MAXIMUM PERMISSION EXPOSEURE

Standard Applicable

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure
(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm2)	Averaging Times | E |2, | H |2 or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100000			5	6

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm2)	Averaging Times | E |2, | H |2 or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

MPE Calculation Method

$S = (P*G) / (4*\prod*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)
P = power input to the antenna (in appropriate units, e.g., mw)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.
R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

MPE Calculation Result

For GSM mode

Maximum peak output power at antenna input terminal: 31.53(dBm)
Maximum peak output power at antenna input terminal: 1422.3(mW)
Prediction distance: 20 (cm)
Prediction frequency: 824.2(MHz)
Antenna gain (typical): 1 (dBi)
Antenna gain (numeric): 1.2589 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.356 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.356 (mw/cm^2) < 1 (mw/cm^2)

Result: Compliant

Maximum peak output power at antenna input terminal: 28.87(dBm)
Maximum peak output power at antenna input terminal: 770.9(mW)
Prediction distance: 20 (cm)
Prediction frequency: 1850.2(MHz)
Antenna gain (typical): 1 (dBi)
Antenna gain (numeric): 1.2589 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.193 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.193 (mw/cm^2) < 1 (mw/cm^2)

Result: Compliant

For GPRS mode

Maximum peak output power at antenna input terminal: 31.49(dBm)
Maximum peak output power at antenna input terminal: 1409.3(mW)
Prediction distance: 20 (cm)
Prediction frequency: 824.2 (MHz)
Antenna gain (typical): 1 (dBi)
Antenna gain (numeric): 1.2589 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.353 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.353 (mw/cm^2) < 1 (mw/cm^2)

Result: Compliant

Maximum peak output power at antenna input terminal: 29.40(dBm)
Maximum peak output power at antenna input terminal: 871.0(mW)
Prediction distance: 20 (cm)
Prediction frequency: 1850.2 (MHz)
Antenna gain (typical): 1 (dBi)
Antenna gain (numeric): 1.2589 (numeric)
The worst case is power density at prediction frequency at 20cm: 0.218 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

0.218 (mw/cm^2) < 1 (mw/cm^2)

Result: Compliant