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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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.

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)	☒ 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 ☐ Others
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)
Antenna Specification	**For 2.4GHz:** 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) **For 5GHz:** For Band 1、2 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) For Band 3、4 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)

<table>
<tr><td>Maximum Average output power</td><td>
<table>
<tr><td>2.4GHz:</td><td></td><td></td></tr>
<tr><td>IEEE 802.11b Mode:</td><td>27.05 dBm</td><td>(506.991 mW)</td></tr>
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<tr><td>IEEE 802.11n HT 40 Mode:</td><td>20.74 dBm</td><td>(118.577 mW)</td></tr>
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<tr><td>Evaluation applied</td><td>☒ MPE Evaluation*
☐ SAR Evaluation
☐ N/A</td></tr>
</table>

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 (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

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

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 + ……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--