

# Qingdao Intelligent&Precise Electronics Co., Ltd MPE ASSESSMENT REPORT

## **Report Type:**

FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

#### Model:

ZDGFMT7638GU

#### **REPORT NUMBER:**

181200571SHA-004

#### **ISSUE DATE:**

January 2, 2019

#### **DOCUMENT CONTROL NUMBER:**

TTRFFCCMPE-01\_V1 © 2018 Intertek





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Report no.: 181200571SHA-004

**Applicant:** Qingdao Intelligent&Precise Electronics Co., Ltd

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Development Zone, Shandong, China.

Manufacturer: Qingdao Intelligent&Precise Electronics Co., Ltd

No.218, Qianwangang Road, Qingdao Economic&Technological

Development Zone, Shandong, China.

Manufacturing site: Qingdao Intelligent&Precise Electronics Co., Ltd

No.218, Qianwangang Road, Qingdao Economic&Technological

Development Zone, Shandong, China.

FCC ID: 2AJVQ-ZD7638GU

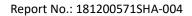
#### **SUMMARY:**

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	REVIEWED BY:	
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Project Engineer	Reviewer	
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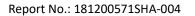
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# **Revision History**

Report No.	Version	Description	Issued Date	
181200571SHA-004	Rev. 01	Initial issue of report	January 2, 2019	





## **1 GENERAL INFORMATION**

## 1.1 Description of Equipment Under Test (EUT)

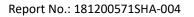
Product name:	Wireless Module
Type/Model:	ZDGFMT7638GU
	EUT is a Wireless Module with WiFi and Bluetooth function, and has
Description of EUT:	only one model.
Rating:	DC 5V
EUT type:	☐ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	December 07, 2018
Date of test:	December 07, 2018 ~ January 2, 2019

## 1.2 Technical Specification

Frequency Range:	2400MHz ~ 2483.5MHz			
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE 802.11n(HT40)			
	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)			
	IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)			
	IEEE 802.11n(HT20): OFDM (64-QAM, 16-QAM, QPSK, BPSK)			
Type of Modulation:	IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)			
	11 Channels for 802.11b, 802.11g and 802.11n(HT20)			
Channel Number:	9 Channels for 802.11n(HT40)			
Channel Separation:	5 MHz			

Frequency Range:	2400MHz to 2483.5MHz
Support Standards:	Bluetooth Low Energy
Operating Frequency:	2402MHz to 2480MHz
Type of Modulation:	GFSK
Channel Number:	40 (0-39)
Channel Separation:	2MHz
Antenna Information:	PIFA Antenna, 2.3dBi

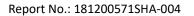
Frequency Range:	2400MHz ~ 2483.5MHz
Support Standards:	Bluetooth BR+EDR
Operating Frequency:	2402MHz to 2480MHz





### **TEST REPORT**

Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, π/4-DQPSK, 8DPSK
Channel Number:	79 (0 - 78)
Channel Separation:	1 MHz
Antenna:	PIFA Antenna, 2,3dBi

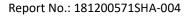




# 1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is	CNAS Accreditation Lab
recognized,	Registration No. CNAS L0139
certified, or	FCC Accredited Lab
accredited by these	Designation Number: CN1175
organizations:	Designation Number. CN1173
	IC Registration Lab
	Registration code No.: 2042B-1
	VCCI Registration Lab
	Registration No.: R-4243, G-845, C-4723, T-2252
	A2LA Accreditation Lab
	Certificate Number: 3309.02





## 2 MPE Assessment

Test result: Pass

### 2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength	H-field strength	B-field	Equivalent plane wave	
	(V/m)	(A/m) (uT) pov		power density	
				S <sub>eq</sub> (W/m²)	
0-1 Hz	-	$3,2 \times 10^4$	$4 \times 10^{4}$	-	
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-	
8-25 Hz	10 000	4 000/f	5 000/f	-	
0,025-0,8 kHz	250/f	4/f	5/f	-	
0,8-3 kHz	250/f	5	6,25 -		
3-150 kHz	87	5	6,25 -		
0,15-1 MHz	87	0,73/f	0,92/f	-	
1-10 MHz	87/f <sup>1/2</sup>	0,73/f	0,92/f	-	
10-400 MHz	28	0,073 0,092		2	
400-2 000 MHz	1,375 f <sup>1/2</sup>	0,0037 f <sup>1/2</sup> 0,0046 f <sup>1/2</sup> f/20		f/200	
2-300 GHz	61	0,16	0,20	10	

Mobile device exposure for simultaneous transmission operations: the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is  $\leq$  1.0

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# 2.2 Assessment Results

Power density (S) is calculated according to the formula:

 $S = PG / (4\pi R^2)$ 

**TEST REPORT** 

Where  $S = power density in mW/cm^2$ 

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 181200571SHA-001, 181200571SHA-002 and 181200571SHA-003:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

The Bluetooth and WiFi can support simultaneous transmission.

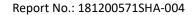
Mode	Frequency band	Max Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm2)	(mW/cm2)
Bluetooth	2400 -2483.5	8.17	2.3	20	0.0022	1
WiFi	2400 -2483.5	17.01	2.3	20	0.0170	1

Note: 1 mW/cm2 from 1.310 Table 1

For the device can support simultaneous transmission, according to 447498 D01 General RF Exposure Guidance v06,

For the device consider simultaneous transmission of WiFi and Bluetooth:

The worst MPE = 0.0022/1 + 0.0170/1 = 0.0192 mW/cm2 < 1 mW/cm2.





## **Appendix I**

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.