1 Cover Page

RF Exposure Evaluation Report

Application No.:	KSEM2008000929CR
FCC ID:	2AH25NT311
Applicant:	Shanghai Sunmi Technology Co.,Ltd.
Address of Applicant:	Room 605,Block 7,KIC Plaza,No.388 Song Hu Road Yang Pu District,Shanghai,China
Manufacturer:	Shanghai Sunmi Technology Co.,Ltd.
Address of Manufacturer:	Room 605,Block 7,KIC Plaza,No.388 Song Hu Road Yang Pu District,Shanghai,China
Factory:	Kang Zhun Electronical Technology(Kunshan)Co.,Ltd.Wu Song Jiang Branch
Address of Factory:	No.299,Nansong Road,Yushan Town,Kunshan City,Jiangsu Province,China
Equipment Under Test (EUT):	
EUT Name:	Cloud POS Printer
Model No.:	NT311
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2020-08-03
Date of Test:	2020-08-14 to 2020-08-28
Date of Issue:	2020-08-31
Test Result:	**Pass***

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

Eric Lin
EMC Lab Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in writing.

No.10, Weiye Road, Innovation Park, Kunshan, Jiangsu, China 215300 t(86-512)57355888 f(86-512)57370818 www.sgsgroup.com.cn
中国・江苏・昆山市留学生创业园伟业路10号 邮编 215300 t(86-512)57355888 f(86-512)57370818 sgs.china@sgs.com

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2020-8-31	/

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

2 Contents

Page

3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 24V by Adapter Adapter Model:CYSE65-240250 INPUT:100-240V,50/60Hz 1.7A OUTPUT:24V,2.5A

3.2 Technical Specifications

2.4G WiFi

Antenna Gain:	1dBi
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

BT

Antenna Gain:	1dBi
Antenna Type:	PCB Antenna
Bluetooth Version:	BT4.2 Dual mode
Channel Spacing:	1MHz
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channels:	79
Operation Frequency:	2402MHz to 2480MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)

BLE

Cable:	USB cable 50cm
Antenna Gain:	1dBi
Antenna Type:	PCB Antenna
Bluetooth Version:	BT4.2 Dual mode
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz

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

No tests were sub-contracted.

3.4 Test Facility

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

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. 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. 2541.01)**

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

- **FCC –Designation Number: CN1172**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172. Test Firm Registration Number: 995260.

- **Industry Canada (IC) – IC Assigned Code:** 2324E

The 10m and 3m Semi-anechoic chamber of Compliance Certification Services (Kunshan) Inc. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 2324E-1 for 10m chamber, 2324E-2 for 3m chamber.

- **VCCI (Member No.: 1938)**

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-1600, C-1707, T-1499, G-10216 respectively.

4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits:

According to§1.1310, the limit for general population/uncontrolled exposures

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Note:Limit for 2.4GHz is 1.0 mW/cm^2

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSEM200800092901,KSEM200800092902, KSEM200800092903

2.4G WIFI

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	19.59	90.99
11B	2437	Ant1	19.58	90.78
11B	2462	Ant1	19.92	98.17
11G	2412	Ant1	22.97	198.15
11G	2437	Ant1	23.24	210.86
11G	2462	Ant1	**23.37**	**217.27**
11N20SISO	2412	Ant1	22.32	170.61
11N20SISO	2437	Ant1	22.46	176.20
11N20SISO	2462	Ant1	22.66	184.50

BT

Test Mode	Test Frequency (MHz)	Output Power (dBm)	Reading Power (mW)
GFSK	2402	9.85	9.66
	2441	9.84	9.64
	2480	**10.66**	**11.64**
Pi/4DQPSK	2402	9.08	8.09
	2441	8.71	7.43
	2480	7.76	5.97
8DPSK	2402	9.47	8.85
	2441	9.12	8.17
	2480	9.39	8.69

BLE

Test Mode	Test Frequency (MHz)	Output Power (dBm)	Reading Power (mW)
BLE	2402	8.43	6.97
	2440	8.41	6.93
	2480	**8.82**	**7.62**

5.2 MPE Calculation

For WiFi:

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 WIFI

The max. antenna gain is 1 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
217.27	1.259	20	0.05442	1	Pass

For BT

The max. antenna gain is 1 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
11.64	1.259	20	0.00292	1	Pass

For BLE

The max. antenna gain is 1 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
7.62	1.259	20	0.00191	1	Pass

The 2.4G WIFI and BT function can simultaneous transmitting.But the maximum rate of MPE is 0.054/1.0+0.003/1.0=0.057<=1.0. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

--End of the Report--