



TESTING LABORATORY  
CERTIFICATE#4323.01



## FCC PART 15B

## TEST REPORT

For

### Shanghai Sunmi Technology Co.,Ltd.

Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai 200433 China

**FCC ID: 2AH25BL205**

|  |   |
|--|---|
| <b>Report Type:</b><br>Original Report         | <b>Product Type:</b><br>Electronic Shelf Label  |
| <b>Test Engineer:</b><br>Cody Lu               |    |
| <b>Report Number:</b><br>RKSA200622001-00A     |   |
| <b>Report Date:</b><br>2020-07-07              |   |
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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

|                             |                                    |
|-----------------------------|------------------------------------|
| Applicant                   | Shanghai Sunmi Technology Co.,Ltd. |
| Test Model                  | BL205                              |
| Product                     | Electronic Shelf Label             |
| Rate Voltage                | DC 3V from battery                 |
| Highest Operation Frequency | 2480MHz                            |

*\*All measurement and test data in this report was gathered from production sample serial number: 20200622001. (Assigned by BACL, Kunshan). The EUT was received on 2020-06-22)*

### Objective

This report is prepared on behalf of *Shanghai Sunmi Technology Co.,Ltd.* in accordance with Part 2-Subpart J, and Part 15-Subparts A and B of the Federal Communication Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15, Class B device.

### Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS Submittal with FCC ID: 2AH25BL205.  
FCC Part 15.247 DTS grant with FCC ID: 2AH25BL010.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01 and CAB identifier CN0004 under the ISED requirement. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

## SYSTEM TEST CONFIGURATION

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### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

*Test mode: Normal working*

### EUT Exercise Software

No software was used to test.

### Special Accessories

No special accessory was used.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

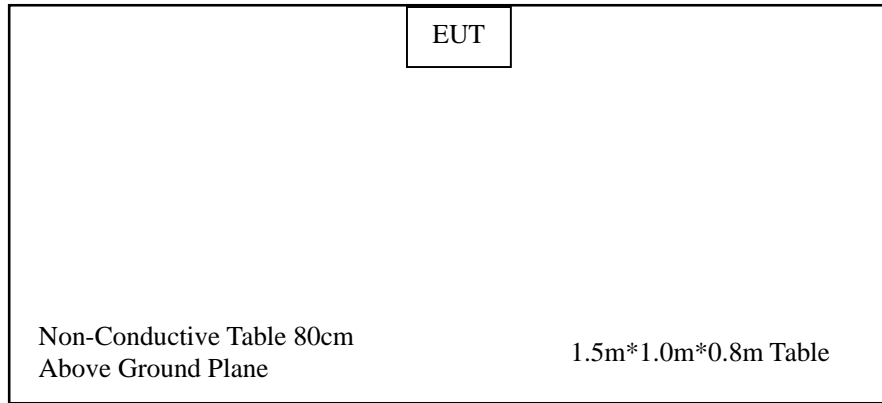
| Manufacturer | Description | Model | Serial Number |
|--------------|-------------|-------|---------------|
| /            | /           | /     | /             |

### External I/O Cable

| Cable Description | Length (m) | From/Port | To |
|-------------------|------------|-----------|----|
| /                 | /          | /         | /  |

## Block Diagram of Radiated Test Setup

*Test mode: normal working*



**SUMMARY OF TEST RESULTS**

| FCC Rules | Description of Test | Results        |
|-----------|---------------------|----------------|
| §15.107   | Conducted Emissions | Not Applicable |
| §15.109   | Radiated Emissions  | Compliant      |

Note: The EUT is powered by battery.

## FCC §15.109 - RADIATED EMISSIONS

### Applicable Standard

FCC §15.109

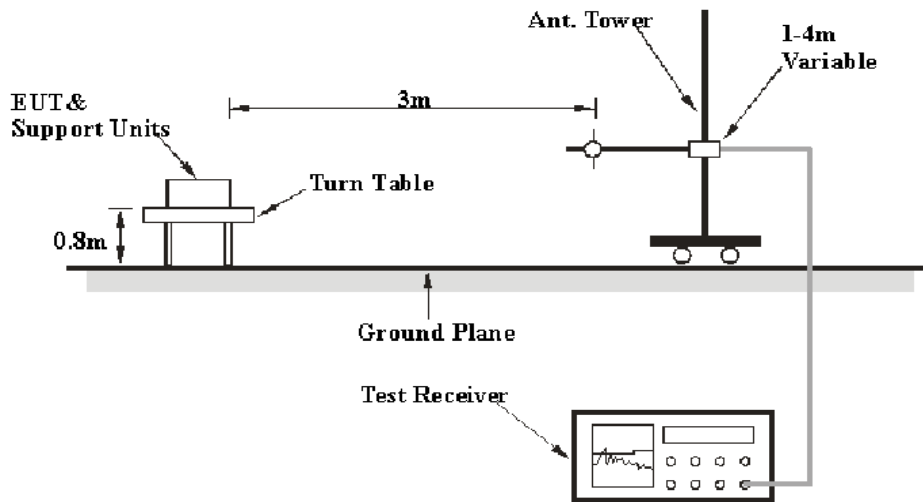
### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average) and system repeatability.

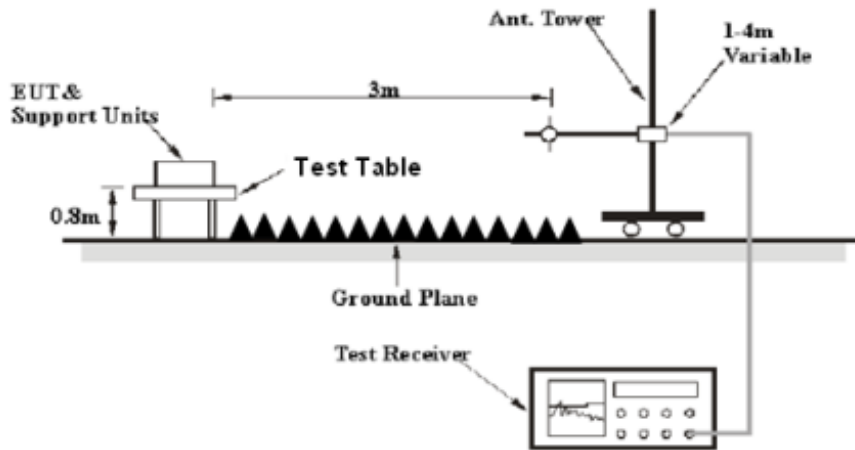
| Item              | Measurement Uncertainty | $U_{cispr}$ |
|-------------------|-------------------------|-------------|
| Radiated Emission | 30MHz~1GHz              | 6.11dB      |
|                   | 1GHz~6GHz               | 4.45dB      |
|                   | 6 GHz ~18 GHz           | 5.23dB      |

### EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

**EMI Test Receiver Setup**

The system was investigated from 30 MHz to 12.5 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

| Frequency Range  | RBW     | Video B/W | IF B/W | Detector |
|------------------|---------|-----------|--------|----------|
| 30MHz – 1000 MHz | 120 kHz | 300 kHz   | 120kHz | QP       |
| Above 1 GHz      | 1MHz    | 3 MHz     | /      | Peak     |
|                  | 1MHz    | 3 MHz     | 1MHz   | AVG      |

**Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.



**Test Equipment List and Details**

| Manufacturer      | Description        | Model      | Serial Number | Calibration Date | Calibration Due Date |
|-------------------|--------------------|------------|---------------|------------------|----------------------|
| Sonoma Instrument | Amplifier          | 310N       | 185700        | 2019-08-14       | 2020-08-13           |
| Rohde & Schwarz   | EMI Test Receiver  | ESCI       | 100195        | 2019-12-14       | 2020-12-13           |
| Sunol Sciences    | Broadband Antenna  | JB3        | A090413-1     | 2017-12-26       | 2020-12-25           |
| Champrotek        | Chamber 1#         | 3m-SAC 966 | NA            | 2019-05-08       | 2022-05-07           |
| Albatross         | Chamber 2#         | 3m-SAC 966 | NA            | 2019-05-08       | 2022-05-07           |
| Rohde & Schwarz   | Auto test Software | EMC32      | 100361        | -                | -                    |
| ETS               | Horn Antenna       | 3115       | 6229          | 2020-01-10       | 2023-01-09           |
| Rohde & Schwarz   | EMI Receiver       | ESU40      | 100207        | 2020-04-01       | 2021-03-31           |
| A.H.Systems,inc   | Amplifier          | PAM-0118P  | 512           | 2020-02-20       | 2021-02-19           |
| MICRO-COAX        | Coaxial Cable      | Cable-8    | 008           | 2019-08-15       | 2020-08-14           |
| MICRO-COAX        | Coaxial Cable      | Cable-9    | 009           | 2019-08-15       | 2020-08-14           |
| MICRO-COAX        | Coaxial Cable      | Cable-10   | 010           | 2019-08-15       | 2020-08-14           |
| MICRO-COAX        | Coaxial Cable      | Cable-4    | 004           | 2019-12-12       | 2020-12-11           |
| MICRO-COAX        | Coaxial Cable      | Cable-5    | 005           | 2019-12-12       | 2020-12-11           |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

**Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

**Test Data**

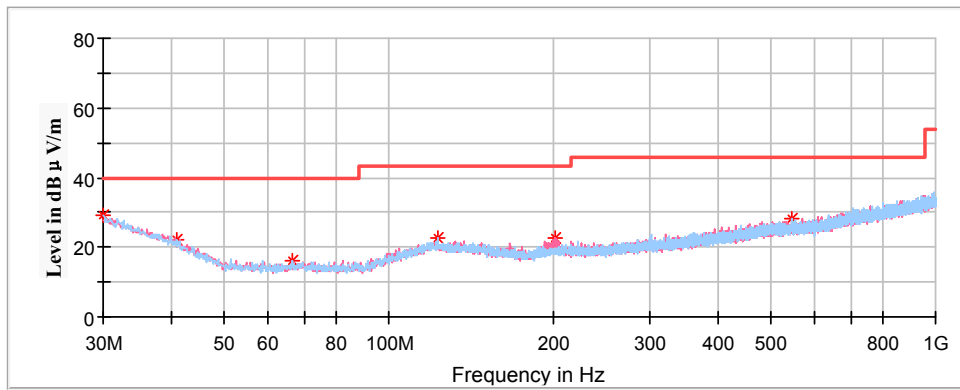
**Environmental Conditions**

|                           |           |
|---------------------------|-----------|
| <b>Temperature:</b>       | 24.7 °C   |
| <b>Relative Humidity:</b> | 51 %      |
| <b>ATM Pressure:</b>      | 101.7 kPa |

The testing was performed by Cody Lu on 2020-06-29.

Test mode: normal working

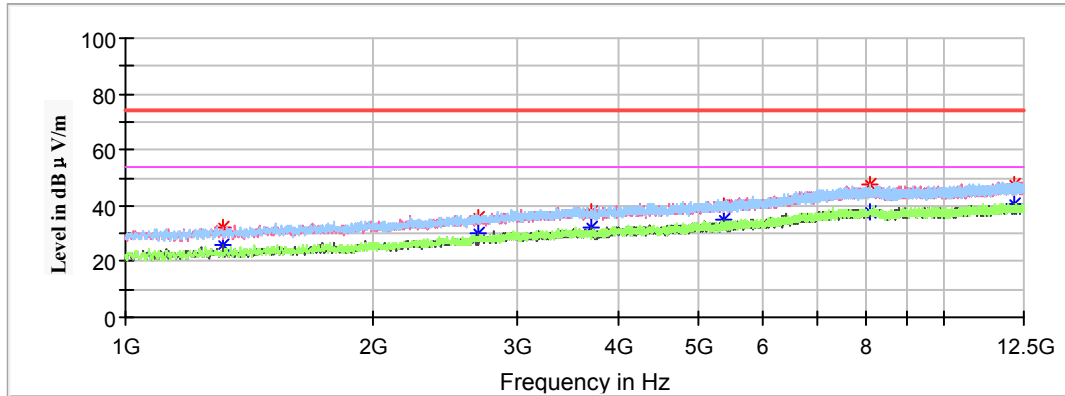
**1) 30MHz ~ 1GHz:**



| Frequency (MHz) | Max-Peak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|-------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 30.000000       | 29.14             | 40.00          | 10.86       | 100.0       | H   | 223.0         | -4.4         |
| 40.791250       | 22.24             | 40.00          | 17.76       | 200.0       | H   | 331.0         | -11.7        |
| 66.496250       | 16.25             | 40.00          | 23.75       | 100.0       | V   | 179.0         | -18.0        |
| 122.877500      | 22.70             | 43.50          | 20.80       | 100.0       | H   | 8.0           | -11.7        |
| 201.568750      | 22.82             | 43.50          | 20.68       | 200.0       | V   | 346.0         | -12.8        |
| 547.373750      | 28.13             | 46.00          | 17.87       | 100.0       | H   | 358.0         | -5.8         |

**Above 1 GHz:**

Full Spectrum



| Frequency (MHz) | Max Peak (dBμV/m) | Average (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|-------------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1312.80         | ---               | 25.76            | 54.00          | 28.24       | 100.0       | V   | 281.0         | -17.4        |
| 1312.80         | 32.01             | ---              | 74.00          | 41.99       | 100.0       | V   | 281.0         | -17.4        |
| 2689.35         | ---               | 30.04            | 54.00          | 23.96       | 200.0       | V   | 162.0         | -11.5        |
| 2689.35         | 35.54             | ---              | 74.00          | 38.46       | 200.0       | V   | 162.0         | -11.5        |
| 3704.80         | ---               | 32.46            | 54.00          | 21.54       | 200.0       | V   | 188.0         | -8.1         |
| 3704.80         | 37.59             | ---              | 74.00          | 36.41       | 200.0       | V   | 188.0         | -8.1         |
| 5366.55         | ---               | 35.00            | 54.00          | 19.00       | 100.0       | V   | 328.0         | -4.2         |
| 5366.55         | 39.70             | ---              | 74.00          | 34.30       | 100.0       | V   | 328.0         | -4.2         |
| 8117.35         | ---               | 37.47            | 54.00          | 16.53       | 100.0       | H   | 291.0         | 1.7          |
| 8117.35         | 47.30             | ---              | 74.00          | 26.70       | 100.0       | H   | 291.0         | 1.7          |
| 12174.55        | ---               | 40.37            | 54.00          | 13.63       | 100.0       | V   | 76.0          | 3.5          |
| 12174.55        | 47.75             | ---              | 74.00          | 26.25       | 100.0       | V   | 76.0          | 3.5          |

### **Declarations**

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '\*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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