



CTC Laboratories, Inc.

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Maximum Permissible Exposure Evaluation

FCC ID: ATI-AW01

The tests were performed according to following standards:

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b) [RSS-102 Issue 5](#)— Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

EUT Specification

| | |
|----------------------------|---|
| Product Name: | 802.11b/g/n Wi-Fi Module |
| Trade Mark: | Action |
| Model/Type reference: | AW-01 |
| Listed Model(s): | N/A |
| Frequency band (Operating) | <input type="checkbox"/> BT: 2.402GHz ~ 2.480GHz <input type="checkbox"/> BLE: 2.402GHz ~ 2.480GHz <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> RLAN: 5.180GHz ~ 5.240GHz <input type="checkbox"/> RLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others |
| Device category | <input type="checkbox"/> Portable (<5mm separation) <input type="checkbox"/> Mobile (>20cm separation) <input checked="" type="checkbox"/> Fixed (>20cm separation) <input type="checkbox"/> Others |
| Exposure classification | <input type="checkbox"/> Occupational/Controlled exposure (S=5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²) |
| Antenna diversity | <input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity |
| Antenna gain (Max) | 2.0dBi |
| Evaluation applied | <input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation |

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range(MHz) | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density(mW/cm ²) | Average Time |
|---|------------------------------|------------------------------|------------------------------------|--------------|
| (A) Limits for Occupational/Control Exposures | | | | |
| 300-1500 | -- | -- | F/300 | 6 |
| 1500-100000 | -- | -- | 5 | 6 |
| (B) Limits for General Population/Uncontrol Exposures | | | | |
| 300-1500 | -- | -- | F/1500 | 6 |
| 1500-100000 | -- | -- | 1 | 30 |

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Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

| 2.4G WIFI | | | | | | | |
|---------------|-------------------------|---------------------------|-------------------------|--------------------------|--------------------|-------------------------------------|------------------------------------|
| Type | Channel frequency (MHz) | Max. Measured Power (dBm) | Tune up tolerance (dBm) | Max. Tune up Power (dBm) | Antenna Gain (dBi) | Power density at 20cm (mW/cm^2) | Power density Limits (mW/cm^2) |
| 802.11 b | 2412 | 10.28 | 10±1 | 11 | 2.0 | 0.00397 | 1 |
| | 2437 | 14.91 | 15±1 | 16 | 2.0 | 0.01255 | 1 |
| | 2462 | 10.78 | 11±1 | 12 | 2.0 | 0.00500 | 1 |
| 802.11g | 2412 | 10.64 | 11±1 | 12 | 2.0 | 0.00500 | 1 |
| | 2437 | 12.92 | 13±1 | 14 | 2.0 | 0.00792 | 1 |
| | 2462 | 13.05 | 13±1 | 14 | 2.0 | 0.00792 | 1 |
| 802.11n(HT20) | 2412 | 13.80 | 14±1 | 15 | 2.0 | 0.00997 | 1 |
| | 2437 | 12.09 | 12±1 | 13 | 2.0 | 0.00629 | 1 |
| | 2462 | 12.23 | 12±1 | 13 | 2.0 | 0.00629 | 1 |
| 802.11n(HT40) | 2422 | 11.89 | 12±1 | 13 | 2.0 | 0.00629 | 1 |
| | 2437 | 12.30 | 12±1 | 13 | 2.0 | 0.00629 | 1 |
| | 2452 | 12.61 | 13±1 | 14 | 2.0 | 0.00792 | 1 |

Note

For a more detailed features description, please refer to the RF Test Report.

*****THE END*****