FCC RF EXPOSURE REPORT

CERTIFICATION TEST REPORT

For

WIFI Module

FCC MODEL NUMBER: SI04B, SI04* (*: A ~ Z, or Blank)
ISED MODEL NUMBER: SI04B

FCC ID: 2AFG6-SI04B

REPORT NUMBER: 4790929065-1-RF-4

ISSUE DATE: October 13, 2023

Prepared for

Guangzhou Shirui Electronics Co., Ltd.
192 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	August 10, 2023	Initial Issue	Fanny Huang
V1	August 16, 2023	Updated the address of applicant and manufacturer.	Fanny Huang
V2	October 13, 2023	Updated antenna information	Fanny Huang

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Guangzhou Shirui Electronics Co., Ltd.
Address:	192 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China

Manufacturer Information

Company Name:	Guangzhou Shirui Electronics Co., Ltd.
Address:	192 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China

EUT Information

EUT Name:	WIFI Module
FCC&ISED Model:	SI04B
FCC Series Model:	SI04* (*: A ~ Z, or Blank)
Model difference:	Refer to section 4
Sample Received Date:	July 13, 2023
Sample Status:	Normal
Sample ID:	5161650
Date of Tested:	July 24, 2023 to October 13, 2023

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 47CFR§2.1091	PASS

Prepared By:

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Checked By:

Denny Huang

Senior Project Engineer

Approved By:

Stephen Guo

Operations Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 and KDB 447498 D01 General RF Exposure Guidance v06.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011

Note: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China.

4. DESCRIPTION OF EUT

EUT Name	WIFI Module
FCC&ISED Model	SI04B
FCC Series Model	SI04* (*: A ~ Z, or Blank)
Model difference	SI04* (*: A ~ Z, or Blank) has the same technical construction including circuit diagram, PCB Layout, components, and component layout, all electrical construction, and mechanical construction with SI04B. The difference lies only in the model number and market. All these changes do not degrade the unwanted emissions of the certified product.

Product Description (BLE for module SKI.WB8821CU.1)	Frequency Range:	2402 MHz to 2480 MHz
	Type of Modulation:	GFSK
	Data Rate:	1 Mbps
Product Description (BT for module SKI.WB8821CU.1)	Frequency Range:	2402 MHz to 2480 MHz
	Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
	Type of Modulation:	GFSK, Π/4DQPSK, 8DPSK
Product Description (2.4G WLAN for module SKI.WB8821CU.1)	Frequency Range:	2412 MHz ~ 2462 MHz
	Type of Modulation:	IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM(64-QAM, 16-QAM, QPSK, BPSK)
	Radio Technology:	IEEE 802.11b/g/n-HT20/n-HT40
Product Description (5G RLAN for module SKI.WB8821CU.1)	Frequency Range:	5180 MHz to 5240 MHz (U-NII-1) 5260 MHz to 5320 MHz (U-NII-2A) 5500 MHz to 5720 MHz (U-NII-2C) 5745 MHz to 5825 MHz (U-NII-3)
	Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
	Radio Technology:	IEEE802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40/ac-VHT80
Product Description (5G RLAN for module SKI.W7613E.1)	Frequency Range:	5180 MHz to 5240 MHz (U-NII-1) 5745 MHz to 5825 MHz (U-NII-3)
	Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
	Radio Technology:	IEEE802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40/ac-VHT80
Normal Test Voltage:		DC 12 V

5. REQUIREMENT

LIMIT AND CALCULATION METHOD

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

RF EXPOSURE LIMIT

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (Minutes)
0.3 -- 1.34	614	1.63	(100)*	30
1.34 -- 30	824/f	2.19/f	($180/f^2$)*	30
30 -- 300	27.5	0.073	0.2	30
300 -- 1500	--	--	f/1500	30
1500 -- 100,000	--	--	1.0	30

CALCULATION METHOD

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

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

CALCULATED RESULTS

Module SKI.W7613E.1

Mode	Output Power	Directional Gain	Power Density	Power Density Limit	Test Result
	dBm	dBi	mW/cm2	mW/cm2	--
WIFI 5G	17	6.62	0.04579	1.0	Complies

Module SKI.WB8821CU.1

Mode	Output Power	Max Antenna Gain	Power Density	Power Density Limit	Test Result
	dBm	dBi	mW/cm2	mW/cm2	--
WIFI 2.4G	16	3.66	0.01840	1.0	Complies

Mode	Output Power	Max Antenna Gain	Power Density	Power Density Limit	Test Result
	dBm	dBi	mW/cm2	mW/cm2	--
WIFI 5G	13	5.45	0.01392	1.0	Complies

Mode	Output Power	Max Antenna Gain	Power Density	Power Density Limit	Test Result
	dBm	dBi	mW/cm2	mW/cm2	--
BLE	3.95	3.66	0.00115	1.0	Complies

Mode	Output Power	Max Antenna Gain	Power Density	Power Density Limit	Test Result
	dBm	dBi	mW/cm2	mW/cm2	--
BT	7	3.66	0.00232	1.0	Complies

Note: 1. The calculated distance is 20cm.
2. Module SKI.W7613E.1 WIFI 5GHz + Module SKI.WB8821CU.1 WIFI 2.4GHz + Module SKI.WB8821CU.1 BT=0.04579 + 0.01840 + 0.00232=0.06651 (mW/ cm^2)

Therefor the maximum calculations of above situations are less than the “1” limit.

END OF REPORT