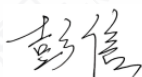


Industrial Internet Innovation Center (Shanghai) Co.,Ltd.**EMC TEST REPORT**

PRODUCT	ELECTRONIC SHELF LABEL
BRAND	SUNMI
MODEL	BL420
FCC ID	2AH25BL420
APPLICANT	Shanghai Sunmi Technology Co.,Ltd.
ISSUE DATE	September 16, 2022
STANDARD(S)	FCC Part 15, Subpart B, ANSI C63.4-2014

Prepared by: *Peng Xin*Reviewed by: *Qin Yabin*Approved by: *Liu Long***CAUTION:**

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1 Summary of Test Report

1.1 Test Standard (s)

No.	Test Standard(s)	Title	Version
1	FCC Part 15, Subpart B	Radio frequency devices	2021/10/1
2	ANSI C63.4	Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014
NOTE: According to customer requirements, test and report using the latest version of the standard.			

1.2 Summary of Test Results

No.	Item(s)	Standard(s)	Verdicts for Single Item	Detailed Results
1	Radiated Emission	15.109(a)	Pass	See section 6.1
NOTE: The BL420, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a new product for testing. Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3. Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1 of this test report.				

2 General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4, No. 766, Jingang Road, Pudong, Shanghai, China
Telephone	021-68866880
FCC Registration No.	958356
FCC Designation No.	CN1177

2.2 Laboratory Environmental Requirements

Temperature	15°C~35°C
Relative Humidity	25%RH~75%RH
Atmospheric Pressure	86kPa~106kPa
Supply Voltage	3V Battery Power Supply

2.3 Project Information

Project Manager	Gao Hongning
Test Date	August 26, 2022 to August 29, 2022

3 General Information of The Customer

3.1 Applicant

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	18826519551

3.2 Manufacturer

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	18826519551

3.3 Factory

Company	N/A
Address	N/A

4 General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	ELECTRONIC SHELF LABEL
Model	BL420
Date of Receipt	August 26, 2022
EUT ID*	S03aa
SN/IMEI	B111D28900077
Supported Radio Technology and Bands	NFC BLE
Hardware Version	N/A
Software Version	N/A
NOTE1: EUT ID is the internal identification code of the laboratory.	
NOTE2: Photographs of EUT are shown in ANNEX A of this test report.	

4.2 Description for Auxiliary Equipment (AE)

AE ID*	Description	Model	SN/Remark
AE1	Smart Phone	Redmi K40	N/A
AE2	Mobile APP	Sunmi Price Tag Assistant	N/A
NOTE: *AE ID is the internal identification code of the laboratory.			

5 Test Configuration Information

5.1 Laboratory Environmental Conditions

5.1.1 Permanent Facilities

Semi-anechoic chamber SAC3-1 (9 m*8m*6.2m) & SAC3-2 (9.8m*6.7m*6.7m)	
Shielding effectiveness	0.014MHz ~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (SVSWR)	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room	
Shielding effectiveness	0.014MHz~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω

5.2 Decision of final test mode

The EUT was tested in conjunction with the accessories in Section 4.2. We tested all of the following test modes and selected the worst mode from the test results and recorded them in the report.

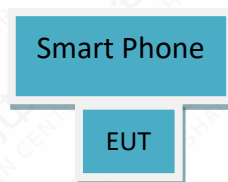
The test configuration modes are as the following:

Test Item	Test setup and operating modes
Radiated emission	30MHz-18GHz frequency range: Mode 1: TX mode
Note: N/A	

5.3 EUT System Operation

1. Connect the EUT with AE.
2. Setup the EUT according to the standard.
3. Start testing and monitoring the function.
4. TX mode: The mobile phone controls the EUT through Sunmi Price Tag Assistant APP to be in the state of NFC transmit.

5.4 EUT Connection Diagram of Test System



<Figure 5.4-1> Mode 1

5.5 Test Equipment Utilized

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	Test Receiver	ESR7	102399	R&S	2022-06-25	1 year
2	Test Receiver	FSW43	101943	R&S	2021-09-10	1 year
3	Trilog Antenna	VULB9162	00426	Schwarzbeck	2021-07-24	2 years
4	Double Ridged Guide Antenna	ETS-3117	00135885	ETS	2020-11-14	2 years
5	EMI Test Software	EMC32 V10.35.02	N/A	R&S	N/A	N/A

5.6 Measurement Uncertainty

Item (s)	Uncertainty
Radiated Emission 30MHz-1000MHz	4.94 dB
Radiated Emission 1000MHz-18000MHz	5.02dB
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.	

6 Test Results

6.1 Radiated Emission

6.1.1 Method of Measurement

- a. For 30MHz -1000MHz, the EUT was placed on the top of a rotating 0.8m 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.
- b. For 1000MHz -18000MHz, the EUT was placed on the top of a 0.8m table above the ground at a 3m fully anechoic chamber. 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

6.1.2 EUT Connection Diagram of Test System

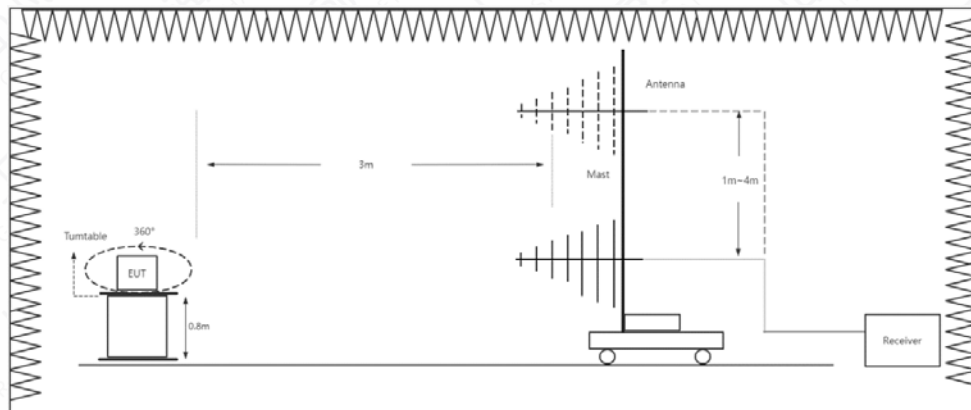


Figure 6.1.2-1 RE 30MHz-1GHz Connection Diagram

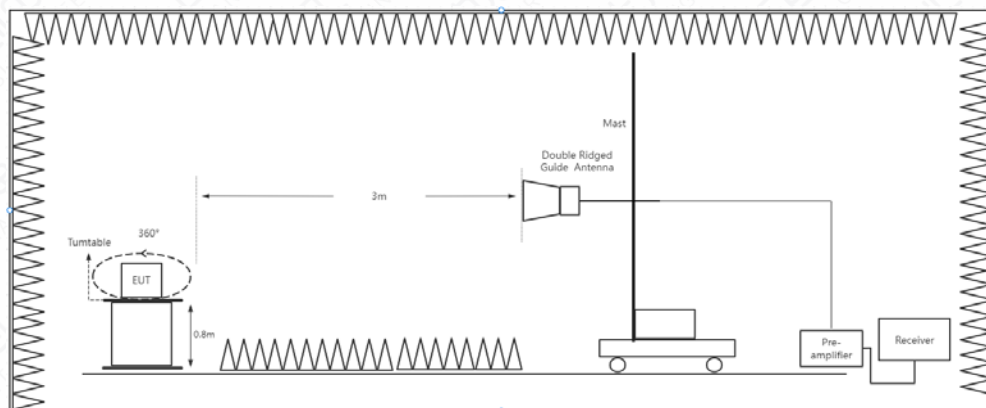


Figure 6.1.2-2 RE Above 1GHz Connection Diagram

6.1.3 Test Condition

Frequency Range (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120kHz/300kHz	AUTO
1000-18000	1MHz/3MHz	AUTO

6.1.4 Limit/Criterion

Frequency Range (MHz)	Quasi-Peak (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
30-88	40	N/A	N/A
88-216	43.5	N/A	N/A
216-960	46	N/A	N/A
Above 960	54	N/A	N/A
Above 1000	N/A	74	54

6.1.5 Test environmental conditions

Temperature	23.4℃
Relative Humidity	56.3%RH
Atmospheric Pressure	100.3kPa

6.1.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 1: TX mode	30-1000	See Annex A.1-1	Pass
Mode 1: TX mode	1000-18000	See Annex A.1-2 &A.1-3	Pass
NOTE: Abbreviations used in this clause: Pass—P; Fail—F; Not applicable—N/A			

Annex A: Measurement Data

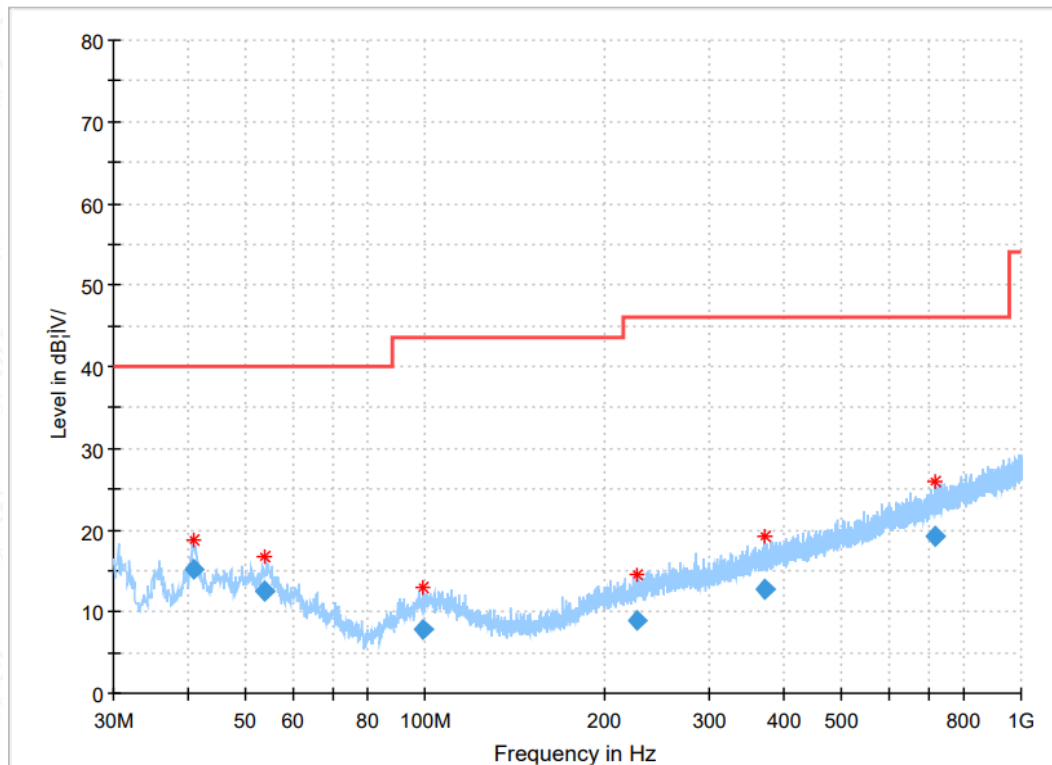


Figure A.1-1 Mode 1 (30M-1GHz)

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.996520	15.21	40.00	24.79	100.0	V	85.0	-12.8
53.873680	12.58	40.00	27.42	100.0	V	0.0	-12.1
99.545080	7.78	43.50	35.72	100.0	V	304.0	-13.2
227.184960	8.86	46.00	37.14	200.0	V	0.0	-11.8
372.957360	12.75	46.00	33.25	100.0	H	0.0	-7.9
715.560800	19.17	46.00	26.83	100.0	H	11.0	-1.5

Note: Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data diagram.

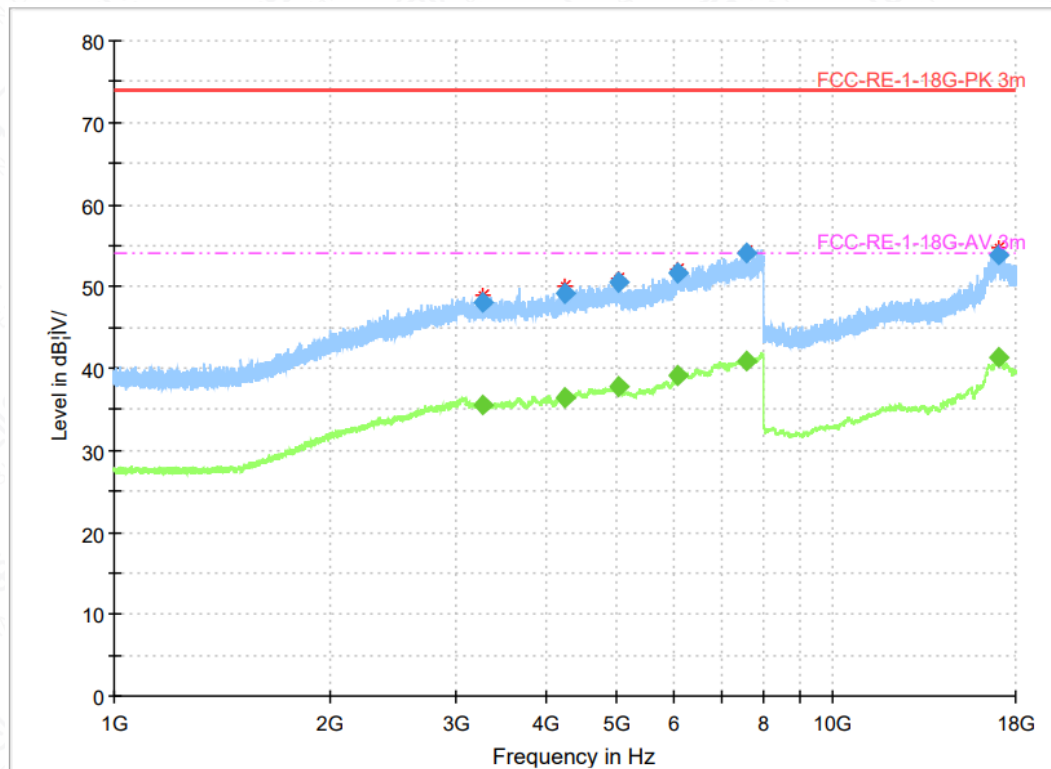


Figure A.1-2 Mode 1 (1GHz-18GHz)-H

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3256.5037	48.02	---	74.00	25.98	500.0	1000.0	100.0	H	126.0	12.3
3256.5037	---	35.45	54.00	18.55	500.0	1000.0	100.0	H	126.0	12.3
4230.1400	---	36.42	54.00	17.58	500.0	1000.0	115.0	H	358.0	13.6
4230.1400	49.09	---	74.00	24.91	500.0	1000.0	115.0	H	358.0	13.6
5042.3800	50.57	---	74.00	23.43	500.0	1000.0	188.0	H	357.0	16.0
5042.3800	---	37.83	54.00	16.17	500.0	1000.0	188.0	H	357.0	16.0
6089.0587	51.56	---	74.00	22.44	500.0	1000.0	115.0	H	190.0	18.1
6089.0587	---	39.15	54.00	14.85	500.0	1000.0	115.0	H	190.0	18.1
7573.8687	---	40.92	54.00	13.08	500.0	1000.0	210.0	H	2.0	20.8
7573.8687	54.08	---	74.00	19.92	500.0	1000.0	210.0	H	2.0	20.8
17011.593	53.80	---	74.00	20.20	500.0	1000.0	100.0	H	107.0	22.6
17011.593	---	41.25	54.00	12.75	500.0	1000.0	100.0	H	107.0	22.6

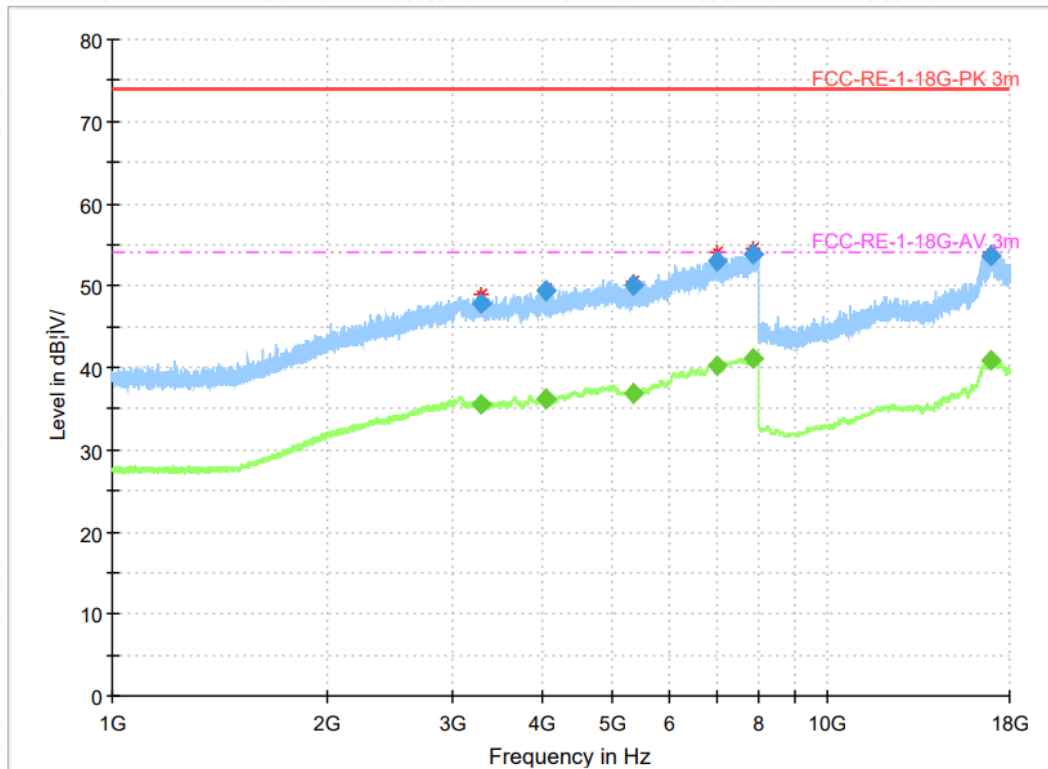


Figure A.1-3 Mode 1 (1GHz-18GHz)-V

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3290.3700	47.92	---	74.00	26.08	500.0	1000.0	115.0	V	96.0	12.1
3290.3700	---	35.61	54.00	18.39	500.0	1000.0	115.0	V	96.0	12.1
4033.6087	49.38	---	74.00	24.62	500.0	1000.0	215.0	V	69.0	13.3
4033.6087	---	36.28	54.00	17.72	500.0	1000.0	215.0	V	69.0	13.3
5368.0112	50.01	---	74.00	23.99	500.0	1000.0	100.0	V	1.0	16.5
5368.0112	---	36.85	54.00	17.15	500.0	1000.0	100.0	V	1.0	16.5
7010.8387	53.07	---	74.00	20.93	500.0	1000.0	215.0	V	267.0	19.7
7010.8387	---	40.22	54.00	13.78	500.0	1000.0	215.0	V	267.0	19.7
7874.4750	53.84	---	74.00	20.16	500.0	1000.0	115.0	V	1.0	21.0
7874.4750	---	41.11	54.00	12.89	500.0	1000.0	115.0	V	1.0	21.0
16944.488	53.60	---	74.00	20.40	500.0	1000.0	115.0	V	244.0	22.5
16944.488	---	40.97	54.00	13.03	500.0	1000.0	115.0	V	244.0	22.5

Annex B: Revised History

Version	Revised Content
V00	Initial

Annex C: Accreditation Certificate





Accredited Laboratory

A2LA has accredited

**INDUSTRIAL INTERNET INNOVATION CENTER
(SHANGHAI) CO., LTD.**

Shanghai, People's Republic of China

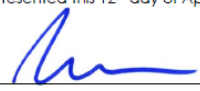
for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 12th day of April 2021.



Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2023

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.