



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

Report No.:SHCR230700145207

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# TEST REPORT

**Application No.:**

SHCR2307001452AT

**FCC ID:**

2AH25T6810

**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):**

Smart POS system

**EUT Name:**

T6810

**Model No.:**

T6810, T6810H, T6810M

**HVIN:**

SUNMI

**Trade mark:**

47 CFR FCC Part 2

47 CFR FCC Part 22

47 CFR FCC Part 24

47 CFR FCC Part 27

**Date of Receipt:**

2023-06-07

**Date of Test:**

2023-06-26 to 2023-07-01

**Date of Issue:**

2023-07-03

**Test Result:**

Pass\*

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

Parlam Zhan

Parlam Zhan  
Laboratory Manager



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### Revision Record

Version	Description	Date	Remark
00	Add new configuration SKU3.	2023-07-03	Based on KSCR221000185707

### Authorized for issue by:

	<b>Micheal Niu / Project Engineer</b>		
	<b>Parlam Zhan / Reviewer</b>		

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## 2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Radiated spurious emissions	§2.1051, §22.917, §24.238 §27.53(h)	≤ -13dBm	PASS

### Remark:

Compared with the original report, this report added new configuration SKU3. Compared with SKU1, SKU3 removed code scanning probe, also added one alternative screen and battery. Considering the differences, only test Radiated spurious emissions in this report, other test data please refer to original report.

Note: SKU1: T6810H, SKU2: T6810, SKU3: T6810M



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply:	DC 5V 1A; DC 5V 2A
Adapter information:	Adapter 1: Model: TPA-46B050100UU Input: 100-240V~ 50/60Hz 0.2A Output: 5.0V 1.0A Adapter 2: Model: TPA-23A050200UU01 Input: 100-240V~ 50/60Hz 0.3A Output: 5.0V 2.0A Adapter 3: Model No.: UC11US PRI: 100-240V~50/60Hz 0.2A SEC: 5.0V 1.0A 5.0W
Battery information:	Model 1: TMPA 1ICP6/59/63 Nominal Voltage: 3.8V Limited Charge Voltage: 4.35V Rated Capacity: 2900mAh Model 2: TMPC 1ICP6/59/63 Nominal Voltage: 3.8V Limited Charge Voltage: 4.35V Rated Capacity: 2900mAh
Test voltage:	DC 3.8V
Serial Number:	PC10E35P10028
Firmware version:	V1.0.0
Sample Type:	Portable production
Operation Frequency Band:	UMTS B2, B4, B5
Modulation Type:	UL QPSK, BPSK DL QPSK, BPSK
Antenna Type:	FPC Antenna
Antenna Gain:	UMTS B2: -0.10dBi (Provided by the manufacturer) UMTS B4: -1.70dBi (Provided by the manufacturer) UMTS B5: -1.60dBi (Provided by the manufacturer)
Extreme temp. Tolerance:	-10°C to +50°C
Extreme vol. Limits:	3.46V DC to 4.35V DC (nominal: 3.8V DC)
HSDPA UE Category:	14
HSUPA UE Category:	6
IMEI:	863407060071936



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## 4.2 Test Frequency

Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B2	TX	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960 MHz	1987.6 MHz
Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B4	TX	Channel 1312	Channel 1413	Channel 1513
		1712.4 MHz	1732.6 MHz	1752.6 MHz
	RX	Channel 1537	Channel 1638	Channel 1738
		2112.4 MHz	2132.6 MHz	2152.6 MHz
Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B5	TX	Channel 4132	Channel 4183	Channel 4233
		826.4 MHz	836.6 MHz	846.6 MHz
	RX	Channel 4357	Channel 4408	Channel 4458
		871.4 MHz	881.6 MHz	891.6 MHz

## 4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	101kPa	
Temperature:	TN	25 °C
Voltage:	VL	3.46V
	VN	3.80V
	VH	4.35V

NOTE: VL= lower extreme test voltage

VN= nominal voltage

VH= upper extreme test voltage

TN= normal temperature



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#### 4.4 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
The EUT has been tested as an independent unit.			

#### 4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$8.4 \times 10^{-8}$
2	Timeout	2s
3	Duty cycle	0.37%
4	Occupied Bandwidth	3%
5	RF conducted power	0.6dB
6	RF power density	2.84dB
7	Conducted Spurious emissions	0.75dB
8	RF Radiated power	4.6dB (Below 1GHz) 4.1dB (Above 1GHz)
9	Radiated Spurious emission test	4.2dB (Below 30MHz) 4.4dB (30MHz-1GHz) 4.8dB (1GHz-18GHz) 5.2dB (Above 18GHz)
10	Temperature test	1°C
11	Humidity test	3%
12	Supply voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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## 4.6 Test Location

All tests were performed at:

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

Tel: +86 21 6191 5666      Fax: +86 21 6191 5678

No tests were sub-contracted.

Note:

- 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).
- 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).

## 4.7 Test Facility

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

- **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.

## 4.8 Deviation from Standards

None

## 4.9 Abnormalities from Standard Conditions

None

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## 5 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
<b>RF Conducted Test</b>					
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2022-12-20	2023-12-19
Spectrum Analyzer	Keysight	N9020B	SHEM241-1	2022-12-20	2023-12-19
Spectrum Analyzer	Agilent	N9020A	SHEM181-1	2022-08-02	2023-08-01
Signal Generator	R&S	SMR20	SHEM006-1	2022-08-02	2023-08-01
Signal Generator	Agilent	N5182A	SHEM182-1	2022-08-02	2023-08-01
Communication Tester	R&S	CMW270	SHEM183-1	2023-06-01	2024-05-31
Communication Tester	R&S	CMW500	SHEM268-1	2023-06-01	2024-05-31
Power Sensor	Keysight	U2021XA * 4	SHEM184-1	2022-08-02	2023-08-01
Splitter	Anritsu	MA1612A	SHEM185-1	/	/
Coupler	e-meca	803-S-1	SHEM186-1	/	/
High-low Temp Cabinet	Suzhou Zhihe	TL-40	SHEM087-1	2022-11-08	2024-11-07
AC Power Stabilizer	APC	KDF-31020T-V0-F0	SHEM216-1	2022-12-20	2023-12-19
DC Power Supply	MCH	MCH-303A	SHEM210-1	2022-12-20	2023-12-19
Conducted test Cable	/	RF01~RF04	/	2022-12-20	2023-12-19
Switcher	Tonscend	JS0806	SHEM184-1	2022-08-02	2023-08-01
Test software	Tonscend	JS Tonscend BT/WIFI System	Version: 2.6	/	/
Coaxial Cable	TST		SHEM263-1	2022-08-02	2023-08-01
Test software	TST	TST PASS	Version: 2.0	/	/
<b>RF Radiated Test</b>					
EMI test Receiver	R&S	ESU40	SHEM051-1	2022-12-20	2023-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2022-12-20	2023-12-19
Communication Tester	R&S	CMW500	SHEM268-1	2023-06-01	2024-05-31
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2022-12-20	2023-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2021-09-11	2023-09-10
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2022-05-07	2024-05-06
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2022-08-11	2024-08-10
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2021-09-18	2023-09-17
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2021-09-18	2023-09-17
Pre-Amplifier	HP	8447D	SHEM236-1	2022-08-02	2023-08-01
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2022-12-20	2023-12-19
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2021-05-25	2024-05-24
RE test Cable	/	RE01, RE02, RE06	/	2023-01-07	2024-01-06
Test software	FARAD	EZ EMC	1.1.4.2	/	/



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## 6 Radio Spectrum Matter Test Results

### 6.1 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238, §27.53(h)

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit:  $\leq -13\text{dBm}$

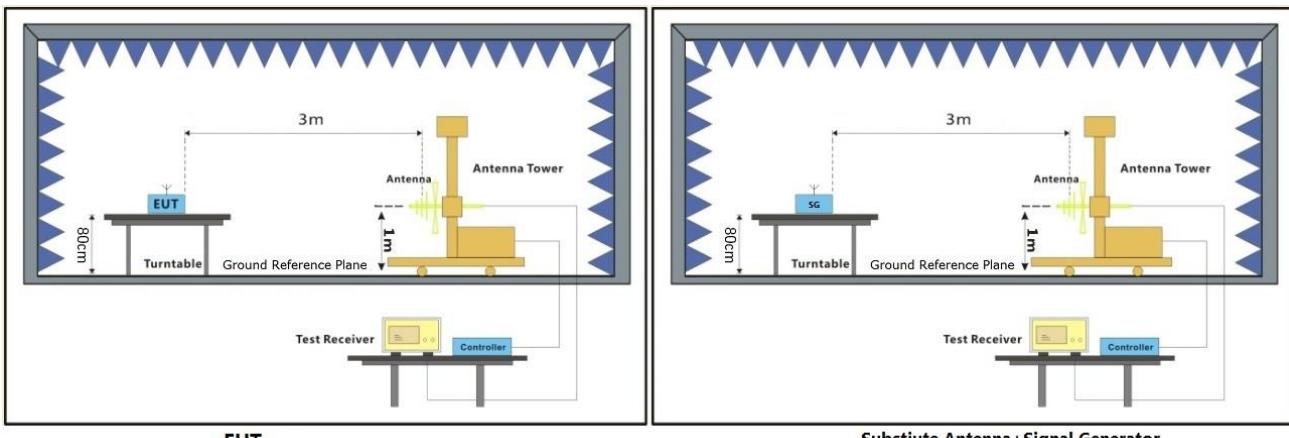
#### 6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C      Humidity: 68.2 % RH      Atmospheric Pressure: 1030 mbar

Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.1.2 Test Setup Diagram



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### 6.1.3 Measurement Procedure and Data

#### Test Procedure:

- (1) On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

Remark: We have evaluated different adapters and battery modes. The battery mode is the worst, and only the battery mode is tested finally.



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WCDMA BAND II-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3704.800	-55.66	-13	-42.66	Horizontal
5557.200	-56.55	-13	-43.55	Horizontal
7409.600	-54.07	-13	-41.07	Horizontal
3704.800	-52.40	-13	-39.40	Vertical
5557.200	-57.34	-13	-44.34	Vertical
7409.600	-56.15	-13	-43.15	Vertical

WCDMA BAND II-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3760.000	-54.53	-13	-41.53	Horizontal
5640.000	-57.59	-13	-44.59	Horizontal
7520.000	-57.91	-13	-44.91	Horizontal
3760.000	-59.01	-13	-46.01	Vertical
5640.000	-59.44	-13	-46.44	Vertical
7520.000	-58.92	-13	-45.92	Vertical

WCDMA BAND II-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3815.200	-61.15	-13	-48.15	Horizontal
5722.800	-63.51	-13	-50.51	Horizontal
7630.400	-52.60	-13	-39.60	Horizontal
3815.200	-58.42	-13	-45.42	Vertical
5722.800	-60.98	-13	-47.98	Vertical
7630.400	-56.03	-13	-43.03	Vertical



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WCDMA BAND IV-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3440.000	-50.87	-13	-37.87	Horizontal
5160.000	-48.62	-13	-35.62	Horizontal
6880.000	-48.59	-13	-35.59	Horizontal
3440.000	-46.01	-13	-33.01	Vertical
5160.000	-49.94	-13	-36.94	Vertical
6880.000	-46.94	-13	-33.94	Vertical

WCDMA BAND IV-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3465.200	-47.04	-13	-34.04	Horizontal
5197.800	-50.67	-13	-37.67	Horizontal
6930.400	-48.10	-13	-35.10	Horizontal
3465.200	-49.11	-13	-36.11	Vertical
5197.800	-52.28	-13	-39.28	Vertical
6930.400	-47.30	-13	-34.30	Vertical

WCDMA BAND IV-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3490.000	-50.47	-13	-37.47	Horizontal
5235.000	-50.54	-13	-37.54	Horizontal
6980.000	-43.26	-13	-30.26	Horizontal
3490.000	-53.81	-13	-40.81	Vertical
5235.000	-51.07	-13	-38.07	Vertical
6980.000	-42.76	-13	-29.76	Vertical



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WCDMA BAND V-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1652.800	-51.99	-13	-38.99	Horizontal
2479.200	-50.46	-13	-37.46	Horizontal
3305.600	-46.84	-13	-33.84	Horizontal
1652.800	-52.80	-13	-39.80	Vertical
2479.200	-49.87	-13	-36.87	Vertical
3305.600	-44.69	-13	-31.69	Vertical

WCDMA BAND V-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1672.800	-46.30	-13	-33.30	Horizontal
2509.200	-51.48	-13	-38.48	Horizontal
3345.600	-46.76	-13	-33.76	Horizontal
1672.800	-42.84	-13	-29.84	Vertical
2509.200	-51.43	-13	-38.43	Vertical
3345.600	-48.43	-13	-35.43	Vertical

WCDMA BAND V-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1692.800	-53.19	-13	-40.19	Horizontal
2539.200	-49.72	-13	-36.72	Horizontal
3385.600	-41.91	-13	-28.91	Horizontal
1692.800	-49.23	-13	-36.23	Vertical
2539.200	-49.75	-13	-36.75	Vertical
3385.600	-42.17	-13	-29.17	Vertical

**Remark:**

We have tested all modulation and all Bandwidth , but only the worst case data presented in this report.



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## 7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SHCR2307001452AT

## 8 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for SHCR2307001452AT

- End of the Report -



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