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

Yanzi IoT Gateway Plus

Model:
DR2-8910XXXXXXXXXXXXXXXXXXX, (where X may be any alphanumeric character or blank)

Trade Name: Yanzi

Issued to

Yanzi Networks AB
Isafjordsgatan 32C, 16440, Kista, Sweden

Issued by

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
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TAF
Testing Laboratory
1309

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	March 22, 2017	Initial Issue	ALL	Doris Chu

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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.
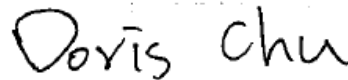
APPLICABLE STANDARDS	
STANDARD	TEST RESULT
IEEE C95.1 2005 KDB 447498 D03 47 C.F.R. Part 1, Subpart I, Section 1.1310 47 C.F.R. Part 2, Subpart J, Section 2.1091	No non-compliance noted

Approved by: *Prepared by:*

_____   _____
Sam Chuang   Doris Chu
Manager   Report coordinator
Compliance Certification Services Inc.   Compliance Certification Services Inc.

2. <u>LIMIT</u>

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. <u>EUT SPECIFICATION</u>

EUT	Yanzi IoT Gateway Plus
Model	DR2-8910XXXXXXXXXXXXXXXXXXXXX, (where X may be any alphanumeric character or blank)
Model Discrepancy	All the above models are identical except for the designation of model numbers. The suffix of (where X may be any alphanumeric character or blank) on model number is just for marketing purpose only.
Trade Name	Yanzi
Frequency band (Operating)	☐ Bluetooth 2.1 + EDR / 4.0: 2402 ~ 2480 MHz 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a/n HT20: 5.180GHz ~ 5.320GHz / 5.500 ~ 5.825GHz 802.11n HT40: 5.190GHz ~ 5.310GHz / 5.510 ~ 5.795GHz 802.11ac VHT80: 5.210GHz ~ 5.290GHz / 5.530 ~ 5.775GHz ☒ Others IEEE 802.15.4 Zigbee: 2405~2480MHz
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	Antenna Gain : 2.80 dBi (Numeric gain 1.91)
Maximum Average output power	IEEE 802.15.4 Zigbee : 16.85 dBm (48.417 mW)
Maximum Tune up Power	IEEE 802.15.4 Zigbee : 17.00 dBm (50.119 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 watts / meter

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

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

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

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

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

Zigbee:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
11	2405	50.119	1.91	20	0.0190	1

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