

1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 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.

According to §1.1310 and §2.1093 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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Maximum Permissible Exposure (MPE) Evaluation

| BLE mode: Tune up tolerance ± 0.1 dBm | | | |
|---|-----------------|--|-----------------|
| CH | Frequency (MHz) | Max. output power including tune-up tolerance(dBm) | Required Limit |
| 0 | 2402 | 0.40 | 1 Watt = 30 dBm |
| 20 | 2442 | 0.38 | 1 Watt = 30 dBm |
| 39 | 2480 | 0.36 | 1 Watt = 30 dBm |

MPE Prediction (BLE)

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

| | | |
|---|-----------|-----------------------|
| Max. output power including tune-up tolerance: | 0.40 | (dBm) |
| Max. output power including tune-up tolerance: | 1.0964782 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 1.0964782 | (mW) |
| Peak Antenna gain (Maximum): | 1.8 | (dBi) |
| Peak Antenna gain (linear): | 1.5135612 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 2402 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.00033 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.00033 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 2402MHz.

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