TEST REPORT

Application No.:	KSCR2209001699AT
FCC ID:	2AH25T6820
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:	Smart POS system
Model No.:	T6820
Trade Mark:	SUNMI
Standard(s) :	47 CFR Part 2; 47 CFR Part 22 subpart H; 47 CFR Part 24 subpart E
Date of Receipt:	2022-09-08
Date of Test:	2022-11-29 to 2022-11-29
Date of Issue:	2022-12-09
Test Result:	**Pass***

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

Eric Lin
Laboratory Manager

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Revision Record			
Version	**Description**	**Date**	**Remark**
00	*Add two configurations*	2022-12-09	*Based on KSCR220400050307AT*

Authorized for issue by:				
		Damon zhou **Damon_Zhou/Project Engineer**		
		Eric Lin **Eric Lin /Reviewer**		

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2 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Field strength of spurious radiation	47 CFR Part 2; 47 CFR Part 22 subpart H; 47 CFR Part 24 subpart E	ANSI C63.26, KDB 971168 D01 v03	§2.1051, §22.917, §24.238	Pass

This report based on KSCR220400050307AT, added two configurations. expressed as SKU5 and SKU6.
SKU5 (HVIN:T6820-1) stand for support HD screen, not support scanner version.
SKU6 (HVIN:T6820-2) stand for support laser scanner version.

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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 7.2V by Rechargeable Li-ion Battery charged by Adapter Battery Model: LKPA Nominal voltage:7.2V Limited charge voltage:8.4V Rated capacity:2500mAh/18Wh Typical capacity:2600mAh/18.72Wh Adapter Model 1: UC13US INPUT:100-240V,50/60Hz,0.35A OUTPUT:5V,2A Adapter Model 2: UC11US INPUT:100-240V,50/60Hz,0.2A OUTPUT:5V,1A Adapter Model 3: TPA-46B050100UU INPUT:100-240V,50/60Hz,0.2A OUTPUT:5V,1A Adapter Model 4: TPA-23A050200UU01 INPUT:100-240V,50/60Hz,0.3A OUTPUT:5V,2A
Test voltage:	DC 7.2V
Serial Number:	TJ06P28C20009
Firmware version:	SP6228A_V11_20220501_sunmi
Sample Type:	Portable production
Operation Frequency Band:	UMTS B2,B4,B5
Modulation Type:	QPSK,BPSK
Antenna Type:	PIFA Antenna
Antenna Gain:	UMTS B2: 2.0dBi UMTS B4 0.4dBi UMTS B5: 1.3dBi
Extreme temp. Tolerance:	-10°C to +50°C
Extreme vol. Limits:	6.12V DC to 8.28V DC (nominal: 7.2V DC)
HSDPA UE Category:	14
HSUPA UE Category:	6
IMEI:	867223060217692

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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:	1015Pa	
Temperature:	TN	25 °C
Voltage:	VL	6.12V
	VN	7.2V
	VH	8.28V

NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

4.4 Description of Support Units

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

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4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (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:

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

No tests were sub-contracted.

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).

4.7 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 (CAB identifier CN0072)

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.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/22/2022	08/21/2023
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/22/2022	08/21/2023
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/22/2022	01/21/2023
4	Signal Generator	R&S	SMW200A	KSEM020-1	08/22/2022	08/21/2023
5	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/22/2022	08/21/2023
6	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/22/2022	08/21/2023
7	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	04/01/2022	03/31/2023
8	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/22/2022	08/21/2023
9	Switcher	CCSRF	FY562	KUS2001M001-3	08/22/2022	08/21/2023
10	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R
11	DC Power Supply	Aglient	E3632A	KS301180	N.C.R	N.C.R
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/16/2022	01/15/2023
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	04/01/2021	03/31/2023
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	04/14/2022	04/13/2023
15	Software	BST	TST-PASS	/	N/A	N/A
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/22/2022	08/21/2023
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	04/01/2022	03/31/2023
3	Signal Generator	Agilent	E8257C	KS301066	08/22/2022	08/21/2023
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	04/13/2021	04/12/2023
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2021	06/28/2023
6	Bilog Antenna	SCHWARZBECK	VULB9160	CZ301016	04/13/2021	04/12/2024
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	04/02/2022	04/01/2024
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	02/22/2021	02/21/2023
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	03/17/2022	03/16/2023
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/22/2022	01/21/2023
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	KUS1710E001	01/22/2022	01/21/2023
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	11/13/2022	11/12/2023
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	01/04/2022	31/03/2023
14	Software	Faratronic	EZ_EMC-v 3A1	/	N/A	N/A

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

Limit:
Limit: ≤ -13dBm

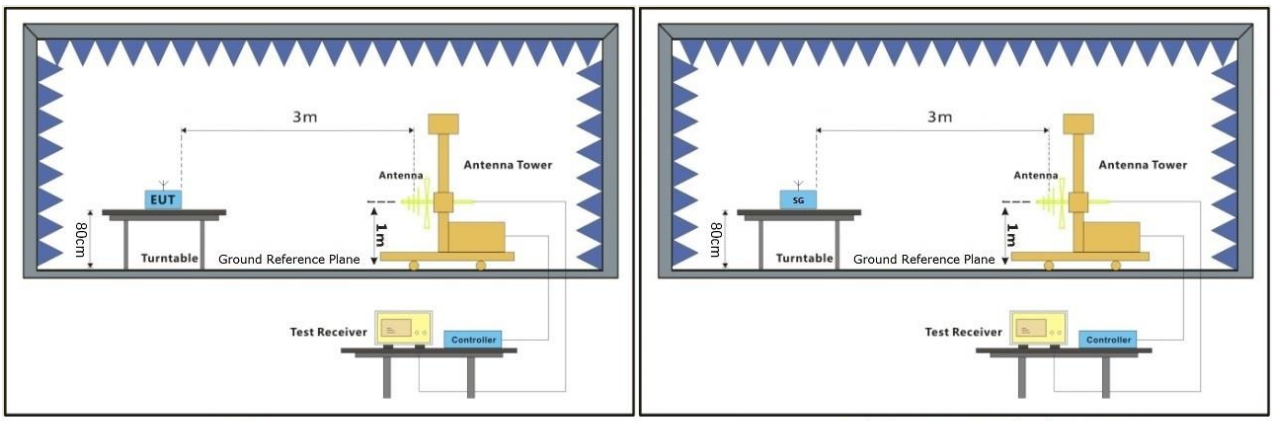
6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23.3 °C Humidity: 47.4 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	16	TX mode_Keep the EUT (SKU6) in transmitting mode
Final test	07	TX mode_Keep the EUT (SKU5) in transmitting mode

6.1.3 Test Setup Diagram



EUT Substiute Antenna+Signal Generator

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6.1.4 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 than 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.

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WCDMA BAND II-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3704.800	-58.14	-13	-45.14	Horizontal
5557.200	-57.53	-13	-44.53	Horizontal
7409.600	-55.74	-13	-42.74	Horizontal
3704.800	-56.71	-13	-43.71	Vertical
5557.200	-60.02	-13	-47.02	Vertical
7409.600	-56.71	-13	-43.71	Vertical

WCDMA BAND II-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3760.000	-53.59	-13	-40.59	Horizontal
5640.000	-61.23	-13	-48.23	Horizontal
7520.000	-55.12	-13	-42.12	Horizontal
3760.000	-57.82	-13	-44.82	Vertical
5640.000	-58.08	-13	-45.08	Vertical
7520.000	-58.41	-13	-45.41	Vertical

WCDMA BAND II-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3815.200	-61.40	-13	-48.40	Horizontal
5722.800	-60.27	-13	-47.27	Horizontal
7630.400	-55.81	-13	-42.81	Horizontal
3815.200	-60.73	-13	-47.73	Vertical
5722.800	-58.72	-13	-45.72	Vertical
7630.400	-53.75	-13	-40.75	Vertical

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WCDMA BAND IV-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3440.000	-49.75	-13	-36.75	Horizontal
5160.000	-50.33	-13	-37.33	Horizontal
6880.000	-48.93	-13	-35.93	Horizontal
3440.000	-49.07	-13	-36.07	Vertical
5160.000	-51.09	-13	-38.09	Vertical
6880.000	-47.66	-13	-34.66	Vertical

WCDMA BAND IV-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3465.200	-43.45	-13	-30.45	Horizontal
5197.800	-49.95	-13	-36.95	Horizontal
6930.400	-48.70	-13	-35.70	Horizontal
3465.200	-42.74	-13	-29.74	Vertical
5197.800	-50.95	-13	-37.95	Vertical
6930.400	-46.23	-13	-33.23	Vertical

WCDMA BAND IV-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3490.000	-46.58	-13	-33.58	Horizontal
5235.000	-50.69	-13	-37.69	Horizontal
6980.000	-43.43	-13	-30.43	Horizontal
3490.000	-54.48	-13	-41.48	Vertical
5235.000	-50.22	-13	-37.22	Vertical
6980.000	-44.66	-13	-31.66	Vertical

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WCDMA BAND V-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1652.800	-52.50	-13	-39.50	Horizontal
2479.200	-51.26	-13	-38.26	Horizontal
3305.600	-47.56	-13	-34.56	Horizontal
1652.800	-47.39	-13	-34.39	Vertical
2479.200	-49.41	-13	-36.41	Vertical
3305.600	-47.07	-13	-34.07	Vertical

WCDMA BAND V-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1672.800	-49.68	-13	-36.68	Horizontal
2509.200	-53.13	-13	-40.13	Horizontal
3345.600	-46.99	-13	-33.99	Horizontal
1672.800	-45.14	-13	-32.14	Vertical
2509.200	-51.43	-13	-38.43	Vertical
3345.600	-48.04	-13	-35.04	Vertical

WCDMA BAND V-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1692.800	-48.65	-13	-35.65	Horizontal
2539.200	-50.74	-13	-37.74	Horizontal
3385.600	-40.60	-13	-27.60	Horizontal
1692.800	-47.76	-13	-34.76	Vertical
2539.200	-49.67	-13	-36.67	Vertical
3385.600	-43.44	-13	-30.44	Vertical

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7 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2209001699AT

8 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for KSCR2209001699AT

- End of the Report -

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