

TEST REPORT

Applicant: GUANGZHOU LIUHUAN INFORMATION TECHNOLOGY CO., LTD.
ROOM 1201&1301 OF BUILDING 1, NO.6. YUNPU
Address: FOUR ROAD, HUANGPU DISTRICT,
GUANGZHOU CITY, GUANGDONG PROVINCE,
CHINA
Equipment Type: Car Audio Navigation
Model Name: M903AT-13T1(WZA16) (refer to section 2.3)
Brand Name: MISSON
FCC ID: 2A7U2-M903AT-13T
Test Standard: 47 CFR Part 15 Subpart B
ANSI C63.4-2014
Sample Arrival Date: Sep. 25, 2025
Test Date: Dec. 05, 2025
Date of Issue: Dec. 24, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Zhang Guoxi**Checked by:** Zong Liyao**Approved by:** Tolan Tu
(Testing Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Dec. 24, 2025</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☒ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ Building 2, Intelligent Connected Vehicle Industrial Park, No. 55, Xiangshan Road, Luotian Community, Yanluo Sub-district, Bao'an District, Shenzhen
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The certification body is American Association for Laboratory Accreditation (A2LA).

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	GUANGZHOU LIUHUAN INFORMATION TECHNOLOGY CO., LTD.
Address	ROOM 1201&1301 OF BUILDING 1, NO.6. YUNPU FOUR ROAD, HUANGPU DISTRICT, GUANGZHOU CITY, GUANGDONG PROVINCE, CHINA

2.2 Manufacturer Information

Manufacturer	GUANGZHOU LIUHUAN INFORMATION TECHNOLOGY CO., LTD.
Address	ROOM 1201&1301 OF BUILDING 1, NO.6. YUNPU FOUR ROAD, HUANGPU DISTRICT, GUANGZHOU CITY, GUANGDONG PROVINCE, CHINA

2.3 General Description for Equipment under Test (EUT)

EUT Name	Car Audio Navigation
Model Name Under Test	M903AT-13T1(WZA16)
Series Model Name	M903AT-13TX(WZA16),X=1~9/M903AT-11T2(WZA38)/M903AT-10T2(WZA83)
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in Appearance and display screen size specifications. (this information provided by the applicant)
Hardware Version	V1.0.5
Software Version	V1.0.0.5.2
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR) WIFI 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac FM, AM receiver
Classification of equipment	Class B
The highest internal frequency of EUT	5850 MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B	Unintentional Radiators
2	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

3.2 Verdict

No.	Description	FCC Rule	Test Verdict	Remark
1	Radiated Emission	15.109	Pass	--
2	Conducted Emission, AC Ports	15.107	N/A	--

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Value
Radiated emissions (30 MHz-1 GHz)-966#2	4.4 dB
Radiated emissions (1 GHz-18 GHz)-966#2	5.0 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Enclosure List

Description	Manufacturer	Model	Serial No.	Length	Description	Use
Wireless Communications Test Set	R&S	CMW500	102318	N/A	Cal. Due 2026.04.28	☒
USB disk	Sandisk	CZ73-32G	N/A	N/A	32G	☒
Vehicle battery	CAMEL	6-QWLZ-45(370)	N/A	N/A	N/A	☒

4.2 Test Configurations

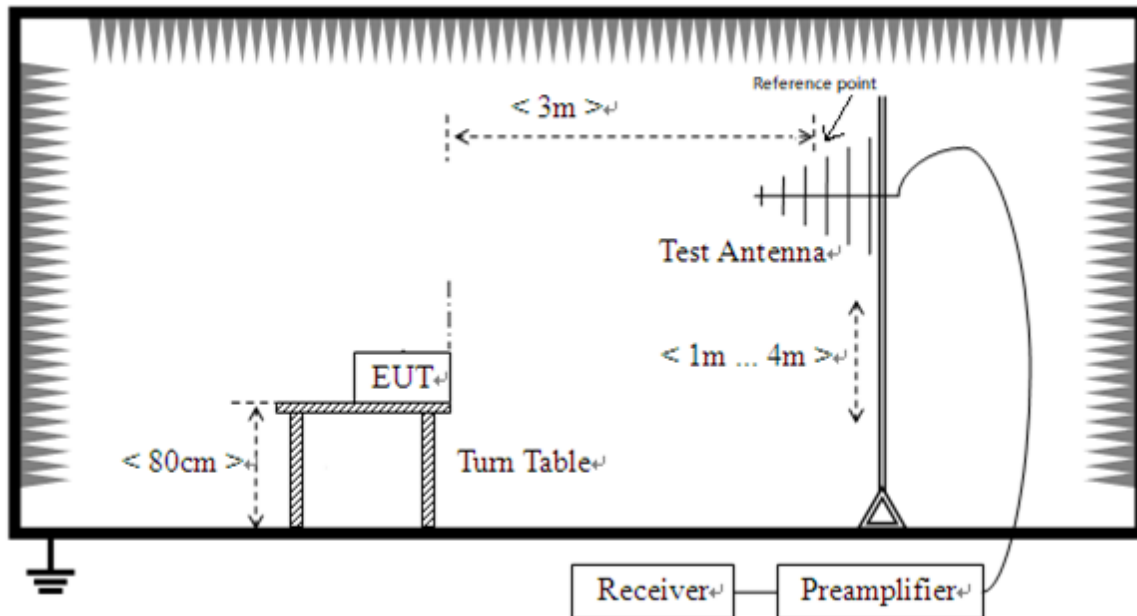
All test modes of EUT are listed in the table below.

Test Mode Configuration	Description
Mode 1	<u>The Music playback Test Mode</u> EUT + Vehicle battery + USB disk
Mode 2	<u>The FM RX Test Mode</u> EUT + Vehicle battery + USB disk
Mode 3	<u>The AM RX Test Mode</u> <u>EUT + Vehicle battery + USB disk</u>

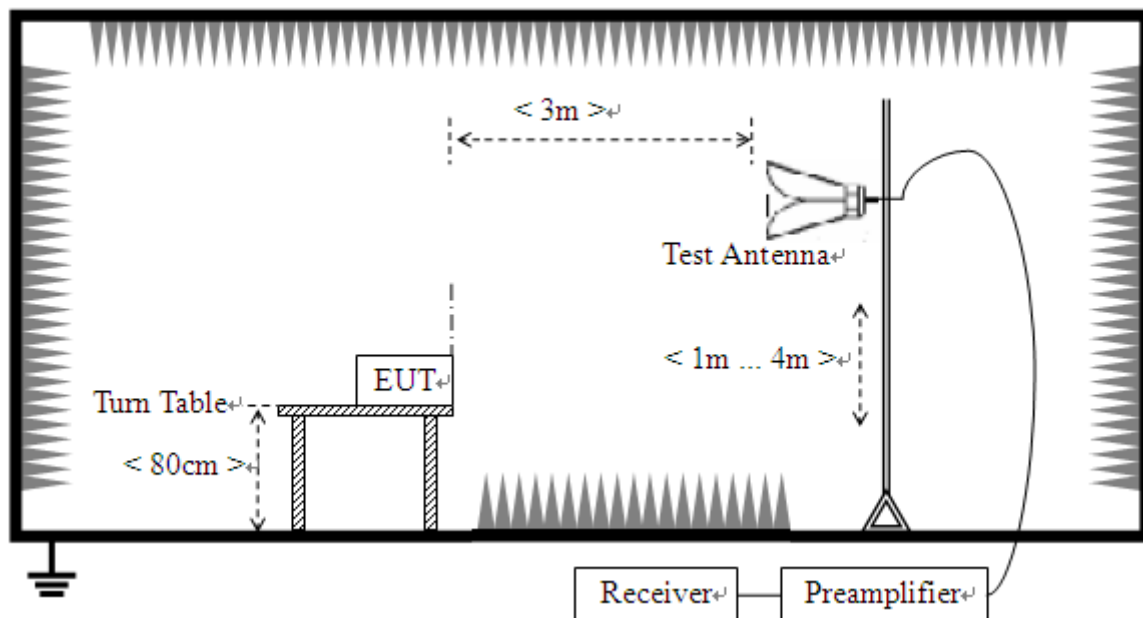
Test Case	Test Mode Configuration	Worst Mode
Radiated Emission	Mode 1~Mode 3	1
Note: All operation modes were tested, but only test data of the worst mode was presented in this report.		

4.3 Test Setups

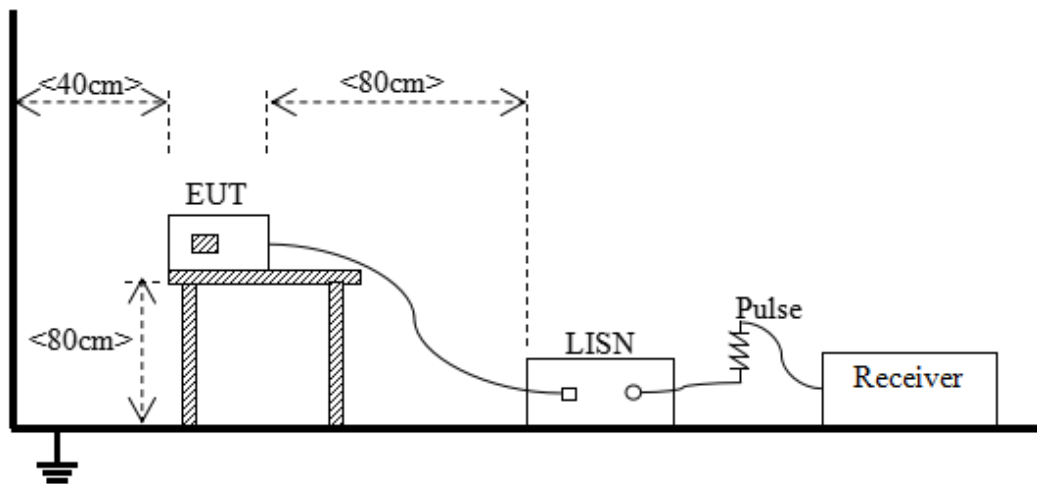
Test Setup 1



Radiated Emission (30 MHz-1 GHz)



Radiated Emission (above 1 GHz)

Test Setup 2

Conducted Emissions, AC Ports

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

Frequency range (MHz)	Class B (at 3 m)		Class A (at 3 m)
	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)
30 - 88	100	40	49.5
88 - 216	150	43.5	54
216 - 960	200	46	56.9
Above 960	500	54	60

NOTE:

- 1) Field Strength (dB $\mu\text{V/m}$) = $20 \cdot \log [\text{Field Strength } (\mu\text{V/m})]$.
- 2) In the emission tables above, the tighter limit applies at the band edges.
- 3) For 30 MHz to 1000 MHz, the CISPR quasi-peak is employed.

For above 1000 MHz, according to the requirements of FCC 15.35, unless otherwise specified, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Frequency range (GHz)	Class B (at 3 m)			Class A (at 3 m)	
	Field Strength ($\mu\text{V/m}$)	Field Strength Average (dB $\mu\text{V/m}$)	Field Strength Peak (dB $\mu\text{V/m}$)	Field Strength Average (dB $\mu\text{V/m}$)	Field Strength Peak (dB $\mu\text{V/m}$)
1 - F_M	500	54	74	60	80

Note 1: The highest measurement frequency, F_M , in GHz, shall be determined as next Table.

Note 2: Average Class A limit at 3m L_{3m} is determined by the following conversion formula:

$$L_{3m} = L_{10m} + 20 \cdot \log(d_{10m}/d_{3m})$$
Where:
 L_{3m} is Average Class A limit at 3m;
 L_{10m} is Average Class A limit at 10m;
 d_{10m} is Measurement distance in 10m;
 d_{3m} is Measurement distance in 3m.
For this case: $L_{3m} = 49.5 + 20 \cdot \log(10/3) = 60$ (dB $\mu\text{V/m}$).

Highest internal frequency (F_X)	Highest measurement frequency (F_M)
$F_X \leq 108 \text{ MHz}$	1 GHz
$108 \text{ MHz} \leq F_X \leq 500 \text{ MHz}$	2 GHz
$500 \text{ MHz} \leq F_X \leq 1 \text{ GHz}$	5 GHz
$F_X \geq 1 \text{ GHz}$	$5 * F_X$ or 40 GHz, whichever is lower.
Note: F_X is Highest frequency generated or used in the device or on which the device operates or tunes.	

5.1.1.2 Test Setup

Refer to 4.3 section (test setup 1) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.1.1.3 Test Procedure

All Radiated Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

The measurement frequency range is from 30 MHz to the 5th harmonic of the maximum frequency of the EUT internal source. The Turn Table is actuated to turn from 0° to 360° , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1 \text{ GHz}$, 100 kHz for $f < 1 \text{ GHz}$

VBW $\geq$ RBW

Sweep = auto

Detector function = peak for $f < 1 \text{ GHz}$, peak & RMS Average for $f \geq 1 \text{ GHz}$

Trace = max hold

5.1.1.4 Test Result and Test Equipment List

Please refer to ANNEX A.1.

NOTE:

1. Results (dB μ V/m) = Reading (dB μ V) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain (dB)

3. Margin = Limit - Results

5.1.2 Conducted Emission, AC Ports

5.1.2.1 Test Limit

Frequency range (MHz)	Class A	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- 1) The lower limit shall apply at the band edges.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.1.2.2 Test Setup

Refer to 4.3 section test (test setup 2) for conducted emission, the photo of test setup please refer to ANNEX B.

5.1.2.3 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

Use the following spectrum analyzer settings:

RBW = 9 kHz

VBW $\geq$ RBW

Sweep = 10ms

Detector function = peak & Average

Trace = max hold

5.1.2.4 Test Result and Test Equipment List

Please refer to ANNEX A.2.

NOTE:

1. Results (dBμV) = Reading (dBμV) + Factor (dB)

The reading level is calculated by software which is not shown in the sheet

2. Factor = Insertion loss + Cable loss

3. Margin = Limit - Results

ANNEX A TEST RESULTS

A.1 Radiated Emission

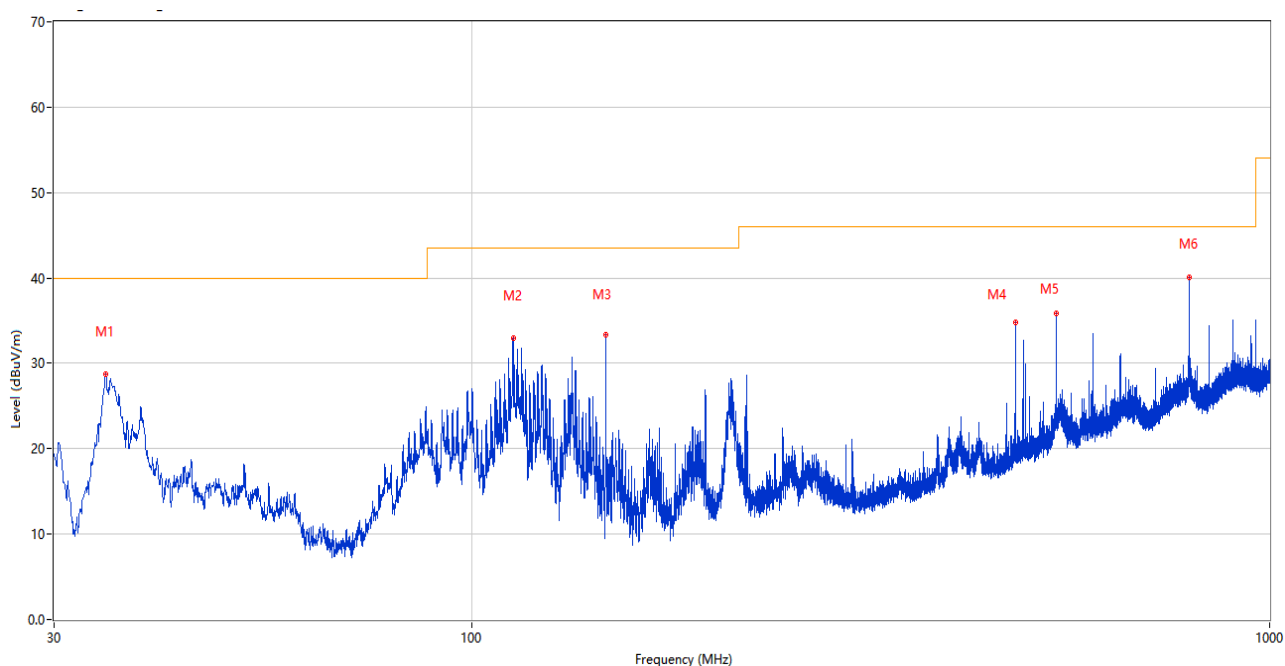
Note 1: The symbol of "--" in the table which means not application.

Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Sample No.	S03	Temperature	21.9℃
Humidity	49%RH	Pressure	101kPa
Test Engineer	Guo Siyu	Test Date	2025.12.05

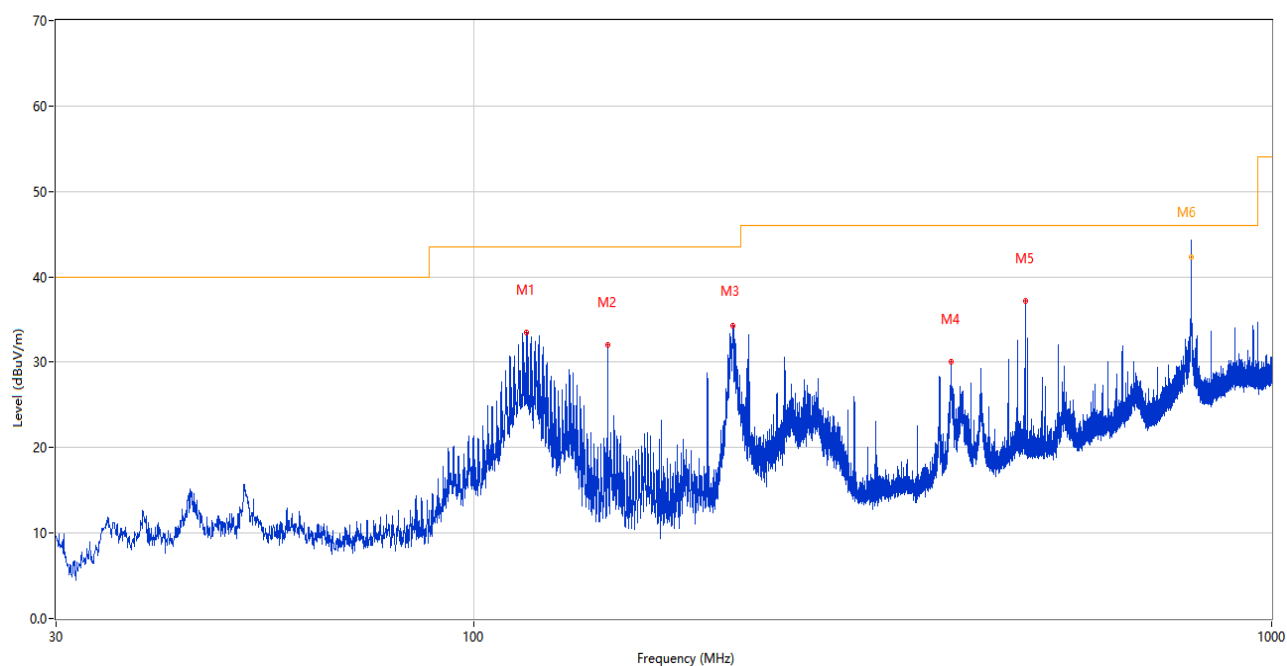
Test Mode 1

1) Test Antenna Vertical, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	34.801	28.71	-28.58	40.0	11.29	Peak	356.00	100	Vertical	Pass
2	112.789	32.93	-26.59	43.5	10.57	Peak	292.00	100	Vertical	Pass
3	147.322	33.35	-30.07	43.5	10.15	Peak	288.00	100	Vertical	Pass
4	480.031	34.79	-18.79	46.0	11.21	Peak	187.00	100	Vertical	Pass
5	540.026	35.92	-17.23	46.0	10.08	Peak	170.00	100	Vertical	Pass
6	793.050	40.10	-11.30	46.0	5.90	Peak	320.00	100	Vertical	Pass

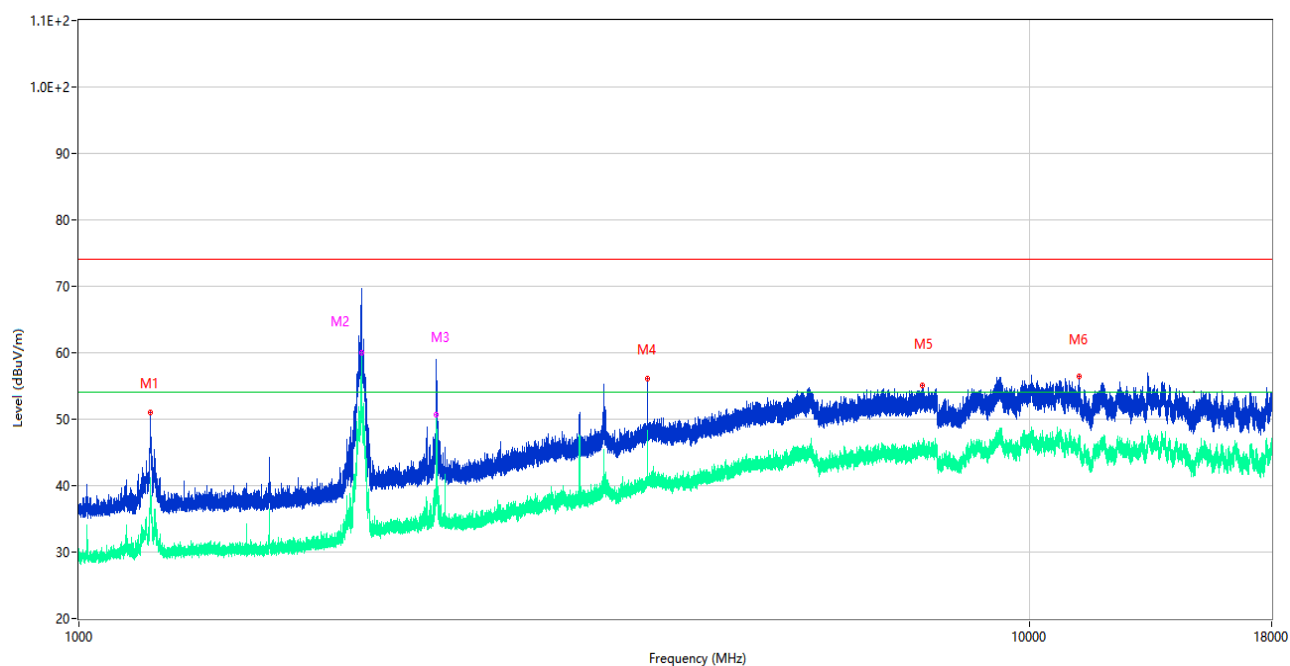
2) Test Antenna Horizontal, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	116.670	33.54	-27.24	43.5	9.96	Peak	56.00	200	Horizontal	Pass
2	147.322	32.00	-30.07	43.5	11.50	Peak	23.00	200	Horizontal	Pass
3	211.245	34.29	-26.47	43.5	9.21	Peak	275.00	100	Horizontal	Pass
4	396.224	30.03	-20.65	46.0	15.97	Peak	44.00	100	Horizontal	Pass
5	491.090	37.22	-18.34	46.0	8.78	Peak	82.00	200	Horizontal	Pass
6	793.029	45.21	-11.30	46.0	0.79	Peak	233.00	101	Horizontal	N/A
6*	793.029	42.28	-11.30	46.0	3.72	QP	233.00	101	Horizontal	Pass

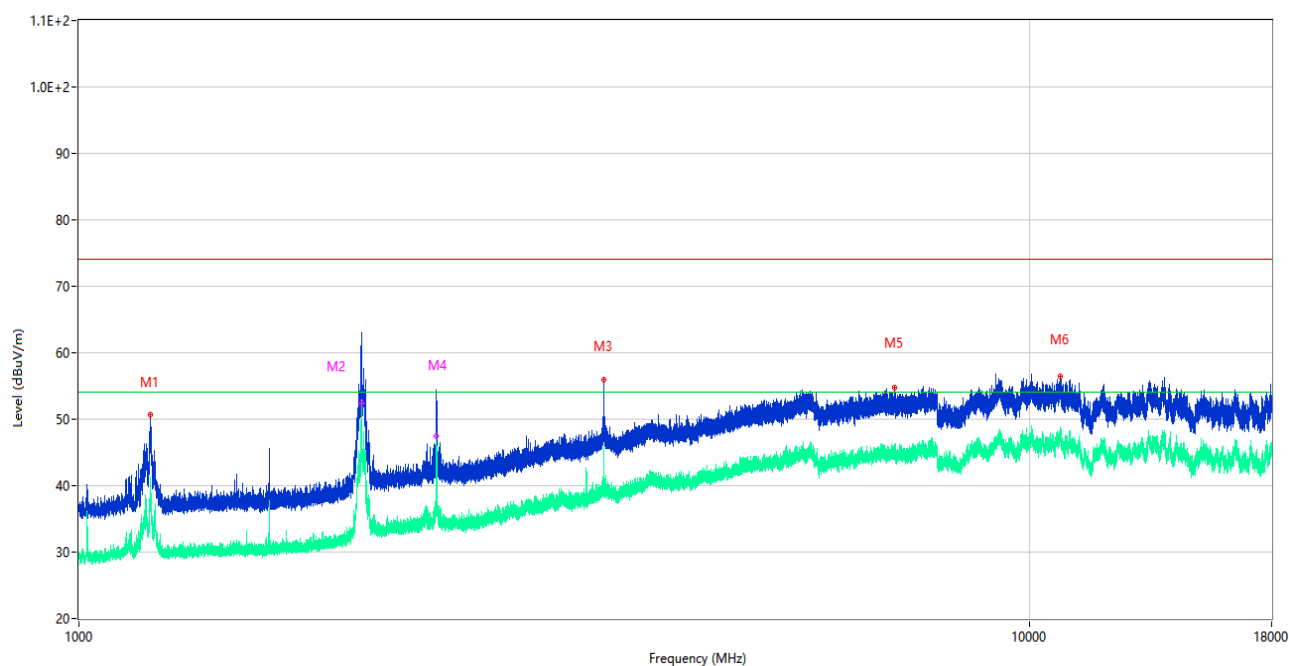
Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Below 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330121	2025.04.16	2026.04.15	☒
Test Antenna- Bi-Log	SCHWARZB ECK	VULB 9163	01414	2023.11.03	2026.11.02	☒
Anechoic Chamber	EMC Electronic Co., Ltd	C8-966	107	2024.05.12	2027.05.11	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.4 en	/		☒

3) Test Antenna Vertical, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1189.540	50.98	-15.80	74.0	23.02	Peak	334.00	150	Vertical	Pass
1**	1189.540	41.08	-15.80	54.0	12.92	AV	334.00	150	Vertical	Pass
2	1982.800	67.59	-13.07	74.0	6.41	Peak	38.00	150	Vertical	Pass
2**	1982.800	59.92	-13.07	54.0	-5.92	AV	38.00	150	Vertical	N/A
2***	1982.800	48.095	-13.07	54.0	5.905	AV	38.00	150	Vertical	Pass
3	2379.300	56.33	-10.72	74.0	17.67	Peak	38.00	150	Vertical	Pass
3**	2379.300	50.62	-10.72	54.0	3.38	AV	38.00	150	Vertical	Pass
4	3965.420	56.07	-1.70	74.0	17.93	Peak	334.00	150	Vertical	Pass
4**	3965.420	48.01	-1.70	54.0	5.99	AV	334.00	150	Vertical	Pass
5	7726.540	55.06	2.02	74.0	18.94	Peak	267.00	150	Vertical	Pass
5**	7726.540	45.74	2.02	54.0	8.26	AV	267.00	150	Vertical	Pass
6	11292.937	56.48	2.46	74.0	17.52	Peak	331.00	150	Vertical	Pass
6**	11292.937	46.65	2.46	54.0	7.35	AV	331.00	150	Vertical	Pass

4) Test Antenna Horizontal, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1189.540	50.61	-15.80	74.0	23.39	Peak	59.00	150	Horizontal	Pass
1**	1189.540	41.29	-15.80	54.0	12.71	AV	59.00	150	Horizontal	Pass
2	1982.280	61.53	-13.09	74.0	12.47	Peak	302.00	150	Horizontal	Pass
2**	1982.800	52.69	-13.07	54.0	1.31	AV	33.00	150	Horizontal	N/A
2***	1982.800	37.552	-13.07	54.0	16.448	AV	33.00	150	Horizontal	Pass
3	3568.670	55.96	-3.75	74.0	18.04	Peak	9.00	150	Horizontal	Pass
3**	3568.670	41.62	-3.75	54.0	12.38	AV	9.00	150	Horizontal	Pass
4	2379.170	53.62	-10.73	74.0	20.38	Peak	3.00	150	Horizontal	Pass
4**	2379.170	47.42	-10.73	54.0	6.58	AV	3.00	150	Horizontal	Pass
5	7220.540	54.68	1.21	74.0	19.32	Peak	101.00	150	Horizontal	Pass
5**	7220.540	44.52	1.21	54.0	9.48	AV	101.00	150	Horizontal	Pass
6	10778.988	56.52	3.86	74.0	17.48	Peak	184.00	150	Horizontal	Pass
6**	10778.988	48.08	3.86	54.0	5.92	AV	184.00	150	Horizontal	Pass

Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Above 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330121	2025.04.16	2026.04.15	☒
Test Antenna-Horn	SCHWARZB ECK	BBHA 9120D	02459	2023.10.26	2026.10.25	☒
Anechoic Chamber	EMC Electronic Co., Ltd	C8-966	107	2024.05.12	2027.05.11	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.4 en	/		☒

A.2 Conducted Emission, AC Ports

Note: Not applicable.

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ25A0087-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ25A0087-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ25A0087-AI.PDF”.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the "inspection and testing dedicated stamp" or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--