698-787MHz) (dB)	At 800MHz (dB)	At 1900MHz (dB)	At 1700MHz (dB)	At 2100MHz (dB)
CM240-20FN 20Feet	2.06	2.29	3.56	3.36	3.76
CM400-30NN 30Feet	2.05	2.12	2.83	2.68	2.98
MIN LOSS	2.05	2.12	2.83	2.68	2.98

Cellular Band UL:	
Maximum peak output power at antenna input terminal(dBm):	20.90
Maximum peak output power at antenna input terminal(mW):	123.03
Prediction distance(cm):	20
Prediction frequency(MHz):	833.89
Maximum Antenna Gain (dBi):	11
Cable Loss(dB):	2.12
G (numeric) :	7.73
Power density at predication frequency and distance(mW/cm ²):	0.1892
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.5559

Cellular Band DL:	
Maximum peak output power at antenna input terminal(dBm):	4.70
Maximum peak output power at antenna input terminal(mW):	2.95
Prediction distance(cm):	20
Prediction frequency(MHz):	880.15
Maximum Antenna Gain (dBi):	7
Cable Loss(dB):	2.12
G (numeric) :	3.08
Power density at predication frequency and distance(mW/cm ²):	0.0018
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.5868

PCS Band UL:	
Maximum peak output power at antenna input terminal(dBm):	20.30
Maximum peak output power at antenna input terminal(mW):	107.15
Prediction distance(cm):	20
Prediction frequency(MHz):	1864.30
Maximum Antenna Gain (dBi):	12
Cable Loss(dB):	2.83
G (numeric) :	8.26
Power density at predication frequency and distance(mW/cm ²):	0.1762
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):	5.60
Maximum peak output power at antenna input terminal(mW):	3.63
Prediction distance(cm):	20
Prediction frequency(MHz):	1963.59
Maximum Antenna Gain (dBi):	10
Cable Loss(dB):	2.83
G (numeric) :	5.21
Power density at predication frequency and distance(mW/cm ²):	0.0038
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	1.0000

AWS Band UL:	
Maximum peak output power at antenna input terminal(dBm):	20.90
Maximum peak output power at antenna input terminal(mW):	123.03
Prediction distance(cm):	20
Prediction frequency(MHz):	1721.20
Maximum Antenna Gain (dBi):	12
Cable Loss(dB):	2.68
G (numeric) :	8.55
Power density at predication frequency and distance(mW/cm ²):	0.2094
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	1.0000

AWS Band DL:	
Maximum peak output power at antenna input terminal(dBm):	2.50
Maximum peak output power at antenna input terminal(mW):	1.78
Prediction distance(cm):	20
Prediction frequency(MHz):	2152.50
Maximum Antenna Gain (dBi):	10
Cable Loss(dB):	2.98
G (numeric) :	5.04
Power density at predication frequency and distance(mW/cm ²):	0.0018
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	1.0000

LTE Band 781 UL:	
Maximum peak output power at antenna input terminal(dBm):	20.00
Maximum peak output power at antenna input terminal(mW):	100.00
Prediction distance(cm):	20
Prediction frequency(MHz):	781.95
Maximum Antenna Gain (dBi):	11
Cable Loss(dB):	2.05
G (numeric) :	7.85
Power density at predication frequency and distance(mW/cm ²):	0.1563
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.5213

LET Band 707 UL:	
Maximum peak output power at antenna input terminal(dBm):	20.90
Maximum peak output power at antenna input terminal(mW):	123.03
Prediction distance(cm):	20
Prediction frequency(MHz):	703.45
Maximum Antenna Gain (dBi):	11
Cable Loss(dB):	2.05
G (numeric) :	7.85
Power density at predication frequency and distance(mW/cm ²):	0.1923
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.4690

LET Band 742 DL:	
Maximum peak output power at antenna input terminal(dBm):	1.20
Maximum peak output power at antenna input terminal(mW):	1.32
Prediction distance(cm):	20
Prediction frequency(MHz):	741.40
Maximum Antenna Gain (dBi):	7
Cable Loss(dB):	2.05
G (numeric) :	3.13
Power density at predication frequency and distance(mW/cm ²):	0.0008
MPE limit for uncontrolled exposure at predication frequency(mW/cm ²):	0.4943