

RF Exposure Statement

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

| Frequency range (MHz) | Electric field Strength (V/m) | Magnetic field Strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|-----------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| 0.3 | - | - | - | - |
| 1.34..... | - | - | - | - |
| 1.34 | - | 614 | 1.63 | *(100) 30 |
| 30..... | 824/f | 2.19/f | *(180/ f ²) | 30 |
| 30 - 300..... | 27.5 | 0.073 | 0.2 | 30 |
| 300 | - | | f/1500 | 30 |
| 1500..... | | | 1.0 | 30 |
| 1500 | - | - | - | - |
| 100.000..... | - | - | - | - |

F = frequency in MHz

* = Plane-wave equivalent power density

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

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

2-1. GSM850 BAND

| | |
|---|----------|
| Max Peak output Power at antenna input terminal (dBm) | 31.930 |
| Max Peak output Power at antenna input terminal (mW) | 1559.553 |
| Prediction distance (cm) | 20.000 |
| Prediction frequency (MHz) | 836.600 |
| Antenna Gain(typical) (dBi) | 1.270 |
| Antenna Gain(numeric) | 1.340 |
| Power density at prediction frequency (mW/cm ²) | 0.41565 |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²) | 0.558 |

2-2. GSM1900 BAND

| | |
|---|-----------|
| Max Peak output Power at antenna input terminal (dBm) | 29.13 |
| Max Peak output Power at antenna input terminal (mW) | 818.46479 |
| Prediction distance (cm) | 20.00000 |
| Prediction frequency (MHz) | 1850.200 |
| Antenna Gain(typical) (dBi) | 1.81000 |
| Antenna Gain(numeric) | 1.51705 |
| Power density at prediction frequency (mW/cm ²) | 0.24702 |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²) | 1.00000 |

2-3. WCDMA850 BAND

| | |
|---|---------|
| Max Peak output Power at antenna input terminal (dBm) | 22.820 |
| Max Peak output Power at antenna input terminal (mW) | 191.426 |
| Prediction distance (cm) | 20.000 |
| Prediction frequency (MHz) | 836.600 |
| Antenna Gain(typical) (dBi) | 1.270 |
| Antenna Gain(numeric) | 1.340 |
| Power density at prediction frequency (mW/cm ²) | 0.05102 |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²) | 0.558 |

2-4. WCDMA1900 BAND

| | |
|---|-----------|
| Max Peak output Power at antenna input terminal (dBm) | 22.62 |
| Max Peak output Power at antenna input terminal (mW) | 182.81002 |
| Prediction distance (cm) | 20.00000 |
| Prediction frequency (MHz) | 1880.000 |
| Antenna Gain(typical) (dBi) | 1.66000 |
| Antenna Gain(numeric) | 1.46555 |
| Power density at prediction frequency (mW/cm ²) | 0.05330 |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²) | 1.00000 |

2-5. WLAN

| | |
|---|------------|
| Max Peak output Power at antenna input terminal (dBm) | 20.700 |
| Max Peak output Power at antenna input terminal (mW) | 117.48976 |
| Prediction distance (cm) | 20.00000 |
| Prediction frequency (MHz) | 2412.00000 |
| Antenna Gain(typical) (dBi) | 1.940 |
| Antenna Gain(numeric) | 1.56315 |
| Power density at prediction frequency (mW/cm ²) | 0.03654 |
| MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²) | 1.00000 |

2-6. CO-LOCATED MPE RESULTS.

GSM850 band measured 0.41565 mW/cm², Limit (example) is 0.558 mW/cm², therefore the % of the limit is $0.41565/0.558 = 74.5\%$ or ratio of 0.745

WLAN measured 0.03654 mW/cm², Limit (example) is 1.0mW/cm², therefore the % of the limit is $0.03654/1.0 = 3.7\%$ or ratio of 0.037

The combined MPE ratios is $74.5\% + 3.7\% = 78.2\% < 100\%$ (or $0.745 + 0.037 = 0.782$ which is < 1.0)

3. RESULTS

The power density level at 20 cm is 0.41565 mW/cm², which is below the controlled exposure limit of 0.558 mW/cm² at 836.6 MHz for GSM850 band. The power density level at 20 cm is 0.24702 mW/cm², which is below the uncontrolled exposure limit of 1.0 mW/cm² at 1850.2 MHz for GSM1900 band.

The power density level at 20 cm is 0.05102 mW/cm², which is below the controlled exposure limit of 0.558 mW/cm² at 836.6 MHz for WCDMA850 band. The power density level at 20 cm is 0.0533 mW/cm², which is below the uncontrolled exposure limit of 1.0 mW/cm² at 1880 MHz for WCDMA1900 band.

The power density level at 20 cm is 0.03654 mW/cm², which is below the uncontrolled exposure limit of 1.0 mW/cm² at 2412 MHz for WLAN.

The combined MPE ratios is $74.5\% + 3.7\% = 78.2\% < 100\%$ (or $0.745 + 0.037 = 0.782$ which is < 1.0).

Note : Worst case in combined MPE ratios is GSM850 band and WLAN.