



FCC ID: 2AU11-XA2200
Report No.: T190411D03-MF

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**IEEE C95.1 2005
KDB 447498 D03
47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091**

RF EXPOSURE REPORT

For

WIRELESS ROUTER

Model: XA2200

Trade Name: XADA

Issued to

**XADA Technologies Ltd.
1F., No. 2, Ln. 150, Sec. 5, Xinyi Rd., Xiny District, 110 Taipei City, Taiwan**

Issued by

**Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issue Date: October 28, 2019**

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|------------------|----------------------------------|-----------------|------------|
| 00 | October 04, 2019 | Initial Issue | ALL | May Lin |
| 01 | October 28, 2019 | See the following Note Rev. (01) | P.1, P.7, P9-11 | May Lin |

Rev (01):

- 1. Revised the product name.*
- 2. Revised the chapter 3 、 5 and added the chapter 6*



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1. TEST RESULT CERTIFICATION

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10: 2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

| APPLICABLE STANDARDS | |
|---|-------------------------|
| STANDARD | TEST RESULT |
| IEEE C95.1 2005 KDB 447498 D03 47 C.F.R. Part 1, Subpart I, Section 1.1310 47 C.F.R. Part 2, Subpart J, Section 2.1091 | No non-compliance noted |
| Statements of Conformity | |
| Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. | |

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

Reporter:

May Lin
Report coordinator
Compliance Certification Services Inc.



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2. LIMIT

According to §15.247(i), 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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

3. EUT SPECIFICATION

| | |
|-----------------------------------|---|
| EUT | WIRELESS ROUTER |
| Model | XA2200 |
| Frequency band (Operating) | <input checked="" type="checkbox"/> 802.11b/g/n HT20: 2412MHz ~ 2462 MHz 802.11n HT40: 2422MHz ~ 2452MHz 802.11a/n HT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz / 5500MHz ~ 5700MHz / 5745MHz ~ 5825MHz 802.11n HT40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz / 5510MHz ~ 5670MHz / 5755MHz ~ 5795MHz 802.11ac VHT80: 5210MHz / 5290MHz / 5530MHz / 5775MHz <input type="checkbox"/> Others |
| Device category | <input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>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 Specification | <p>For 2.4GHz:</p> Chain 0 Antenna Gain : 2.77 dBi (Numeric gain 1.89) Chain 1 Antenna Gain : 1.10 dBi (Numeric gain 1.29) MIMO Directional Gain Antenna Gain : 2.01 dBi (Numeric gain 1.59) <p>For 5GHz:</p> <p>For Band 1 、 2</p> Chain 0 Antenna Gain : 4.50 dBi (Numeric gain 2.82) Chain 1 Antenna Gain : 4.00 dBi (Numeric gain 2.51) MIMO Directional Gain Antenna Gain : 4.26 dBi (Numeric gain 2.67) <p>For Band 3 、 4</p> Chain 0 Antenna Gain : 3.90 dBi (Numeric gain 2.45) Chain 1 Antenna Gain : 2.70 dBi (Numeric gain 1.86) MIMO Directional Gain Antenna Gain : 3.34 dBi (Numeric gain 2.16) |

| | | | |
|---------------------------------|--|-----------|--------------|
| Maximum Average output power | 2.4GHz: | | |
| | IEEE 802.11b Mode: | 27.05 dBm | (506.991 mW) |
| | IEEE 802.11g Mode: | 21.03 dBm | (126.765 mW) |
| | IEEE 802.11n HT 20 Mode: | 20.96 dBm | (124.738 mW) |
| | IEEE 802.11n HT 40 Mode: | 20.74 dBm | (118.577 mW) |
| | 5GHz: | | |
| | IEEE 802.11a Mode: | 26.85 dBm | (484.172 mW) |
| | IEEE 802.11n HT 20 Mode: | 25.18 dBm | (329.610 mW) |
| | IEEE 802.11n HT 40 Mode: | 26.42 dBm | (438.531 mW) |
| | IEEE 802.11ac VHT 80 Mode: | 21.00 dBm | (125.893 mW) |
| Maximum Tune up Power | 2.4GHz: | | |
| | IEEE 802.11b Mode: | 27.05 dBm | (506.991 mW) |
| | IEEE 802.11g Mode: | 21.03 dBm | (126.765 mW) |
| | IEEE 802.11n HT 20 Mode: | 20.96 dBm | (124.738 mW) |
| | IEEE 802.11n HT 40 Mode: | 20.74 dBm | (118.577 mW) |
| | 5GHz: | | |
| | IEEE 802.11a Mode: | 26.85 dBm | (484.172 mW) |
| | IEEE 802.11n HT 20 Mode: | 25.18 dBm | (329.610 mW) |
| | IEEE 802.11n HT 40 Mode: | 26.42 dBm | (438.531 mW) |
| | IEEE 802.11ac VHT 80 Mode: | 21.00 dBm | (125.893 mW) |
| Evaluation applied | <input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A | | |

4. TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

5. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

IEEE 802.11b mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 6 | 2437 | 506.991 | 1.59 | 20 | 0.1604 | 1 |

IEEE 802.11g mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 1 | 2412 | 126.765 | 1.59 | 20 | 0.0401 | 1 |

IEEE 802.11n HT20 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 6 | 2437 | 124.738 | 1.59 | 20 | 0.0395 | 1 |

IEEE 802.11n HT40 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 3 | 2422 | 118.577 | 1.59 | 20 | 0.0375 | 1 |

IEEE 802.11a mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 149 | 5745 | 484.172 | 2.16 | 20 | 0.2081 | 1 |

IEEE 802.11n HT20 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 157 | 5785 | 329.61 | 2.16 | 20 | 0.1417 | 1 |

IEEE 802.11n HT40 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 151 | 5755 | 438.531 | 2.16 | 20 | 0.1885 | 1 |

IEEE 802.11ac VHT80 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm2) |
|-----|-----------|---------|-------------|--------|---------------------------------------|----------------|
| 155 | 5775 | 125.893 | 2.16 | 20 | 0.0541 | 1 |



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6. SIMULTANEOUS TRANSMISSION SAR ANALYSIS

Both of the WiFi 2.4GHz and WiFi 5GHz can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

WiFi 2.4GHz + WiFi 5GHz

Therefore, the worst-case situation is $0.1604 / 1 + 0.2081 / 1 = 0.3685$, which is less than "1".

--End of Report--