

## 14. FCC 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<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

Note:

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

\*Note: BT / WLAN 2.4G / WLAN 5G will transmit together.

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 (Worst Case)

| 802.11b Main |                 |           |                         |                        |                    |        |
|--------------|-----------------|-----------|-------------------------|------------------------|--------------------|--------|
| CH           | Frequency (MHz) | Data Rate | Peak Output Power (dBm) | Peak Output Power (mW) | Limit              | RESULT |
| 1            | 2412            | 1         | 9.90                    | 9.77                   | 1 Watt = 30.00 dBm | PASS   |
| 6            | 2437            | 1         | 10.31                   | 10.74                  | 1 Watt = 30.00 dBm | PASS   |
| 11           | 2462            | 1         | <b>11.14</b>            | <b>13.00</b>           | 1 Watt = 30.00 dBm | PASS   |
| 802.11b Main |                 |           |                         |                        |                    |        |
| CH           | Frequency (MHz) | Data Rate | Avg. Output Power (dBm) | Avg. Output Power (mW) | Limit              | RESULT |
| 1            | 2412            | 1         | 7.87                    | 6.12                   | 1 Watt = 30.00 dBm | PASS   |
| 6            | 2437            | 1         | 8.28                    | 6.73                   | 1 Watt = 30.00 dBm | PASS   |
| 11           | 2462            | 1         | <b>9.07</b>             | <b>8.07</b>            | 1 Watt = 30.00 dBm | PASS   |

### MPE Prediction (802.11b 2412~2462)

|                                                   |              |                       |
|---------------------------------------------------|--------------|-----------------------|
| Max. output power including tune-up tolerancel:   | <b>9.07</b>  | (dBm)                 |
| Max. output power including tune-up tolerancel:   | 8.0723503    | (mW)                  |
| Duty cycle:                                       | <b>97.95</b> | (%)                   |
| Maximum Pav :                                     | 7.9068671    | (mW)                  |
| Peak Antenna gain (Maximum):                      | <b>2</b>     | (dBi)                 |
| Peak Antenna gain (linear):                       | 1.5848932    | (numeric)             |
| Prediction distance:                              | 20           | (cm)                  |
| Prediction frequency:                             | <b>2462</b>  | (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 2462MHz.

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