

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.

This is a Mobile device, the MPE is required.

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

Limits for Maximum Permissible 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: 802.11b mode (the worst case)

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

Tune-Up Power and Tolerance:

WLAN: 1TX, 1RX

| Wi-Fi | Frequency Range (MHz) | Channels | Average Tune-Up Power | Modulation Technology |
|------------------|--------------------------|-------------|--------------------------|--------------------------|
| 802.11b | 2412 – 2462(DTS) | 11 | 13 dBm | DSSS |
| 802.11g | 2412 – 2462(DTS) | 11 | 7 dBm | OFDM |
| 802.11n | HT20 2412 – 2462(DTS) | 11 | 7 dBm | |
| | HT40 2422 – 2452(DTS) | 7 | 7 dBm | |
| Power Tolerance: | | +/- 1.5 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 | 13.00 | (dBm) |
| Tune-Up power at antenna input | 19.95 | (mW) |
| Tune-Up power Tolerance: | 1.50 | dB |
| Duty cycle: | 99.00 | (%) |
| Maximum Pav : | 27.90 | (mW) |
| Antenna gain (typical): | -9.86 | (dBi) |
| Maximum antenna gain: | 0.10 | (numeric) |
| Prediction distance: | 20.00 | (cm) |
| | | |
| MPE limit for uncontrolled exposure | 1.00 | (mW/cm^2) |
| Power density at predication | 0.0006 | (mW/cm^2) |

Measurement Result:

The worst power density is 0.0007 mW/cm^2 which is less than 1 mW/cm^2.

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