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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. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部分複製。

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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 Cor	Statements of Conformity								
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.									

Approved by:

Komil Tsoi

Kevin Tsai Deputy Manager Compliance Certification Services Inc.

Reporter:

ay Lin

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)	 Bluetooth: 2402MHz-2480MHz 802.11b/g/n HT20: 2412MHz ~ 2462 MHz 802.11n HT40: 2422MHz ~ 2452MHz 802.11n HT40: 5180MHz ~ 5240MHz / 5745MHz ~ 5825MHz 802.11n HT40: 5190MHz ~ 5230MHz / 5755MHz ~ 5795MHz Others 										
Device category	 Portable (<20cm separation) Mobile (>20cm separation) Others 										
Exposure classification	 Occupational/Controlled exposure (S = 5mW/cm²) 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	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: 15.06 dBm (32.063 mW)										
Maximum tune up power	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) IEEE 802.11n HT 20 Mode: 16.00 dBm (63.096 mW) IEEE 802.11n HT 20 Mode: 16.00 dBm (39.811 mW)										
Evaluation applied	MPE Evaluation* SAR Evaluation N/A										



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4. TEST RESULTS

No non-compliance noted.

CalculationGiven $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$ WhereE = Field strength in Volts / meterP = Power in WattsG = Numeric antenna gaind = Distance in metersS = 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 cmP = Power in mWG = Numeric antenna gain S = Power density in mW / cm^2



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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

 $S = Power density in mW / cm^2$

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:

	<u> </u>					
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:

ĺ	Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
ĺ	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--