

14 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

14.1 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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14.2 Maximum Permissible Exposure (MPE) Evaluation

| CH | Frequency (MHz) | Peak Power Output(dBm) | Required Limit |
|----|-----------------|------------------------|-----------------|
| 0 | 2402 | 18.60 | 1 Watt = 30 dBm |
| 19 | 2440 | 15.91 | 1 Watt = 30 dBm |
| 38 | 2476 | 15.63 | 1 Watt = 30 dBm |

| CH | Frequency (MHz) | Average Power Output(dBm) | Required Limit |
|----|-----------------|---------------------------|-----------------|
| 0 | 2402 | 15.70 | 1 Watt = 30 dBm |
| 19 | 2440 | 12.96 | 1 Watt = 30 dBm |
| 38 | 2476 | 12.92 | 1 Watt = 30 dBm |

**Note: Measured by power meter, cable loss as 14.2dB that offsets on the power meter.*

MPE Prediction

Prediction of MPE limit at a given distance

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

$$S = \frac{PG}{4R^2}$$

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

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| | | |
|--|-------------|-----------------------|
| Maximum peak output power at antenna input terminal: | 18.60 | (dBm) |
| Maximum peak output power at antenna input terminal: | 72.44359601 | (mW) |
| Duty cycle: | 61.3 | (%) |
| Maximum Pav : | 44.40792435 | (mW) |
| Antenna gain (typical): | 2.3 | (dBi) |
| Maximum antenna gain: | 1.698243652 | (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) | 0.015011 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.015011mW/cm². This is below the uncontrolled exposure limit of 1mW/cm² at 2402MHz.

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