# 7 FCC §15.247(i), § 2.1091 & IC RSS-102 - RF Exposure Information

## 7.1 Applicable Standards

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 General Population/Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density ($mW/cm^2$) | Averaging Time (minutes) |
|---|---|---|---|---|
| Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *($180/f^2$) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | f/1500 | 30 |
| 1500-100,000 | / | / | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density

Before equipment certification is granted, the procedure of IC RSS-102 must be followed concerning the exposure of humans to RF fields.

According to IC RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

| Frequency Range (MHz) | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density ($W/m^2$) | Time Averaging (min) |
|---|---|---|---|---|
| 0.003 - 1 | 280 | 2.19 | - | 6 |
| 1 - 10 | 280 / f | 2.19 / f | - | 6 |
| 10 - 30 | 28 | 2.19 / f | - | 6 |
| 30 – 300 | 28 | 0.073 | 2* | 6 |
| 300 – 1 500 | $1.585\ f^{0.5}$ | $0.0042\ f^{0.5}$ | f / 150 | 6 |
| 1 500 – 15 000 | 61.4 | 0.163 | 10 | 6 |
| 15 000 – 150 000 | 61.4 | 0.163 | 10 | $616000 / f^{1.2}$ |
| 150 000- 300 000 | $0.158\ f^{0.5}$ | $4.21 \times 10^{-4}\ f^{0.5}$ | $6.67 \times 10^{-5}\ f$ | $616000 / f^{1.2}$ |

**Note:** *f* is frequency in MHz
* Power density limit is applicable at frequencies greater than 100 MHz

## 7.2 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

## 7.3 MPE Results

| | |
|---|---|
| Maximum peak output power at antenna input terminal (dBm): | 27.07 |
| Maximum peak output power at antenna input terminal (mW): | 509.854 |
| Prediction distance (cm): | 20 |
| Prediction frequency (MHz): | 2412 |
| Antenna Gain, typical (dBi): | 4.5 |
| Maximum Antenna Gain (numeric): | 2.82 |
| Power density at predication frequency and distance ($mW/cm^2$): | 0.286 |
| MPE limit for uncontrolled exposure at predication frequency (mW/cm2): | 1.0 |

| Radio Type | Operating Frequency (MHz) | MPE Limit | Conducted Power (mW) | Duty Cycle | Antenna Gain (dBi) | Gain (numeric) | Power Density at 20 cm ($mW/cm^2$) | % of MPE | Co-located % of MPE |
|---|---|---|---|---|---|---|---|---|---|
| FCC ID: CH8HC02 | | | | | | | | | |
| 802.11 b/g/n Radio | 2412 | 1.0 | 509.854 | 100% | 4.5 | 2.82 | 0.2860 | 28.60 | - |
| FCC ID: CH8HC05 | | | | | | | | | |
| 802.11 a/b/g/n Radio | 5475 | 1.0 | 965.15 | 100% | 3.5 | 2.24 | 0.4301 | 43.01 | - |
| Both Radio On | | | | | | | | | |
| Co-located for CH8HC02 and CH8HC05 | | | | | | | | - | 71.61 |

## 7.4 Test Results

This device complies with the MPE limit at 20cm for uncontrolled exposure and could be able to co-locate with FCC ID: CH8HC05 (802.11 a/b/g/n wireless Radio)