

Qingdao Intelligent&Precise Electronics Co., Ltd

MPE ASSESSMENT REPORT

Report Type:

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

Model:

ZDGF7638GU-C

REPORT NUMBER:

190101102SHA-004

ISSUE DATE:

February 25, 2019

DOCUMENT CONTROL NUMBER:

TTRFFCCMPE-01_V1 © 2018 Intertek





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Report no.: 190101102SHA-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-7638GUC

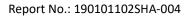
SUMMARY:

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	
Nemo Li	Daniel Zhao	

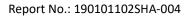
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Revision History

Report No.	Version	Description	Issued Date	
190101102SHA-004	Rev. 01	Initial issue of report	February 25, 2019	





1 GENERAL INFORMATION

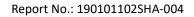
1.1 Description of Equipment Under Test (EUT)

Product name:	Wireless Module
Type/Model:	ZDGF7638GU-C
	EUT is a Wireless Module with WiFi function and Bluetooth function,
Description of EUT:	and has only one model.
Rating:	DC 5V
EUT type:	☐ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	January 14, 2019
Date of test:	January 14, 2019 ~ February 22, 2019

1.2 Technical Specification

Frequency Band:	2400MHz ~ 2483.5MHz				
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE 802.11n(HT40)				
	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20)				
Operating Frequency:	2422MHz to 2452MHz for 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				
	PIFA Antenna				
Antenna Information:	Antenna 0: 1.5dBi, Antenna 1: 1.5dBi				

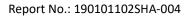
Frequency Band:	2400MHz to 2483.5MHz		
Support Standards:	Bluetooth Low Energy		
Operating Frequency:	2402MHz to 2480MHz		
Type of Modulation:	GFSK		
Channel Number:	40 (0-39)		
Channel Separation:	2MHz		
Antenna Information:	PIFA Antenna, 1.5dBi		





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Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	Bluetooth BR+EDR
Operating Frequency:	2402MHz to 2480MHz
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, 1.5dBi

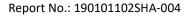




1.3 Description of Test Facility

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 accredited by these	FCC Accredited Lab Designation Number: CN1175
organizations:	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab
	Registration No.: R-14243, G-10845, C-14723, T-12252
	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)	power density	
				S _{eq} (W/m²)	
0-1 Hz	-	$3,2 \times 10^4$	4×10^{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 ^{1/2}	0,73/f	0,92/f	-	
10-400 MHz	28	0,073	0,092	2	
400-2 000 MHz	1,375 f ^{1/2}	0,0037 f ^{1/2}	0,0046 f ^{1/2}	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:

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

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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 190101102SHA-001, 190101102SHA-002 and 190101102SHA-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.

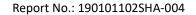
Mode	Frequency band	Max Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm2)	(mW/cm2)
Bluetooth	2400 -2483.5	6.72	1.5	20	0.0013	1
WiFi	2400 -2483.5	17.39	1.5	20	0.0154	1

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 = 0.0013/1 + 0.0154/1 = 0.0167 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.