

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, 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

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	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

(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/cm ²)	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

1.2 MPE Calculation Method

$$S = (30 * P * G) / (377 * R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

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)

1.3 MPE Calculation Result

Model No.: CH3G

FCC ID: 2AA5OCH3G

Device category: Mobile device

For GPRS850:

Maximum peak output power: 32.33 (dBm)

Maximum peak output power at antenna input terminal: 1710.02 (mW)

Prediction distance: >20(cm)

Prediction frequency: 824.2 (MHz)

Antenna gain: -2.0 (dBi)

Directional gain: 0.63 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.21(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

For GPRS1900:

Maximum peak output power: 29.04 (dBm)

Maximum peak output power at antenna input terminal: 801.68 (mW)

Prediction distance: >20(cm)

Prediction frequency: 1850.2 (MHz)

Antenna gain: -1.5 (dBi)

Directional gain: 0.71 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.11(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

For WCDMA850:

Maximum peak output power: 22.59 (dBm)

Maximum peak output power at antenna input terminal: 181.55 (mW)

Prediction distance: >20(cm)

Prediction frequency: 826.4 (MHz)

Antenna gain: -2.0 (dBi)

Directional gain: 0.63 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.02(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

For WCDMA1700:

Maximum peak output power: 22.64 (dBm)

Maximum peak output power at antenna input terminal: 183.65 (mW)

Prediction distance: >20(cm)

Prediction frequency: 1752.6 (MHz)

Antenna gain: -2.0 (dBi)

Directional gain: 0.63 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.02(mw/cm²)

For WCDMA1900:

Maximum peak output power: 22.69 (dBm)

Maximum peak output power at antenna input terminal: 185.78 (mW)

Prediction distance: >20(cm)

Prediction frequency: 1852.4 (MHz)

Antenna gain: -1.5 (dBi)

Directional gain: 0.71 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.03(mw/cm²)

For BT:

Maximum peak output power: -1.232 (dBm)

Maximum peak output power at antenna input terminal: 0.753 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2402(MHz)

Antenna gain: -3.0 (dBi)

Directional gain: 0.50 (dBi)

The worst case is power density at prediction frequency at 20cm: 0.00007(mw/cm²)

For simultaneous:

GPRS850+BT: 0.21007(mw/cm²)

GPRS1900+BT: 0.11007(mw/cm²)

WCDMA850+BT: 0.02007(mw/cm²)

WCDMA1700+BT 0.02007 (mw/cm²)

WCDMA1900+BT 0.03007 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

The maximum power density $0.21007 \text{ (mw/cm}^2\text{)} < 1 \text{ (mw/cm}^2\text{)}$

Result: Pass