



Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR231100215406

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1 Cover Page

RF Exposure Evaluation Report

Application No.: KSCR2311002154AT
FCC ID: 2AH25T1730
IC: 22621-T1730
Applicant: Shanghai Sunmi Technology Co.,Ltd.
Address of Applicant: Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai,China
Manufacturer: Shanghai Sunmi Technology Co.,Ltd.
Address of Manufacturer: Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai,China
Equipment Under Test (EUT):
EUT Name: POS System
Model No.: T1730
HVIN: T1730(F), T1730
Trade Mark: SUNMI
Standard(s) : FCC Rules 47 CFR §2.1091
KDB 447498 D04 interim General RF Exposure Guidance v01
RSS-102 Issue 5 Amendment 1 (February 2, 2021)
Date of Receipt: 2023-11-28
Date of Test: 2023-12-19 to 2024-01-16
Date of Issue: 2024-01-22

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

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



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<i>Revision Record</i>			
<i>Version</i>	<i>Description</i>	<i>Date</i>	<i>Remark</i>
00	Original	2024-01-22	/

Authorized for issue by:			
Tested By	<i>Damon Zhou</i>		
	<u>Damon_Zhou/Project Engineer</u>		
Approved By	<i>Terry Hou</i>		
	<u>Terry Hou /Reviewer</u>		



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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 24V,2.5A by Adapter Adapter model: CYSE65-240250 INPUT: AC 100-240V,50/60Hz,1.7A OUTPUT: DC 24V,2.5A,60W
Serial Number:	DE13D38110023
Firmware version:	D3mini_IO_V2.0

3.2 Details of E.U.T.

BLE

Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0 Dual mode
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	Internal Antenna
Antenna Gain:	1.01 dBi(Provided by the manufacturer)

BT

Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0 Dual mode
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Number of Channels:	79
Channel Spacing:	1MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Antenna Type:	Internal Antenna
Antenna Gain:	1.01 dBi(Provided by the manufacturer)

2.4GHz WiFi

Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
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; 802.11n(HT40):7
Channel Spacing:	5MHz
Antenna Type:	Internal Antenna
Antenna Gain:	1.01 dBi(Provided by the manufacturer)

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5GHz WiFi

Operation Frequency/Number of channels (20MHz):	U-NII-1: 5180-5240MHz (4 Channels); U-NII-2A: 5260-5320MHz (4 Channels); U-NII-2C: 5500-5700MHz (11 Channels); U-NII-3: 5745-5825MHz (5 Channels)
Operation Frequency/Number of channels/(40MHz):	U-NII-1: 5190-5230MHz (2 Channels); U-NII-2A: 5270-5310MHz (2 Channels); U-NII-2C: 5510-5670MHz (5 Channels); U-NII-3: 5755-5795MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	U-NII-1: 5210MHz (1 Channel); U-NII-2A: 5290MHz (1 Channels); U-NII-2C: 5530-5610MHz (2 Channels); U-NII-3: 5775MHz (1 Channel)
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac20: 20MHz; 802.11n/ac40: 40MHz; 802.11ac80: 80MHz
DFS Function:	Slave without Radar detection
Antenna Type:	Internal Antenna
Antenna Gain:	U-NII-1:1.98dBi, U-NII-2A:2.07dBi, U-NII-2C:2.08dBi, U-NII-3:2.12dBi (Provided by the manufacturer)

13.56MHz

Operation Frequency	13.56MHz
Modulation Technique:	ASK
Antenna Type:	Loop antenna
Number of Channel:	1

3.3 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

All tests were performed at:

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

3.4 Test Facility

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

• **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• **FCC**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• **VCCI**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4 FCC Radiofrequency radiation exposure limits

According to §1.1310, The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part 1.1307(b)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

5 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

For 5G device, the limit of worse case is 4.53W

6 Measurement and Calculation

6.1 Maximum transmit power

The Power Data is based on the RF Test Report KSCR231100215401, KSCR231100215402, KSCR231100215403, KSCR231100215404, KSCR231100215405

6.2 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 centimeter)

Test Mode	Max EIRP (dBm)	Operation Distance R(cm)	Power Density (mW/cm ²)	Limit of Power Density S(mW/cm ²) for FCC	Result
Bluetooth	9.83	20	0.002	1	Pass
2.4G WLAN	18.68	20	0.015	1	Pass
5G WLAN	17.38	20	0.011	1	Pass

13.56MHz: 67.79dBuV/m@3m=0.002mW

For FCC:

The BT,2.4GHz WLAN, 5GHz WLAN and 13.56MHz can transmit simultaneously, but the maximum rate of MPE is $0.002/1+0.015/1+0.011/1+0.002/1=0.03\leq 1$.

So the device is exclusion from SAR test.

For IC:

The BT,2.4GHz WLAN, 5GHz WLAN and 13.56MHz can transmit simultaneously, but the maximum rate of MPE is $0.01/2.68+0.074/2.68+0.055/4.53+0.002/1000=0.0435\leq 1$.

So the device is exclusion from SAR test.

--End of the Report--