

## 13 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 13.1 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 §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

| Frequency Range<br>(MHz)                            | Electric Field<br>Strength (V/m) | Magnetic Field<br>Strength (A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | Averaging Time<br>(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 <sup>2</sup> )                 | 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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## 13.2 Maximum Permissible Exposure (MPE) Evaluation

### BT V4.0 Power Table

| Frequency (MHz) | Reading Power (dBm) | Output Power (W) |
|-----------------|---------------------|------------------|
| 2402.00         | 9.49                | 0.0089           |
| 2442.00         | <b>9.56</b>         | 0.0090           |
| 2480.00         | 9.55                | 0.0090           |

### MPE Prediction (BT V4.0)

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

|                                                      |             |                       |
|------------------------------------------------------|-------------|-----------------------|
| Maximum peak output power at antenna input terminal: | <b>9.56</b> | (dBm)                 |
| Maximum peak output power at antenna input terminal: | 9.036494737 | (mW)                  |
| Duty cycle:                                          | <b>99</b>   | (%)                   |
| Maximum Pav :                                        | 8.94612979  | (mW)                  |
| Antenna gain (typical):                              | <b>2.15</b> | (dBi)                 |
| Maximum antenna gain:                                | 1.640589773 | (numeric)             |
| Prediction distance:                                 | 20          | (cm)                  |
| Prediction frequency:                                | <b>2442</b> | (MHz)                 |
|                                                      |             |                       |
| MPE limit for uncontrolled exposure at prediction    | 1           | (mW/cm <sup>2</sup> ) |
| Power density at predication frequency at 20 (cm)    | 0.002921    | (mW/cm <sup>2</sup> ) |

### Measurement Result

The predicted power density level at 20 cm is 0.002921 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2442MHz.

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