



## FCC §15.247 (i), §2.1091 – RF Exposure

**FCC ID: ROWCDW-507601U-10**

### Applied procedures / limit

According to FCC §15.247(i) and §1.1307(b)(1), 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 of the Commission's guidelines.

### Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (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                                                                |
| 1500-100,000          |                                   |                                   | 5                                        | 6                                                                |

Note: f is frequency in MHz

\* = Power density limit is applicable at frequencies greater than 100 MHz

### Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (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                                                               |
| 1500-100,000          |                                   |                                   | 1.0                                      | 30                                                               |

Note: f = frequency in MHz

\* = Plane-wave equivalent power density

**IEEE 802.11b**

*max possible output power (PK,conducted) : 13±1dbm*

**IEEE 802.11g**

*max possible output power (PK,conducted) : 12±1dbm*

**IEEE 802.11n(20)**

*max possible output power (PK,conducted) : 12±1dbm*

**IEEE 802.11n(40)**

*max possible output power (PK,conducted) : 10±1dbm*



*The max possible output power (PK, conducted) of All (IEEE 802.11b , IEEE 802.11g, IEEE 802.11n20, IEEE 802.11n40) is IEEE 802.11b.*

## MPE PREDICTION

Predication of MPE limit at a given distance, Equation from 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,R=20cm

## Test Result of RF Exposure Evaluation

|         | Target power<br>W/ tolerance<br>(dBm) | Max<br>tune up<br>power<br>toleranc<br>e (dBm) | Total Output<br>power to<br>antenna<br>(mW) | Antenna<br>Gain(dBi) | Total Power<br>Density at<br>R=20cm<br>(mW/cm <sup>2</sup> ) | Limit<br>(mW/cm <sup>2</sup> ) | Result |
|---------|---------------------------------------|------------------------------------------------|---------------------------------------------|----------------------|--------------------------------------------------------------|--------------------------------|--------|
| 802.11b | 13±1.0                                | 14.0                                           | 25.12                                       | 3.52<br>(2.249)      | 0.0112                                                       | 1.0                            | Pass   |

|         | Target power<br>W/ tolerance<br>(dBm) | Max<br>tune up<br>power<br>toleranc<br>e (dBm) | Total Output<br>power to<br>antenna<br>(mW) | Antenna<br>Gain(dBi) | Total Power<br>Density at<br>R=20cm<br>(mW/cm <sup>2</sup> ) | Limit<br>(mW/cm <sup>2</sup> ) | Result |
|---------|---------------------------------------|------------------------------------------------|---------------------------------------------|----------------------|--------------------------------------------------------------|--------------------------------|--------|
| 802.11b | 13±1.0                                | 14.0                                           | 25.12                                       | 2.8<br>(1.905)       | 0.0095                                                       | 1.0                            | Pass   |

|         | Target power<br>W/ tolerance<br>(dBm) | Max<br>tune up<br>power<br>toleranc<br>e (dBm) | Total Output<br>power to<br>antenna<br>(mW) | Antenna<br>Gain(dBi) | Total Power<br>Density at<br>R=20cm<br>(mW/cm <sup>2</sup> ) | Limit<br>(mW/cm <sup>2</sup> ) | Result |
|---------|---------------------------------------|------------------------------------------------|---------------------------------------------|----------------------|--------------------------------------------------------------|--------------------------------|--------|
| 802.11b | 13±1.0                                | 14.0                                           | 25.12                                       | 3.60<br>(2.291)      | 0.0115                                                       | 1.0                            | Pass   |