



1 Cover Page

RF Exposure Evaluation Report

Application No.: SHCR2111000806HS
FCC ID: 2ATEV-BL3389-P
IC : 25062-BL3389P
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 COMBO
Model No.: BL3389-P
Trade mark: Broadlink
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: 2021-11-16
Date of Test: 2021-11-24 to 2021-12-17
Date of Issue: 2021-12-22

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

Parlam Zhan

Parlam Zhan
Laboratory Manager



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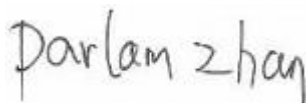
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center EMO Lab (Zhang)

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Revision Record			
Version	Description	Date	Remark
00	Original	2021-12-22	/

Authorized for issue by:			
			
		Wade Zhang / 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
S/N:	EC0BAE9DD98F
Firmware Version:	V1.0

3.2 Technical Specifications

BLE

Antenna Gain:	2dBi (Provided by manufacturer)
Antenna Type:	PCB Antenna
Bluetooth Version:	V5.0 LE
Data Rate:	1Mbps
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz

2.4G WiFi

Antenna Gain:	2dBi (Provided by manufacturer)
Antenna Type:	PCB Antenna
Channel Spacing:	5MHz
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
Date Rate:	802.11b:1/2/5.5/11Mbps 802.11g:6/9/12/18/24/36/48/54Mbps 802.11n:MCS0-MCS7



3.3 Test Location

All tests were performed at:

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

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.



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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



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5 Measurement and Calculation

5.1 Maximum transmit power

BLE:

The Power Data is based on the RF Test Report SHCR211100080601.

Test Mode	Test Channel	Power [dBm]	Power [mW]
BLE	2402	3.65	2.32
BLE	2440	4.43	2.77
BLE	2480	2.9	1.95

2.4GHz :

The Power Data is based on the RF Test Report SHCR211100080602.

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	13.59	22.86
11B	2437	Ant1	14.11	25.76
11B	2462	Ant1	13.99	25.06
11G	2412	Ant1	10.98	12.53
11G	2437	Ant1	12.14	16.37
11G	2462	Ant1	11.56	14.32
11N20SISO	2412	Ant1	10.93	12.39
11N20SISO	2437	Ant1	12.06	16.07
11N20SISO	2462	Ant1	11.39	13.77

Note: The manufacturer declared that the max power with tolerance is:

BLE: 4.5dBm (2.82mW)

WIFI 2.4G: 15dBm (31.62mW)



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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
2.82	1.585	20	0.00089	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
31.62	1.585	20	0.00997	1	Pass

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

For IC:

For BLE

$$E.I.R.P.= P \times G = 0.00282 \times 1.58 = 0.004W < 2.68W$$

For 2.4GHz WiFi mode:

$$E.I.R.P.= P \times G = 0.032 \times 1.58 = 0.051W < 2.68W$$

So the device is exclusion from SAR test

--End of the Report--



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