



FCC ID: PANWG1000DB
Report No.: T190401W01-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

IOT BLE Mini Gateway

Model: WG-1000DB

Trade Name: CC&C

Issued to

**CC&C Technologies, Inc.
8F, No. 150, Jian Yi Road, Zhonghe District,
New Taipei City, 235
Taiwan**

Issued by

**Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issue Date: October 21, 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 21, 2019	Initial Issue	ALL	May Lin



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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	IOT BLE Mini Gateway																																
Model	WG-1000DB																																
Frequency band (Operating)	<input checked="" type="checkbox"/> Bluetooth: 2402MHz-2480MHz <input checked="" type="checkbox"/> 802.11b/g/n HT20: 2412MHz ~ 2462 MHz <input checked="" type="checkbox"/> 802.11n HT40: 2422MHz ~ 2452MHz <input checked="" type="checkbox"/> 802.11a/n HT20: 5180MHz ~ 5240MHz / 5745MHz ~ 5825MHz 802.11n HT40: 5190MHz ~ 5230MHz / 5755MHz ~ 5795MHz <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/cm²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm²)																																
Antenna Specification	Bluetooth : Antenna Gain : 0.00 dBi (Numeric gain 1.00) 2.4GHz: Antenna Gain : 4.04 dBi (Numeric gain 2.53) 5GHz: Antenna Gain : -2.51 dBi (Numeric gain 0.56)																																
Maximum Measurement Average Power	<table><tr><td>Bluetooth:</td><td>10.45 dBm</td><td>(11.092 mW)</td></tr><tr><td>2.4GHz:</td><td></td><td></td></tr><tr><td>IEEE 802.11b Mode:</td><td>18.95 dBm</td><td>(78.524 mW)</td></tr><tr><td>IEEE 802.11g Mode:</td><td>16.82 dBm</td><td>(48.084 mW)</td></tr><tr><td>IEEE 802.11n HT 20 Mode:</td><td>14.76 dBm</td><td>(29.923 mW)</td></tr><tr><td>IEEE 802.11n HT 40 Mode:</td><td>14.87 dBm</td><td>(30.690 mW)</td></tr><tr><td>5GHz:</td><td></td><td></td></tr><tr><td>IEEE 802.11a Mode:</td><td>17.08 dBm</td><td>(51.050 mW)</td></tr><tr><td>IEEE 802.11n HT 20 Mode:</td><td>15.08 dBm</td><td>(32.211 mW)</td></tr><tr><td>IEEE 802.11n HT 40 Mode:</td><td>15.06 dBm</td><td>(32.063 mW)</td></tr></table>			Bluetooth:	10.45 dBm	(11.092 mW)	2.4GHz:			IEEE 802.11b Mode:	18.95 dBm	(78.524 mW)	IEEE 802.11g Mode:	16.82 dBm	(48.084 mW)	IEEE 802.11n HT 20 Mode:	14.76 dBm	(29.923 mW)	IEEE 802.11n HT 40 Mode:	14.87 dBm	(30.690 mW)	5GHz:			IEEE 802.11a Mode:	17.08 dBm	(51.050 mW)	IEEE 802.11n HT 20 Mode:	15.08 dBm	(32.211 mW)	IEEE 802.11n HT 40 Mode:	15.06 dBm	(32.063 mW)
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Maximum tune up power	<table><tr><td>Bluetooth:</td><td>11.00 dBm</td><td>(12.589 mW)</td></tr><tr><td>2.4GHz:</td><td></td><td></td></tr><tr><td>IEEE 802.11b Mode:</td><td>19.50 dBm</td><td>(89.125 mW)</td></tr><tr><td>IEEE 802.11g Mode:</td><td>17.50 dBm</td><td>(56.234 mW)</td></tr><tr><td>IEEE 802.11n HT 20 Mode:</td><td>15.50 dBm</td><td>(35.481 mW)</td></tr><tr><td>IEEE 802.11n HT 40 Mode:</td><td>15.50 dBm</td><td>(35.481 mW)</td></tr><tr><td>5GHz:</td><td></td><td></td></tr><tr><td>IEEE 802.11a Mode:</td><td>18.00 dBm</td><td>(63.096 mW)</td></tr><tr><td>IEEE 802.11n HT 20 Mode:</td><td>16.00 dBm</td><td>(39.811 mW)</td></tr><tr><td>IEEE 802.11n HT 40 Mode:</td><td>16.00 dBm</td><td>(39.811 mW)</td></tr></table>			Bluetooth:	11.00 dBm	(12.589 mW)	2.4GHz:			IEEE 802.11b Mode:	19.50 dBm	(89.125 mW)	IEEE 802.11g Mode:	17.50 dBm	(56.234 mW)	IEEE 802.11n HT 20 Mode:	15.50 dBm	(35.481 mW)	IEEE 802.11n HT 40 Mode:	15.50 dBm	(35.481 mW)	5GHz:			IEEE 802.11a Mode:	18.00 dBm	(63.096 mW)	IEEE 802.11n HT 20 Mode:	16.00 dBm	(39.811 mW)	IEEE 802.11n HT 40 Mode:	16.00 dBm	(39.811 mW)
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IEEE 802.11n HT 40 Mode:	16.00 dBm	(39.811 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

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

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

Bluetooth:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
0	2402	12.589	1	20	0.0025	1

WIFI 2.4G

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
6	2437	89.125	2.53	20	0.0449	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
6	2437	56.234	2.53	20	0.0283	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	35.481	2.53	20	0.0179	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
6	2437	35.481	2.53	20	0.0179	1



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WIFI 5G

IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
44	5220	63.096	0.56	20	0.0070	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)
157	5785	39.811	0.56	20	0.0044	1

IEEE 802.11n HT 40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
159	5795	39.811	0.56	20	0.0044	1

--End of Report--