

TEST REPORT

No. I17D00262-EMC01

For

Client: Shanghai Sunmi Technology Co.,Ltd.

Production: Wireless data POS System

Model Name: W5920

Hardware Version: 2.0

Software Version: 1.1.0

FCC ID: 2AH25V1SNFC

Issued date: 2018-01-12

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

Add: 7F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

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EMC Test Report

Revision Version

| Report Number | Revision | Date | Memo |
|-----------------|----------|------------|---------------------------------|
| I17D00262-EMC01 | 00 | 2018-01-12 | Initial 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: 7F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai,

P. R. China

Postal Code: 200001

Telephone: 86-21-63843300 Fax: 86-21-63843301

FCC registration No: 489729

1.2. Testing Environment

Normal Temperature: 15-35°C Relative Humidity: 30-60%RH

1.3. Project data

Project Leader: Zhou Yan
Testing Start Date: 11-12, 2017
Testing End Date: 31-12, 2017

1.4. Signature

Tong Daocheng

(Prepared this test report)

You Jinjun

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(Reviewed this test report)

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Zheng Zhongbin
Director of the laboratory
(Approved this test report)



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1.5. Client Information

1.6. Applicant Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.

Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu Address:

District, Shanghai, China

Telephone: 18721763396

Post: 200433

1.7. Manufacturer Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.

Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu

District, Shanghai, China

Telephone: 18721763396

Post: 200433

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2. Equipment under Test (EUT) and Ancillary Equipment (AE)

2.1. About EUT

| EUT Description | Wireless data POS System |
|-----------------------------------|---|
| Model name | W5920 |
| GSM Frequency Band | GSM900/GSM1800/GSM850/GSM1900 |
| UMTS Frequency Band | WCDMA Band I / Band II / Band V / Band VIII |
| Additional Communication Function | BT4.0,BLE;WIFI 802.11b,g,n;NFC;GPS |

3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version | Date of receipt |
|---------|-----------------|------------|------------|-----------------|
| N02 | 865150030317082 | 2.0 | 1.1.0 | 2017-11-23 |

^{*}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 | Model | SN | Remark |
|--------|-------------|--------------------|------------------|------------------|
| CB01 | Adapter | TPA-46050200UU | NA | NA |
| BA02 | Battery | SMBP001 | NA | NA |
| BB01 | Battery | SM-18650B4-1S2P | NA | NA |
| UA01 | USB Cable | NA | NA | NA |
| AE1 | Desktop PC | OptiPlex 790 DT | X8RP1 A01 APCC | NA |
| AE2 | Notebook PC | ThinkPad Edge E430 | 0B65911 | NA |
| AE3 | LAN Cable | NA | NA | NA |
| AE4 | VGA Cable | NA | NA | NA |
| AE5 | RS232 Cable | NA | NA | NA |
| AE6 | Keyboard | KB212-B | CN-0Y88XT-65890- | NA |
| | | | 12I-005Q-A00 | |
| AE7 | Mouse | MS111-P | CN-011D3V-71581- | NA |
| | | | 19J-1A64 | |
| AE8 | USB Cable | NA | NA | Used to test the |
| | | | | DATA LINK |
| | | | | mode |

^{*}AE ID: is used to identify the test sample in the lab internally.

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4. Reference Documents

4.1 Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference | Title | Version |
|--------------|---|-----------------|
| FCC Part 15, | Radio frequency devices | 10-1-10 Edition |
| Subpart B | • | |
| | Method of Measurement of Radio-Noise Emissions from Low- | |
| ANSI C63.4 | Voltage Electrical and Electronic Equipment in the Range of 9 | 2014 |
| | kHz to 40 GHz | |



5. Test Results

5.1 Summary of Test Results

| Items | Test List | Clause in FCC rules | Verdict |
|-------|--------------------|---------------------|---------|
| 1 | Radiated Emission | 15.109(a) | Pass |
| 2 | Conducted Emission | 15.107(a) | Pass |

5.2 Statements

The W5920, supporting GSM/WCDMA, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a variant product for testing. ECIT only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

Note: The project changed based on the CCISE170603505 FCC 15B original report, test content for the original report of the worst mode, embodied in the report data is the worst mode. Other information reference original report.

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6. Test Equipment Utilized

6.1 Radiated Emission Equipment list

| No. | Name | Туре | Series Number | Producer | Cal. Date | Cal. interval |
|-----|----------------------------------|----------------|------------------|-------------|------------|------------------|
| 1 | Universal Radio Communication | CMU200 | 123126 | R&S | 2017-05-11 | 1 Year |
| 2 | Test Receiver | ESU40 | 100307 | R&S | 2017-05-11 | 1 Year |
| 3 | Trilog Antenna | VULB9163 | VULB9163-515 | Schwarzbeck | 2017-02-25 | 3 Year |
| 4 | Double Ridged Guide | ETS-3117 | 00135885 | ETS | 2017-01-11 | 3 Year |
| 5 | EMI Test Software | EMC32 V9.15 | NA | R&S | NA | NA |

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6.1 AC Conducted Emission Equipment list

| No. | Name | Туре | Series Number | Producer | Cal. Date | Cal. interval |
|-----|----------------------|----------------|---------------|----------|------------|------------------|
| 1 | Universal Radio | CMU200 | 123123 | R&S | 2017-05-11 | 1 Year |
| 2 | Test Receiver | ESCI | 101235 | R&S | 2017-05-11 | 1 Year |
| 3 | 2-Line V- Network | ENV216 | 101380 | R&S | 2017-05-11 | 1 Year |
| 4 | EMI Test Software | EMC32 V9.15 | NA | R&S | NA | NA |

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7. System Configuration during Test

7.1 Test Mode

| Test Item | Function Type | |
|-----------------------|------------------------------------|--|
| AC Conducted Emission | Mode1: Data link mode with PC+BA02 | |
| | Mode2: Data link mode with PC+BB01 | |
| Radiated Emission | Mode1: Data link mode with PC+BA02 | |
| | Mode2: Data link mode with PC+BB01 | |

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Remark:

- 1.All test modes are performed, only the worst cases test data are recorded in this report.
- 2.Data Link with PC means data application transferred mode between EUT and PC.

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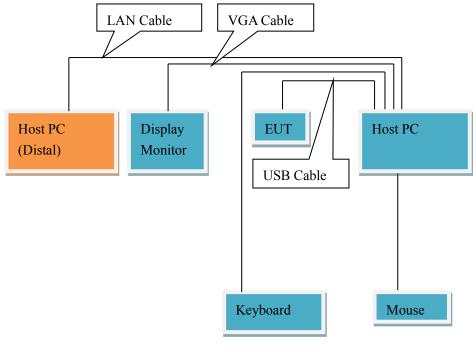


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7.2 Connection Diagram of Test System



<Figure 1>



8. Measurement Results

Only the worst test result was shown in this report.

8.1 Radiated Emission 30MHz-12.75GHz

Method of Measurement

For 30-1000MHz, the EUT was placed on the top of a rotating 0.8-m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement. Tested in accordance with the procedures of ANSI C63.4-2014, section 8.3.

For 1000-12750MHz, The maximal emission value was acquired by adjusting the antenna height, The table was rotated 360 degree to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.

Limits for Radiated Emission at a measuring distance of 3m

| Frequency Range (MHz) | Quasi-Peak (dBuV/m) |
|-----------------------|---------------------|
| 30-88 | 40 |
| 88-216 | 43.5 |
| 216-960 | 46 |
| Above 960 | 54 |

| Frequency Range (MHz) | Peak (dBuV/m) | Average (dBuV/m) |
|-----------------------|---------------|------------------|
| Above 1000 | 74 | 54 |

Test conditions

| Frequency Range (MHz) | RBW/VBW | Sweep Time (s) | | |
|-----------------------|---------------|----------------|--|--|
| 30-1000 | 120KHz/300KHz | Auto | | |
| 1000-12750 | 1MHz/3MHz | Auto | | |

Uncertainty Measurement

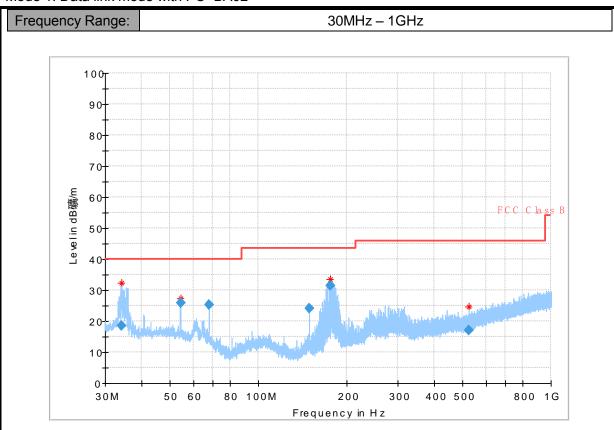
The measurement uncertainty(30MHz-1000MHz) is 5.48 dB (k=2).

The measurement uncertainty(1000MHz-6000MHz) is 5.20 dB (k=2).



Test Results

Mode 1: Data link mode with PC+BA02



| Frequency | QuasiPeak | Limit | Margin | Meas. | Bandwidth | Height | Pol | Azimut | Corr. |
|------------|-----------|-------|--------|--------|-----------|--------|-----|--------|-------|
| (MHz) | (dB礦/m) | (dB礦 | (dB) | Time | (kHz) | (cm) | | h | (dB) |
| | | /m) | | (ms) | | | | (deg) | |
| 34.030885 | 18.67 | 40.00 | 21.33 | 1000.0 | 120.000 | 100.0 | ٧ | 243.0 | -22.0 |
| 54.229835 | 25.94 | 40.00 | 14.06 | 1000.0 | 120.000 | 100.0 | ٧ | 285.0 | -20.9 |
| 67.809483 | 25.17 | 40.00 | 14.83 | 1000.0 | 120.000 | 100.0 | ٧ | 172.0 | -24.5 |
| 149.177173 | 24.21 | 43.50 | 19.29 | 1000.0 | 120.000 | 223.0 | Н | 71.0 | -28.0 |
| 175.997549 | 31.42 | 43.50 | 12.08 | 1000.0 | 120.000 | 125.0 | Н | 100.0 | -26.0 |
| 524.147221 | 16.92 | 46.00 | 29.08 | 1000.0 | 120.000 | 181.0 | ٧ | -12.0 | -16.5 |

Note:

1.Emission level(QP)=Raw value by receiver + Corr(Antenna factor + cable loss - preamplifier gain)

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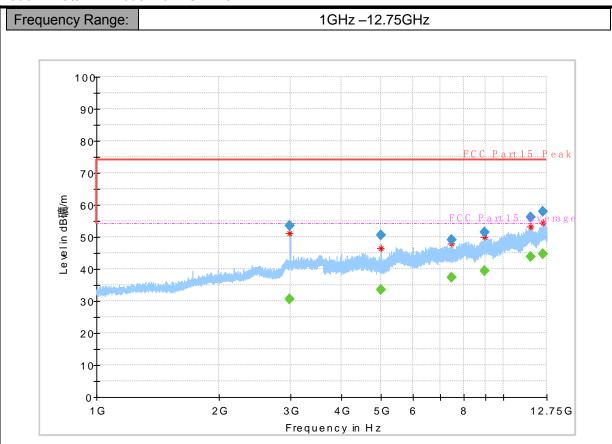
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- 2. The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value emission level.



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Mode 1: Data link mode with PC+BA02



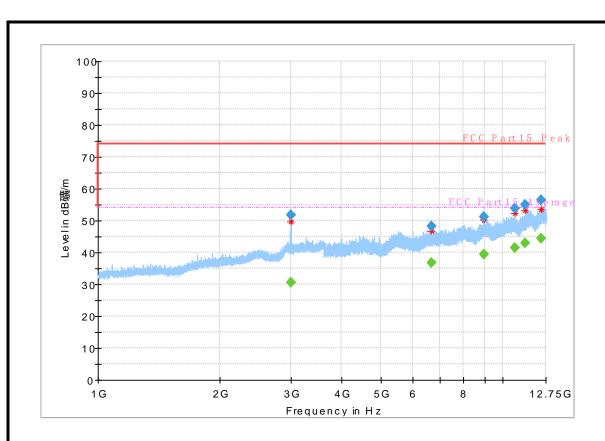
Final Result

| Frequency | MaxPeak | Average | Limit | Margin | Meas. | Bandwidth | Height | Pol | Azimuth |
|--------------|----------|----------|----------|--------|-------|-----------|--------|-----|---------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dB) | Time | (kHz) | (cm) | | (deg) |
| 2986.632000 | 53.65 | | 74.00 | 20.35 | 50.0 | 1000.000 | 100.0 | Н | 278.0 |
| 2986.632000 | | 30.51 | 54.00 | 23.49 | 50.0 | 1000.000 | 100.0 | Н | 278.0 |
| 4990.515466 | 50.55 | | 74.00 | 23.45 | 50.0 | 1000.000 | 200.0 | Н | 202.0 |
| 4990.515466 | | 33.65 | 54.00 | 20.35 | 50.0 | 1000.000 | 200.0 | Н | 202.0 |
| 7428.607400 | 49.17 | | 74.00 | 24.83 | 50.0 | 1000.000 | 200.0 | Н | 22.0 |
| 7428.607400 | | 37.22 | 54.00 | 16.78 | 50.0 | 1000.000 | 200.0 | Н | 22.0 |
| 8992.142600 | | 39.46 | 54.00 | 14.54 | 50.0 | 1000.000 | 100.0 | Н | 139.0 |
| 8992.142600 | 51.33 | | 74.00 | 22.67 | 50.0 | 1000.000 | 100.0 | Н | 139.0 |
| 11637.566467 | 56.05 | | 74.00 | 17.95 | 50.0 | 1000.000 | 100.0 | Н | 229.0 |
| 11637.566467 | | 43.79 | 54.00 | 10.21 | 50.0 | 1000.000 | 100.0 | Н | 229.0 |
| 12499.606200 | | 44.83 | 54.00 | 9.17 | 50.0 | 1000.000 | 100.0 | Н | 294.0 |
| 12499.606200 | 57.82 | | 74.00 | 16.18 | 50.0 | 1000.000 | 100.0 | Н | 294.0 |

Note:

- 1.Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss preamplifier gain)
- 2. The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value emission level.





Final Result

| Frequency | MaxPeak | Average | Limit | Margin | Meas. | Bandwidth | Height | Pol | Azimuth |
|--------------|----------|----------|----------|--------|-------|-----------|--------|-----|---------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dB) | Time | (kHz) | (cm) | | (deg) |
| 2992.497733 | | 30.54 | 54.00 | 23.46 | 50.0 | 1000.000 | 200.0 | ٧ | 349.0 |
| 2992.497733 | 51.79 | | 74.00 | 22.21 | 50.0 | 1000.000 | 200.0 | ٧ | 349.0 |
| 6649.141934 | 48.25 | | 74.00 | 25.75 | 50.0 | 1000.000 | 200.0 | ٧ | -18.0 |
| 6649.141934 | | 36.71 | 54.00 | 17.29 | 50.0 | 1000.000 | 200.0 | ٧ | -18.0 |
| 8990.491867 | 51.13 | | 74.00 | 22.87 | 50.0 | 1000.000 | 200.0 | ٧ | 335.0 |
| 8990.491867 | | 39.43 | 54.00 | 14.57 | 50.0 | 1000.000 | 200.0 | ٧ | 335.0 |
| 10670.613733 | | 41.55 | 54.00 | 12.45 | 50.0 | 1000.000 | 100.0 | ٧ | 20.0 |
| 10670.613733 | 53.96 | | 74.00 | 20.04 | 50.0 | 1000.000 | 100.0 | ٧ | 20.0 |
| 11334.847134 | 54.90 | | 74.00 | 19.10 | 50.0 | 1000.000 | 100.0 | ٧ | 88.0 |
| 11334.847134 | | 42.87 | 54.00 | 11.13 | 50.0 | 1000.000 | 100.0 | ٧ | 88.0 |
| 12423.689733 | 56.40 | | 74.00 | 17.60 | 50.0 | 1000.000 | 100.0 | ٧ | 273.0 |
| 12423.689733 | | 44.52 | 54.00 | 9.48 | 50.0 | 1000.000 | 100.0 | V | 273.0 |

Note:

1.Emission level(peak or average)=Raw value by receiver + Corr(Antenna factor+ cable loss - preamplifier gain)

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- 2. The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value emission level.



8.2 Conducted Emission

Method of Measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies with the band 150 kHz to 30MHz shall not exceed the limits. Both lines of the power mains connected to the EUT were checked for maximum conducted interference. Tested in accordance with the procedures of ANSI C63.4-2014, section 7.3

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Limit of Conducted Emission

| Frequency Range (MHz) | Conducted Limit (dBuV) | | | | | | |
|--|------------------------|-----------|--|--|--|--|--|
| | Quasi-peak | Average | | | | | |
| 0.15-0.5 | 66 to 56* | 56 to 46* | | | | | |
| 0.5-5 | 56 | 46 | | | | | |
| 5-30 | 60 | 50 | | | | | |
| *Decreases with the logarithm of the frequency | | | | | | | |

Test Condition in Charging Mode

| Voltage (V) | Frequency (Hz) | RBW | Sweep Time (s) | | |
|-------------|----------------|-------|----------------|--|--|
| 120 | 60 | 9 kHz | Auto | | |

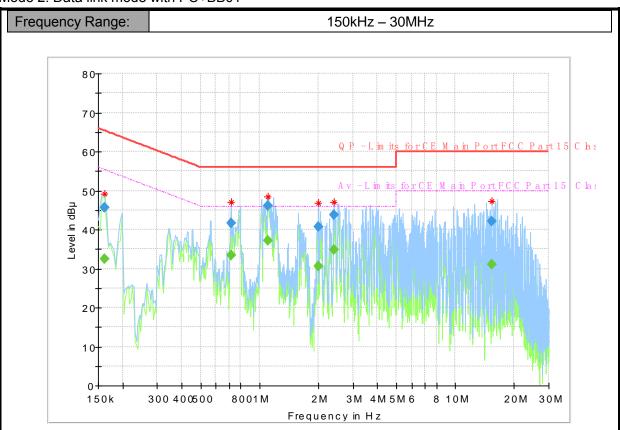
Uncertainty Measurement

The measurement uncertainty is 3.68dB (k=2).

Test Results



Mode 2: Data link mode with PC+BB01



| Frequency | QuasiPeak | Average | Limit | Margin | Meas. | Bandwidth | Line | Filter | Corr. |
|-----------|-----------|--------------|--------------|--------|--------|-----------|------|--------|-------|
| (MHz) | (dB µ V) | (dB μ V) | (dB μ V) | (dB) | Time | (kHz) | | | (dB) |
| 0.161194 | 45.74 | | 65.40 | 19.66 | 1000.0 | 9.000 | N | ON | 9.6 |
| 0.161194 | | 32.43 | 55.40 | 22.97 | 1000.0 | 9.000 | N | ON | 9.6 |
| 0.713419 | 41.75 | | 56.00 | 14.25 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 0.713419 | | 33.31 | 46.00 | 12.69 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 1.108931 | 46.08 | | 56.00 | 9.92 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 1.108931 | | 37.09 | 46.00 | 8.91 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 1.996969 | 40.64 | | 56.00 | 15.36 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 1.996969 | | 30.68 | 46.00 | 15.32 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 2.403675 | 43.66 | | 56.00 | 12.34 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 2.403675 | | 34.88 | 46.00 | 11.12 | 1000.0 | 9.000 | L1 | ON | 9.7 |
| 15.422006 | 42.01 | | 60.00 | 17.99 | 1000.0 | 9.000 | L1 | ON | 9.8 |
| 15.422006 | | 31.09 | 50.00 | 18.91 | 1000.0 | 9.000 | L1 | ON | 9.8 |

Note:

- 1.Emission level(quasi-peak or Average peak)=Raw value by receiver + Corr(Insertion loss+cable loss)
- 2. The raw value is used to calculate by software which is not shown in the sheet.
- 3.Margin=limit value emission level.

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