IEEE C95.1 2005
KDB 447498 D01 V06
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

WLAN USB Module, Ralink IEEE 802.11 b/g/n solution

Model: WN8020-00

Trade Name: Geovision

Issued to
GeoVision Inc.
9F, No. 246, Sec. 1, Neihu Rd., Neihu District, Taipei 114, Taiwan

Issued by

Compliance Certification Services Inc.
Tainan Laboratory
No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: September 12, 2017

ilac-MRA   TAF
Testing Laboratory
1109

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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		September 12, 2017		Initial Issue	ALL	Vicki Huang

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1. TEST RESULT CERTIFICATION

We hereby certify that:

The equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirement of the applicable standards. The test record, data evaluation and Equipment under Test (EUT) configurations represented herein are true and accurate accounts of the measurement of the sample's RF characteristics under the conditions specified in this report.
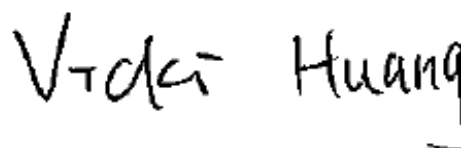
APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
IEEE C95.1 2005 KDB 447498 D03 47 C.F.R. Part 1, Subpart I, Section 1.1310 47 C.F.R. Part 2, Subpart J, Section 2.1091	No non-compliance noted

Approved by: *Tested by:*

Jeter Wu
Assistant Manager
Compliance Certification Services Inc.

Vicki Huang
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

Product	WLAN USB Module, Ralink IEEE 802.11 b/g/n solution
Model	WN8020-00
Brand name	Geovision
Model Discrepancy	N/A
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2412MHz ~ 2462MHz ☐ 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)

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Antenna Specification	**2.4G** PIFA Antenna / Gain: 1.8dBi 2.4GHz: Antenna Gain : 1.80 dBi (Numeric gain: 1.51) Worst
Maximum Average output power	IEEE 802.11b Mode: 6.11 dBm (4.083 mW) IEEE 802.11g Mode: 8.83 dBm (7.638 mW) IEEE 802.11n HT 20 Mode: 6.24 dBm (4.207 mW)
Maximum Tune up Power	IEEE 802.11b Mode: 6.50 dBm (4.467 mW) IEEE 802.11g Mode: 9.00 dBm (7.943 mW) IEEE 802.11n HT 20 Mode: 7.50 dBm (5.623 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

4. TEST RESULTS

No non-compliance noted.

Calculation

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

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 / cm^2

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 / cm^2

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
1	2412	4.467	1.51	20	0.0013	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	7.943	1.51	20	0.0024	1

IEEE 802.11n HT 20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
1	2412	5.623	1.51	20	0.0017	1