



TEST REPORT

No. I17D00243-SAR01

For

Client : Shanghai Sunmi Technology Co.,Ltd.

Production : POS System

Model Name : W1300

FCC ID: 2AH25W1300

Issued date: 2018-01-09

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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Revision Version

Report Number	Revision	Date	Memo
I17D00243-SAR01	00	2018-01-03	Initial creation of test report
I17D00243-SAR01	01	2018-01-09	Second creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
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FCC Registration NO.:	489729

1.2. Project Data

Project Leader:	Zhou Yan
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1.3. Signature



Yan Hang
(Prepared this test report)



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(Reviewed this test report)



Zheng Zhongbin
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address /Post: Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu
District, Shanghai, China
Telephone: 18721763396

2.2. Manufacturer Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address /Post: Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu
District, Shanghai, China
Telephone: 18721763396

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	POS System
Model name	W1300
WCDMA Frequency Band	N/A
LTE Frequency Band	N/A
WLAN Frequency Band	802.11 b/g/n, BT
Antenna Type	Internal Antenna
FCC ID:	2AH25W1300

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N01	N/A	B3.2	SUNMI_T1mini _GLOBAL_000 009_170913	2017-11-01

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
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*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

FCC CFR 47, Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

Section 1.1310 Radiofrequency radiation exposure limits

4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

Limits for Occupational / Controlled Exposure

Frequency Range [MHz]	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density (S) [mW/cm ²]	Averaging Times E ² , H ² or S [minutes]
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6

Limits for General Population / Uncontrolled Exposure

Frequency Range [MHz]	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density (S) [mW/cm ²]	Averaging Times 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)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.

5. Test Results

5.1. RF Power Output

Frequency range		Max power(dBm)	Antenna Gain (dBi)
2.4GHz	802.11b	17	3
	802.11g	15	3
	802.11 n20/n40	14	3
	802.11 n40	13	3

5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$\text{Given } S = \frac{P \times G}{4\pi d^2} \quad \text{Equation 1}$$

Where

P = Power in milliwatts

G = Numeric antenna gain

d = Distance in centimeter

S = Power density in milliwatts / square centimeter

5.3. Result of 2.4GHz 802.11b

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2412 – 2472 MHz; The maximum conducted power is 17 dBm . The maximum gain is 3 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm².

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

P =Power Input to antenna (50.1 milliwatts)

G =Antenna Gain (1.995 numeric)

R = distance to the center of radiation of antenna (in centimeter) = 20 cm

$$S = (50.1 * 1.995) / (4\pi * 20^2) = 0.02 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm². limit for uncontrolled exposure.

Note: $\pi=3.1416$

5.4. Result of 2.4GHz 802.11g

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2412 – 2472 MHz;
The maximum conducted power is 15 dBm . The maximum gain is 3 dBi. Therefore,
maximum limit for general public RF exposure: 1 mW/cm².

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

P =Power Input to antenna (31.6 milliwatts)

G =Antenna Gain (1.995 numeric)

R = distance to the center of radiation of antenna (in centimeter) = 20 cm

$$S = (31.6 * 1.995) / (4\pi * 20^2) = 0.013 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm². limit for uncontrolled exposure.

Note: $\pi=3.1416$

5.5. Result of 2.4GHz 802.11n20

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2412 – 2472 MHz;
The maximum conducted power is 14 dBm . The maximum gain is 3 dBi. Therefore,
maximum limit for general public RF exposure: 1 mW/cm².

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

P =Power Input to antenna (25.1 milliwatts)

G =Antenna Gain (1.995 numeric)

R = distance to the center of radiation of antenna (in centimeter) = 20 cm

$$S = (25.1 * 1.995) / (4\pi * 20^2) = 0.01 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm². limit for uncontrolled exposure.

Note: $\pi=3.1416$

5.6. Result of 2.4GHz 802.11n40

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2422 – 2462 MHz;
The maximum conducted power is 13 dBm . The maximum gain is 3 dBi. Therefore,
maximum limit for general public RF exposure: 1 mW/cm².

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

P =Power Input to antenna (19.95 milliwatts)

G =Antenna Gain (1.995 numeric)

R = distance to the center of radiation of antenna (in centimeter) = 20 cm

$$S = (19.95 * 1.995) / (4\pi * 20^2) = 0.008 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm². limit for uncontrolled exposure.

Note: $\pi=3.1416$

5.7. Result of 2.4GHz BT

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2400 – 2483.5 MHz;
The maximum conducted power is 11 dBm . The maximum gain is 3 dBi. Therefore,
maximum limit for general public RF exposure: 1 mW/cm².

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

P =Power Input to antenna (12.59 milliwatts)

G =Antenna Gain (1.995 numeric)

R = distance to the center of radiation of antenna (in centimeter) = 20 cm

$$S = (12.59 * 1.995) / (4\pi * 20^2) = 0.005 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm². limit for uncontrolled exposure.

Note: $\pi=3.1416$

So the product is under the MPE limits. All is pass.

*******END OF REPORT*******