10 FCC §2.1091 & §27.52 - 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^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	[1] (100)	30
1.34-30	824/f	2.19/f	[1] (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
[1] = 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

Test Results:

WCDMA/HSPA Band (Band 4), Uplink

Maximum peak output power at antenna input terminal (dBm): 22.16
Maximum peak output power at antenna input terminal (mW): 164.43
Prediction distance (cm): 20.00
Prediction frequency (MHz): 1732.4
Antenna Gain, typical (dBi): 5.0
Antenna Gain, typical (numeric): 3.16
Power density at predication frequency and distance (mW/cm^2): 0.103
MPE limit for uncontrolled exposure at predication frequency (mW/cm^2): 1.0

WCDMA/HSPA Band (Band 4), Downlink

Maximum peak output power at antenna input terminal (dBm):	16.01
Maximum peak output power at antenna input terminal (mW):	39.90
Prediction distance (cm):	20
Prediction frequency (MHz):	2153
Antenna Gain, typical (dBi):	3.00
Antenna Gain, typical (numeric):	2.00
Power density at predication frequency and distance (mW/cm^2):	0.016
MPE limit for uncontrolled exposure at predication frequency (mW/cm^2):	1.0

LTE Band (Band 17), Uplink

Maximum peak output power at antenna input terminal (dBm):	22.12
Maximum peak output power at antenna input terminal (mW):	162.93
Prediction distance (cm):	20
Prediction frequency (MHz):	710
Antenna Gain, typical (dBi):	3.0
Antenna Gain, typical (numeric):	2.0
Power density at predication frequency and distance (mW/cm^2):	0.0648
MPE limit for uncontrolled exposure at predication frequency (mW/cm^2):	0.473

LTE Band (Band 17), Downlink

Maximum peak output power at antenna input terminal (dBm):	15.95
Maximum peak output power at antenna input terminal (mW):	39.36
Prediction distance (cm):	20
Prediction frequency (MHz):	737
Antenna Gain, typical (dBi):	3.0
Antenna Gain, typical (numeric):	2.0
Power density at predication frequency and distance (mW/cm^2):	0.0157
MPE limit for uncontrolled exposure at predication frequency (mW/cm^2):	0.491

Results

For uplink and downlink, the highest power density levels at 20 cm are below the MPE uncontrolled exposure limit.