

# 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 <sup>2</sup> ) | 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 <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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## 1.2 Maximum Permissible Exposure (MPE) Evaluation

| CH | Frequency (MHz) | Max. output power including tune-up tolerancel(dBm) | Required Limit  |
|----|-----------------|-----------------------------------------------------|-----------------|
| 1  | 2412            | 14.89                                               | 1 Watt = 30 dBm |
| 6  | 2437            | 14.87                                               | 1 Watt = 30 dBm |
| 11 | 2462            | 14.85                                               | 1 Watt = 30 dBm |

### MPE Prediction (802.11n\_HT20 2412~2462)

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 tolerancel:   | 14.89     | (dBm)                 |
| Max. output power including tune-up tolerancel:   | 30.83188  | (mW)                  |
| Duty cycle:                                       | 87.06     | (%)                   |
| Maximum Pav :                                     | 26.842234 | (mW)                  |
| Peak Antenna gain (Maximum):                      | -5        | (dBi)                 |
| Peak Antenna gain (linear):                       | 0.3162278 | (numeric)             |
| Prediction distance:                              | 20        | (cm)                  |
| Prediction frequency:                             | 2412      | (MHz)                 |
| MPE limit for uncontrolled exposure at prediction | 1         | (mW/cm <sup>2</sup> ) |
| Power density at predication frequency at 20 (cm) | 0.002     | (mW/cm <sup>2</sup> ) |

### Measurement Result

The predicted power density level at 20 cm is 0.002 mW/cm<sup>2</sup>.

This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2412MHz.

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