# Maximum Permissible Exposure (MPE)

## Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

RSS 102 issue 5.

This is a Mobile device, the MPE is required.

**FCC: According to §1.1310 and §2.1091 RF exposure is calculated.**

Limits for Maximum Permissive Exposure (MPE)

| 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 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *($180/f^2$) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | F/1500 | 30 |
| 1500-15000 | / | / | 1.0 | 30 |

F = frequency in MHz,

* = Plane-wave equipment power density

**FCC: 2.4GHz mode: 802.11 b mode**

Maximum Permissible Exposure (MPE) Evaluation: The worst case of Average power

**Power measurement:** refer to Part15.247 report for details.

802.11g

| Cable loss = 0 | Output Power Detector | | Limit (dBm) |
|---|---|---|---|
| CH | PK (dBm) | AV (dBm) | |
| Low | 14.55 | 12.56 | 30 |
| Mid | 14.95 | 12.93 | |
| High | 14.82 | 12.81 | |

Power Tolerance: +/- 1 dBm

Prediction of MPE limit at a given distance

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

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

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

| | CH 1-11 | |
|---|---|---|
| Tune-Up power at antenna input terminal: | 12.93 | (dBm) |
| Tune-Up power at antenna input terminal: | 19.63 | (mW) |
| Tune-Up power Tolerance: | 1.00 | dB |
| Duty cycle: | 100.00 | (%) |
| Maximum Pav : | 24.72 | (mW) |
| Antenna gain (typical): | 2.00 | (dBi) |
| Maximum antenna gain: | 1.58 | (numeric) |
| Prediction distance: | 20.00 | (cm) |
| | | |
| MPE limit for uncontrolled exposure at prediction | 1.00 | (mW/cm^2) |
| Power density at predication frequency at 20 (cm) distance | 0.0078 | (mW/cm^2) |

**Measurement Result:**

The worst power density is 0.0078 mW/cm^2 which is less than 1 mW/cm^2.

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