



1 Cover Page

RF Exposure Evaluation Report

Application No.: SHEM1910017717CR
FCC ID: YQD-T-PANEL201
Applicant: Queclink Wireless Solutions Co., Ltd.
Address of Applicant: 3F, No. 717 Yishan Road, Xuhui District, Shanghai, China. 200233
Equipment Under Test (EUT):
EUT Name: IoT device
Model No.: T-Panel 201
Trade Mark: ninebot
Standard(s) : FCC Rules 47 CFR §2.1091
KDB447498 D01 General RF Exposure Guidance v06
RSS-102 Issue 5 (March 2015)
Date of Receipt: 2019-10-08
Date of Test: 2019-10-22 to 2019-11-13
Date of Issue: 2019-11-28

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlan Zhan

Parlan Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center China

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Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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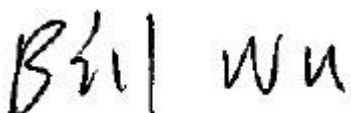
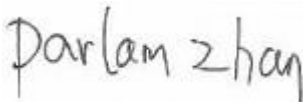
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Revision Record			
Version	Description	Date	Remark
00	Original	2019-11-28	/

Authorized for issue by:				
				
		Bill Wu / Project Engineer		
				
		Parlam Zhan /Reviewer		



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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 36V 1A
Test voltage:	AC 120V/60Hz For DC Source

3.2 Technical Specifications

BLE

Antenna Gain	Antenna: 2.19dBi
Antenna Type	Integral Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz



3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shanghai Branch

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (Certificate No. 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

- **FCC –Designation Number: CN5033**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

IC Registration No.: 8617A-1. CAB Identifier: CN0020.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.



4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm ²)	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM191001771701

Channel	Antenna Power[dBm]	Antenna Power[mW]
2402	-3.65	0.43
2440	-2.89	0.51
2480	-2.19	0.60

The power for LTE modular refer certificate of FCC ID: XMR201707BG96

5.2 MPE Calculation

According to the formula $S=P/4\pi R^2$, we can calculate S which is MPE.

Note:

- 1) P (mW)
- 2) R = distance to the center of radiation of antenna (in meter) = 20cm
- 3) MPE limit = 1mW/cm²

For BLE

The max. antenna gain is 2.19 dBi

Max. Conducted Power P(mW)	Gain in Linear Scale G	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Result
0.6	1.656	20	0.00020	1	Pass

The max EIPR is 1mW

For LTE modular based on original module grantee,

The max Antenna Gain is 1.2dBi

Frequency for 824.2-848.8MHz: the max EIPR is 0.890W;

Frequency for 669.7-715.3MHz: the max EIPR is 0.816W.

Frequency for 779.5-784.5MHz: the max EIPR is 0.776W.

Frequency for 1711.5-1753.5MHz: the max EIPR is 1.311W.

Frequency for 1850.2-1909.8MHz: the max EIPR is 1.220W;

For FCC

LTE Module:

$$\text{Frequency for 824.2-848.8MHz: } S = \frac{PG}{4R^2\pi} = 890/(4*400*3.14) = 0.177 \text{ mW/cm}^2$$

$$\text{Frequency for 669.7-715.3MHz: } S = \frac{PG}{4R^2\pi} = 816/(4*400*3.14) = 0.162 \text{ mW/cm}^2$$

$$\text{Frequency for 779.5-784.5MHz: } S = \frac{PG}{4R^2\pi} = 776/(4*400*3.14) = 0.154 \text{ mW/cm}^2$$

$$\text{Frequency for 1711.5-1753.5MHz: } S = \frac{PG}{4R^2\pi} = 1311/(4*400*3.14) = 0.261 \text{ mW/cm}^2$$

$$\text{Frequency for 1850.2-1909.8MHz: } S = \frac{PG}{4R^2\pi} = 1220/(4*400*3.14) = 0.243 \text{ mW/cm}^2$$

LTE Module and BLE module can simultaneous transmitting, so the maximum rate of MPE is,

$$\text{Frequency for 824.2-848.8MHz: } 0.0002/1 + 0.177/0.55 = 0.32 \leq 1.0.$$

$$\text{Frequency for 669.7-715.3MHz: } 0.0002/1 + 0.162/0.45 = 0.36 \leq 1.0.$$

$$\text{Frequency for 779.5-784.5MHz: } 0.0002/1 + 0.154/0.52 = 0.30 \leq 1.0.$$

$$\text{Frequency for 1711.5-1753.5MHz: } 0.0002/1 + 0.261/1 = 0.26 \leq 1.0.$$



Frequency for 1850.2-1909.8MHz: $0.0002/1+0.243/1=0.24\leq 1.0$.

So the device is exclusion from SAR test.

--End of the Report--