



## RF Exposure Compliance Requirement

### 1. Standard requirement

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

#### (a) Limits for Occupational / Controlled Exposure

| Frequency Range<br>(MHz) | Electric Field<br>Strength (E)<br>(V/m) | Magnetic Field<br>Strength (H)<br>(A/m) | Power Density<br>(S)(mW/cm <sup>2</sup> ) | Averaging Times<br>$ E ^2,  H ^2$ or S<br>(minutes) |
|--------------------------|---|---|---|---|
| 0.3-3.0                  | 614                                     | 1.63                                    | (100)*                                    | 6   |
| 3.0-30                   | 1842/f                                  | 4.89/f                                  | (900/f)*                                  | 6   |
| 30-300                   | 61.4                                    | 0.163                                   | 1.0                                       | 6   |
| 300-1500                 | --                                      | --                                      | F/300                                     | 6   |
| 1500-100000              | --                                      | --                                      | 5   | 6   |

#### (b) Limits for General Population / Uncontrolled Exposure

| Frequency Range<br>(MHz) | Electric Field<br>Strength (E)<br>(V/m) | Magnetic Field<br>Strength (H)<br>(A/m) | Power Density<br>(S)(mW/cm <sup>2</sup> ) | Averaging Times<br>$ E ^2,  H ^2$ or S<br>(minutes) |
|--------------------------|---|---|---|---|
| 0.3-1.34                 | 614                                     | 1.63                                    | (100)*                                    | 30  |
| 1.34-30                  | 824/f                                   | 2.19/f                                  | (180/f)*                                  | 30  |
| 30-300                   | 27.5                                    | 0.073                                   | 0.2                                       | 30  |
| 300-1500                 | --                                      | --                                      | F/1500                                    | 30  |
| 1500-100000              | --                                      | --                                      | 1.0                                       | 30  |

Note: f=frequency in MHz; \*Plane-wave equivalent power density



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## 2. MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d \quad \text{Power Density: } P_d \text{ (W/m}^2\text{)} = E^2 / 377$$

E=Electric Field (V/m)

P=Peak RF output Power (W)

G=EUT Antenna numeric gain (numeric)

d= Separation distance between radiator and human body (m)

The formula can be changed to

$$P_d = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance,  $d=0.2\text{m}$ , as well as the gain of the used antenna, the RF power density can be obtained.

## 3. Calculated Result and Limit

(1) B mode:

| Frequency (MHz) | Antenna Gain (Numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------------|------------------------|-------------------------|------------------------|---|--|-------------|
| 2412            | 1.00                   | 17.18                   | 52.240                 | 0.01039                                 | 1  | Complies    |
| 2442            | 1.00                   | 15.76                   | 37.670                 | 0.00749                                 | 1  | Complies    |
| 2472            | 1.00                   | 15.44                   | 34.995                 | 0.00696                                 | 1  | Complies    |

(2) G mode:

| Frequency (MHz) | Antenna Gain (Numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------------|------------------------|-------------------------|------------------------|---|--|-------------|
| 2412            | 1.00                   | 19.16                   | 82.414                 | 0.01640                                 | 1  | Complies    |
| 2442            | 1.00                   | 18.24                   | 66.681                 | 0.01327                                 | 1  | Complies    |
| 2472            | 1.00                   | 17.24                   | 52.966                 | 0.01054                                 | 1  | Complies    |

3) HT20 mode:

| Frequency (MHz) | Antenna Gain (Numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------------|------------------------|-------------------------|------------------------|---|--|-------------|
| 2412            | 1.00                   | 19.48                   | 88.716                 | 0.01765                                 | 1  | Complies    |
| 2442            | 1.00                   | 18.65                   | 73.282                 | 0.01458                                 | 1  | Complies    |
| 2472            | 1.00                   | 17.99                   | 62.951                 | 0.01252                                 | 1  | Complies    |