



# RF Exposure Evaluation Report

**Equipment** : High Power AC2200 Tri-Band Wi-Fi Router  
**Brand Name** : amped wireless  
**Model No.** : RTA2200T  
**FCC ID** : ZTT-RTA2200T  
**Standard** : 47 CFR Part 2.1091  
**Applicant** : Amped Wireless  
13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA  
**Manufacturer** : Amped Wireless  
13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA

The product sample received on Nov. 09, 2016 and completely tested on Dec. 13, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

  
Cliff Chang  
SPORTON INTERNATIONAL INC.





## **TABLE OF CONTENTS**

|          |                                             |          |
|----------|---------------------------------------------|----------|
| <b>1</b> | <b>GENERAL DESCRIPTION .....</b>            | <b>4</b> |
| 1.1      | EUT General Information .....               | 4        |
| 1.2      | Testing Location .....                      | 4        |
| <b>2</b> | <b>MAXIMUM PERMISSIBLE EXPOSURE .....</b>   | <b>5</b> |
| 2.1      | Limit of Maximum Permissible Exposure ..... | 5        |
| 2.2      | MPE Calculation Method .....                | 5        |
| 2.3      | Calculated Result and Limit.....            | 6        |

## REVISION HISTORY

[illegible]

# 1 General Description

## 1.1 EUT General Information

| RF General Information |                        |                           |                                                                                                 |
|------------------------|------------------------|---------------------------|-------------------------------------------------------------------------------------------------|
| Evaluation Mode        | Frequency Range (MHz)  | Operating Frequency (MHz) | Modulation Type                                                                                 |
| 2.4GHz WLAN            | 2400-2483.5            | 2412-2462                 | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)                 |
| 5GHz WLAN              | 5150-5250<br>5725-5850 | 5180-5240<br>5745-5825    | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) |

## 1.2 Testing Location

| Testing Location                    |        |                                                                                                                               |
|-------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL : 886-3-327-3456 FAX : 886-3-327-0973   |
| <input checked="" type="checkbox"/> | JHUBEI | ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.<br>TEL : 886-3-656-9065 FAX : 886-3-656-9085 |

## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(A) 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                                                                |

(B) 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

### 2.2 MPE Calculation Method

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

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = 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

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



## 2.3 Calculated Result and Limit

### Exposure Environment: General Population / Uncontrolled Exposure

| Mode               | DG<br>(dBi) | Power<br>(dBm) | EIRP<br>(dBm) | EIRP<br>(W) | Distance<br>(cm) | S<br>(mW/cm <sup>2</sup> ) | S Limit<br>(mW/cm <sup>2</sup> ) | Ratio<br>(S/Limit) |
|--------------------|-------------|----------------|---------------|-------------|------------------|----------------------------|----------------------------------|--------------------|
| 2.4G;D1D (Radio 1) | 4.23        | 27.65          | 31.88         | 1.5417      | 20               | 0.30671                    | 1                                | 0.30671            |
| 5.2G;D1D (Radio 1) | 7.30        | 24.34          | 31.64         | 1.45881     | 20               | 0.29022                    | 1                                | 0.29022            |
| 5.8G;D1D (Radio 2) | 5.69        | 25.26          | 30.95         | 1.24451     | 20               | 0.24759                    | 1                                | 0.24759            |
|                    |             |                |               |             |                  |                            | Sum Ratio                        | 0.84452            |
|                    |             |                |               |             |                  |                            | Ratio Limit                      | 1                  |