

## RADIO FREQUENCY EXPOSURE

### 1. Limit

According to §1.1310 and §2.1091 RF exposure is calculated.

**Table: Limits for General Population/Uncontrolled Exposure**

| <b>Frequency Range<br/>(MHz)</b> | <b>Power Density (S)<br/>(mW/cm<sup>2</sup>)</b> |
|----------------------------------|--------------------------------------------------|
| 0.3–1.34                         | *(100)                                           |
| 1.34–30                          | *(180/f <sup>2</sup> )                           |
| 30–300                           | 0.2                                              |
| 300–1500                         | f/1500                                           |
| 1500–100,000                     | 1.0                                              |

F = frequency in MHz

\* = Plane-wave equivalent power density

### Maximum Permissible Exposure

The MPE was calculated at 20cm to show compliance with the power density limit.

$$S = PG/4\pi R^2$$

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:

1. Manufacturer declared that the maximum antenna gain is 1.50 dBi(Max.) for 2412~2462MHz (So the G for calculate the MPE is 1.41) .
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

## 2 Test Results

### Standalone MPE

| Test      | Channel | ANT Power AVG (dBm) | ANT Max. Tune Up Power (dBm) | ANT Max. Tune Up Power (mW) | ANT MPE (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|-----------|---------|---------------------|------------------------------|-----------------------------|-------------------------------|-----------------------------|
| 802.11b   | 1       | 18.73               | 18.0±1.0                     | 79.4328                     | 0.0223                        | 1.0                         |
|           | 6       | 18.57               | 18.0±1.0                     | 79.4328                     | 0.0223                        | 1.0                         |
|           | 11      | 18.77               | 18.0±1.0                     | 79.4328                     | 0.0223                        | 1.0                         |
| 802.11g   | 1       | 16.25               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
|           | 6       | 16.13               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
|           | 11      | 16.20               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
| 802.11n20 | 1       | 15.87               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
|           | 6       | 15.78               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
|           | 11      | 15.93               | 16.0±1.0                     | 50.1187                     | 0.0141                        | 1.0                         |
| 802.11n40 | 3       | 14.23               | 14.0±1.0                     | 31.6228                     | 0.0089                        | 1.0                         |
|           | 6       | 14.45               | 14.0±1.0                     | 31.6228                     | 0.0089                        | 1.0                         |
|           | 9       | 14.18               | 14.0±1.0                     | 31.6228                     | 0.0089                        | 1.0                         |

### Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.