1 Cover Page

RF Exposure Evaluation Report

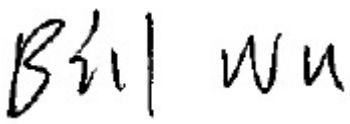
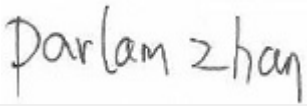
Application No.:	SHEM2107007293CR
FCC ID:	2ATEV-BL3385-P
IC:	25062-BL3385P
Applicant:	Hangzhou BroadLink Technology Co.,Ltd
Address of Applicant:	Unit C,Building 1,No.57 Jiang'er Road, Changhe Street,Binjiang District,Hangzhou,Zhejiang,China
Manufacturer:	Hangzhou BroadLink Technology Co.,Ltd
Address of Manufacturer:	Unit C,Building 1,No.57 Jiang'er Road, Changhe Street,Binjiang District,Hangzhou,Zhejiang,China
Factory:	Hangzhou Gubei Intelligent Manufacturing Co.,Ltd
Address of Factory:	D218,Building 2,Hangzhou Xiaoshan(China) Hardware Machinery Technology Innovation Park,Liansan Village,Yiqiao Town,Xiaoshan District,Hangzhou,310052
Equipment Under Test (EUT):	
EUT Name:	WIFI+BT module
Model No.:	BL3385-P
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 Amendment 1 (February 2, 2021)
Date of Receipt:	2021-07-05
Date of Test:	2021-07-09 to 2021-07-27
Date of Issue:	2021-08-05
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
Laboratory 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.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2021-08-05	/

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 3.3V

3.2 Technical Specifications

BLE

Antenna Gain:	2dBi (Provided by manufacturer)
Antenna Type:	PCB Antenna
Bluetooth Version:	V4.0 LE
Channel Spacing:	2MHz
Data Rate:	1Mbps
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz
S/N:	c8f742fee236
Firmware version:	V1.0

2.4G WiFi

Antenna Gain:	2dBi (Provided by manufacturer)
Antenna Type:	PCB Antenna
Channel Spacing:	5MHz
Data Rate:	802.11b: 1/2/5.5/11Mbps, 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS 0 to 7 for HT20MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz
S/N:	c8f742fee236
Firmware version:	V1.0

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

No tests were sub-contracted.

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 17025:2017 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.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

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

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory Company Number: 8617A

- **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

4.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

• at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 2.4G device, the limit of worse case is 2.68 W

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM210700729301 & SHEM210700729302.

Test Mode	Test Frequency (MHz)	Output Power (dBm)	Reading Power (mW)
BLE	2402	3.95	2.48
	2440	4.81	**3.03**
	2480	4.65	2.92

2.4G WiFi

Test Mode	Test Channel	Power [dBm]	Power [mW]
11B	2412	13.09	20.37
11B	2437	13.62	23.01
11B	2462	13.83	**24.15**
11G	2412	11.62	14.52
11G	2437	12.23	16.71
11G	2462	12.45	17.58
11N20SISO	2412	11.82	15.21
11N20SISO	2437	12.41	17.42
11N20SISO	2462	12.65	18.41

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5.2 MPE Calculation

For FCC:

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 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
3.03	1.585	20	0.00096	1	Pass

For 2.4G WiFi

The max. antenna gain is 2 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
24.15	1.585	20	0.00761	1	Pass

The WIFI can not simultaneous transmitting with BLE, so the SAR report is not required.

For IC:

For BLE

E.I.R.P.= P*G= 0.00303×1.59=0.005W＜2.68W

For 2.4G WiFi

E.I.R.P.= P*G= 0.02415×1.59=0.038W＜2.68W

The WIFI can not simultaneous transmitting with BLE, so the device is exclusion from SAR test

--End of the Report--

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