

RF Exposure Evaluation Report

Product : WIFI+BT Module
Trade mark : GSD
Model/Type reference : WCT3TM2311
Serial Number : N/A
Report Number : EED32L00127304
FCC ID : 2AC23-WCT3T
Date of Issue : Aug. 19, 2019
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01v06
Test result : PASS

Prepared for:

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2 Version

Version No.	Date	Description
00	2019-08-19	Original

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4 General Information

4.1 Client Information

Applicant:	Hui Zhou Gaoshengda Technology Co., LTD
Address of Applicant:	NO.75 Zhongkai Development Area Huizhou, Guangdong, China
Manufacturer:	Hui Zhou Gaoshengda Technology Co., LTD
Address of Manufacturer:	NO.75 Zhongkai Development Area Huizhou, Guangdong, China
Factory:	Hui Zhou Gaoshengda Technology Co., LTD
Address of Factory:	NO.75 Zhongkai Development Area Huizhou, Guangdong, China

4.2 General Description of EUT

Product Name:	WIFI+BT Module
Model No.(EUT):	WCT3TM2311
Trade Mark:	GSD
EUT Supports Radios application	BT 4.2 Dual mode 2.4G WiFi: 802.11b/g/n(20MHz)/n(40MHz) 5G WiFi: 802.11a/n(HT20)/n(HT40)/ac(HT20)/ac(HT40)/ac(HT80)

4.3 Product Specification subjective to this standard

Frequency Range:	BT 4.2 Dual mode: 2402MHz~2480MHz 2.4G WIFI: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 5G WiFi: U-NII-1: 5.15-5.25GHz; U-NII-3: 5.725-5.850GHz
Modulation Type:	GFSK, 8DPSK, $\pi/4$ DQPSK OFDM, DSSS
Test Power Grade:	BT:7 WiFi2.4 Ant 0 (802.11b 1E/1E/1D) (802.11g 14/12/12) (802.11n20 14/12/12) (802.11n40 10/10/11) Ant 1 (802.11b 1E) (802.11g 14/13/13) (802.11n20 13) (802.11n40 10/10/11) Ant 0 WiFi 5G: 802.11a 15/15/16/17 802.11n40:15/16/16/16 802.11ac80:20/21 MIMO 20 :11/10/10/11 MIMO 40 :10/12/14/10 Ant1 802.11a 17/17/18/17 802.11n40:16/16/16/16 802.11ac80:22/21 MIMO 20 :12/11/12/11 MIMO 40 :11/12/13/10

Test Software of EUT:	MT7662 & V1.0.3.14			
Antenna Type:	PIFA Antenna			
Antenna Specification	Bluetooth	Ant.Gain	4.2 dBi	Numeric Gain:2.63
	2.4GHz	Ant.Gain	1.53dBi	Numeric Gain:1.42
	5GHz	Ant.Gain	2.99dBi	Numeric Gain:1.99
Maximum tune up power	Blue tooth		7	5.012
	IEEE 802.11b Mode		19	79.43
	IEEE 802.11g Mode		18	63.06
	IEEE 802.11n HT20 Mode		17	50.12
	IEEE 802.11n HT40 Mode		16	39.81
	IEEE 802.11a Mode		14	25.12
	IEEE 802.11n HT20 Mode		15	31.62
	IEEE 802.11n HT40 Mode		15	31.62
	IEEE 802.11ac VHT80 Mode		15	31.62
Power Supply:	DC 5V			
Sample Received Date:	May. 23, 2019			
Sample tested Date:	May. 23, 2019 to Aug. 15, 2019			
The tested sample(s) and the sample information are provided by the client.				

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user.

Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to

a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.

5.1.3 EUT RF Exposure Evaluation

Bluetooth:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
0	2402	5.012	2.63	20	0.0026	1

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
11	2462	79.43	1.42	20	0.0224	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	63.06	1.42	20	0.0178	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
1	2412	50.12	1.42	20	0.0142	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
4	2437	39.81	1.42	20	0.0112	1

IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
40	5200	25.12	1.99	20	0.0099	1

IEEE 802.11a HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
157	5785	31.62	1.99	20	0.0125	1

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
38	5190	31.62	1.99	20	0.0125	1

IEEE 802.11ac VHT80 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm2)
42	5210	31.62	1.99	20	0.0125	1

Simultaneously MPE

Simultaneously MPE = MPE 1 / Limit 1 + MPE 2 / Limit 2 +

2.4GHz + BT Mode

Simultaneously MPE = (0.0125 / 1) + (0.0026 / 1) = **0.0151 mW/cm²**

5GHz + BT Mode

Simultaneously MPE = (0.0423 / 1) + (0.0026 / 1) = **0.0449 mW/cm²**

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32L00127301 for EUT external and internal photos.

*** End of Report ***

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