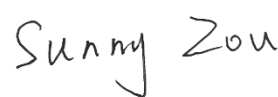
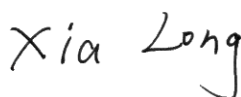


TEST REPORT

Applicant: SHENZHEN 8BITDO TECH CO., LTD.
Address: Room 210, Building 1, Nanhai Ecool, No.6 Xinghua Road, Shekou, Nanshan District, Shenzhen, China
Equipment Type: 8BitDo Ultimate 2C Wired Controller
Model Name: 82CD
Brand Name: 8BITDO
FCC ID: 2AOWF-ULT2CUSB
Test Standard: 47 CFR Part 15 Subpart B
ANSI C63.4-2014
Sample Arrival Date: Jan. 14, 2025
Test Date: Jan. 15, 2025 - Jan. 16, 2025
Date of Issue: Feb. 18, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Liang Yongming**Checked by:** Xia Long**Approved by:** Sunny Zou
(Technical Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Feb. 18, 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
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	SHENZHEN 8BITDO TECH CO., LTD.
Address	Room 210, Building 1, Nanhai Ecool, No.6 Xinghua Road, Shekou, Nanshan District, Shenzhen, China

2.2 Manufacturer Information

Manufacturer	SHENZHEN ONEBITDO TECH CO., LTD.
Address	Room 203, Building 1, Huajian Building, Xinghua Road, Shekou, Shuiwan Community, Zhaoshang Street, Nanshan District, Shenzhen, China

2.3 General Description for Equipment under Test (EUT)

EUT Name	8BitDo Ultimate 2C Wired Controller
Model Name Under Test	82CD
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V 2.00
Software Version	v 1.04
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Ancillary Equipment 1	Type-C Cable	
	Length (Approx.)	1.8 m

2.5 Technical Information

Network and Wireless connectivity	N/A
Classification of equipment	Class B
The highest internal frequency of EUT	48 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	Pass	--

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
Conducted emissions (9 kHz-30 MHz)	3.2 dB
Radiated emissions (30 MHz-1 GHz)-966#2	4.4 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Enclosure List

Description	Manufacturer	Model	Serial No.	Length	Description	Use
Laptop	HONOR	KPRC-W10	N/A	N/A	N/A	☒

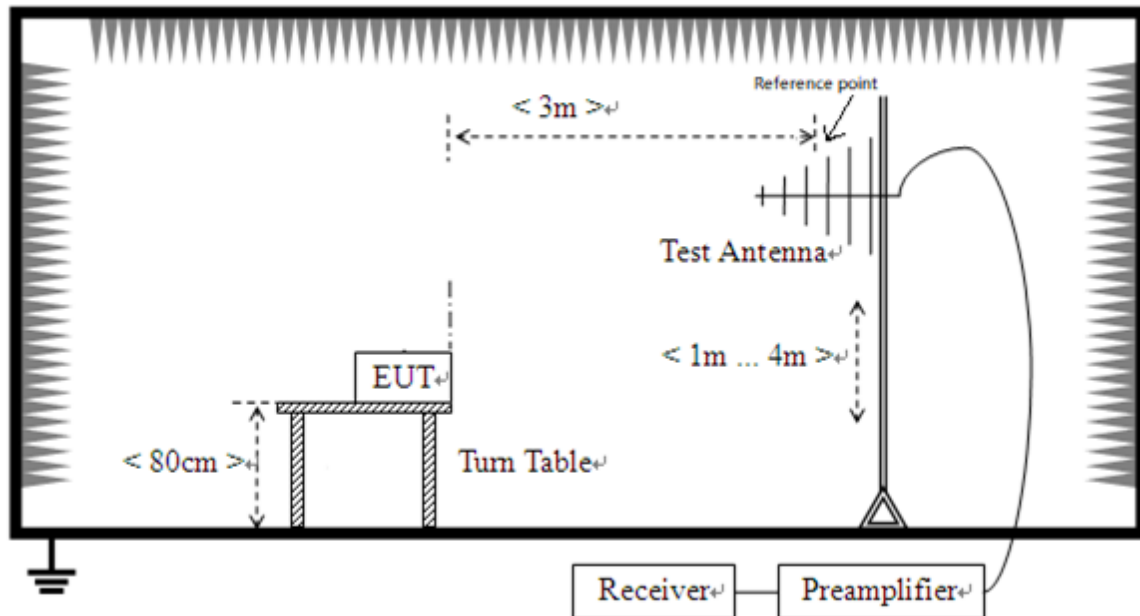
4.2 Test Configurations

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

Test Mode Configuration	Description
Mode 1	<u>The Working Test Mode</u> EUT + Battery + Type-C Cable + Laptop

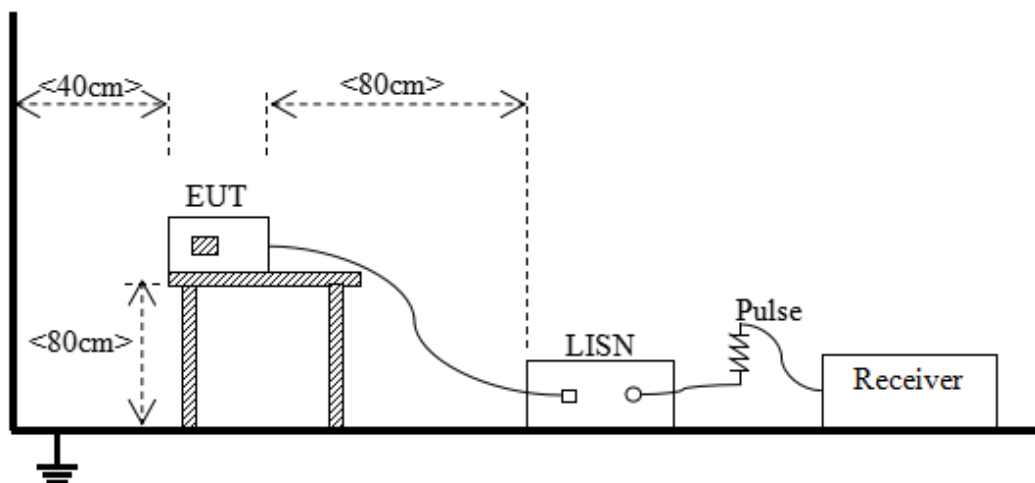
4.3 Test Setups

Test Setup 1



Radiated Emission (30 MHz-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.

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
$F_X \geq 1 \text{ GHz}$	$5 \cdot F_X$ 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 $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak for $f < 1$ GHz, peak & RMS Average for $f \geq 1$ 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 (dB μ V) = Reading (dB μ V) + 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

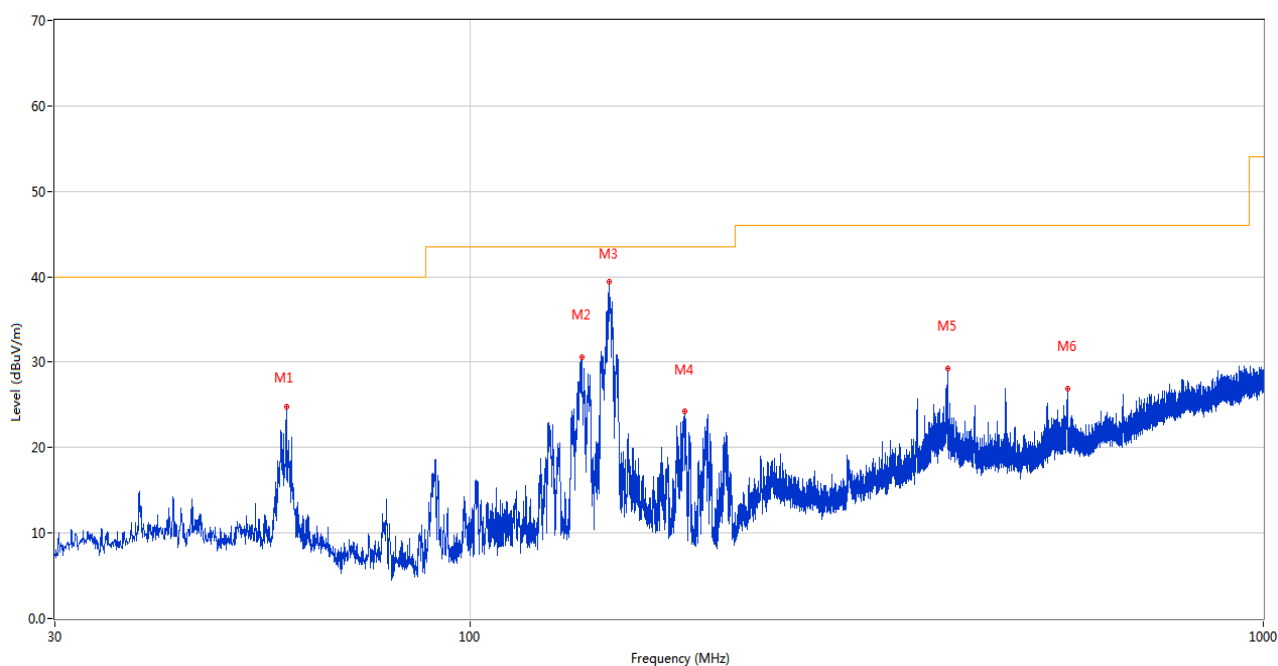
A.1 Radiated Emission

Note: The symbol of “--” in the table which means not application.

Sample No.	S01	Temperature	22.5℃
Humidity	37%RH	Pressure	101kPa
Test Engineer	Chen Jinran	Test Date	2025.01.15

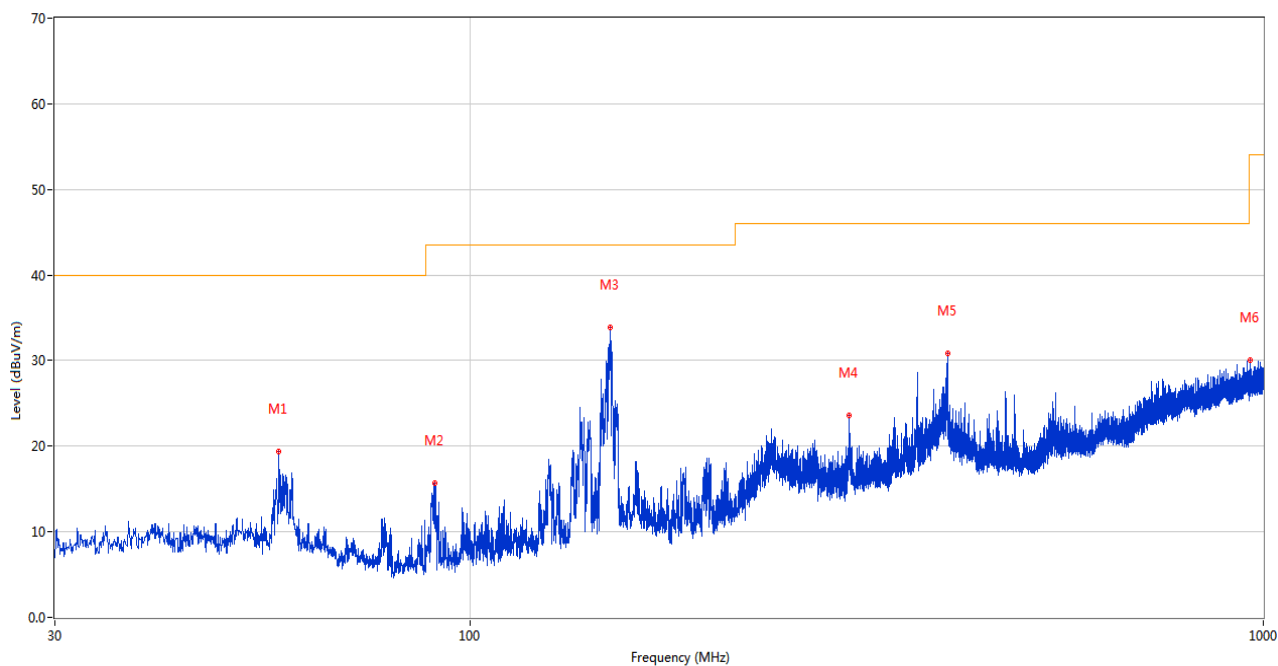
Test Mode 1

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	58.712	24.81	-27.26	40.0	15.19	Peak	254.00	100	Vertical	Pass
2	138.349	30.55	-26.33	43.5	12.95	Peak	347.00	100	Vertical	Pass
3	149.650	39.47	-25.52	43.5	4.03	Peak	41.00	100	Vertical	Pass
4	186.510	24.19	-28.19	43.5	19.31	Peak	37.00	100	Vertical	Pass
5	399.861	29.33	-21.27	46.0	16.67	Peak	223.00	200	Vertical	Pass
6	566.507	26.93	-17.27	46.0	19.07	Peak	129.00	200	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	57.499	19.40	-27.25	40.0	20.60	Peak	360.00	200	Horizontal	Pass
2	90.479	15.65	-30.45	43.5	27.85	Peak	189.00	200	Horizontal	Pass
3	150.426	33.88	-25.54	43.5	9.62	Peak	288.00	200	Horizontal	Pass
4	300.776	23.62	-24.63	46.0	22.38	Peak	117.00	100	Horizontal	Pass
5	399.909	30.89	-21.29	46.0	15.11	Peak	211.00	100	Horizontal	Pass
6	962.655	30.10	-10.21	54.0	23.90	Peak	288.00	100	Horizontal	Pass

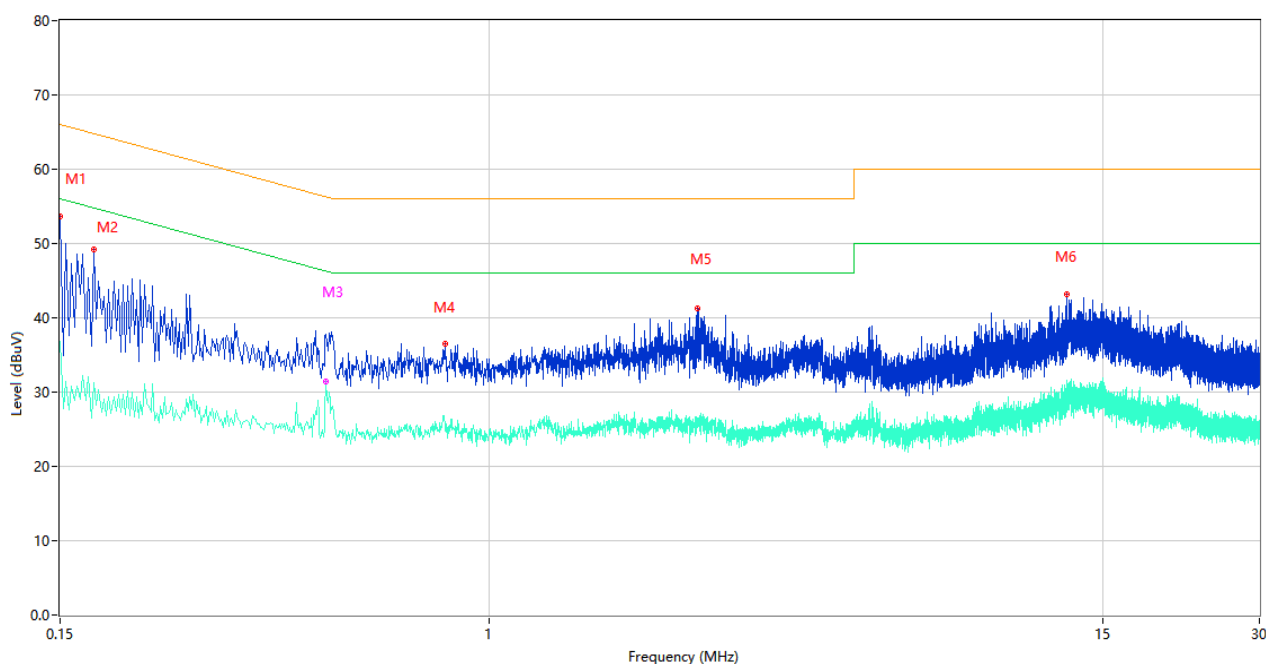
Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Below 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330120	2024.08.01	2025.07.31	☒
Amplifier (30MHz-1GHz)	COM-MV	ZT30-1000M	B2017119081	2024.11.28	2025.11.27	☒
Test Antenna- Bi-Log	SCHWARZB ECK	VULB 9168	9168-00867	2024.07.21	2027.07.20	☒
Anechoic Chamber (#2)	YiHeng	9m*6m*6m	142	2024.08.01	2025.07.31	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

A.2 Conducted Emission, AC Ports

Sample No.	S01	Temperature	22.6℃
Humidity	36%RH	Pressure	101kPa
Test Engineer	Yang Panxia	Test Date	2025.01.16

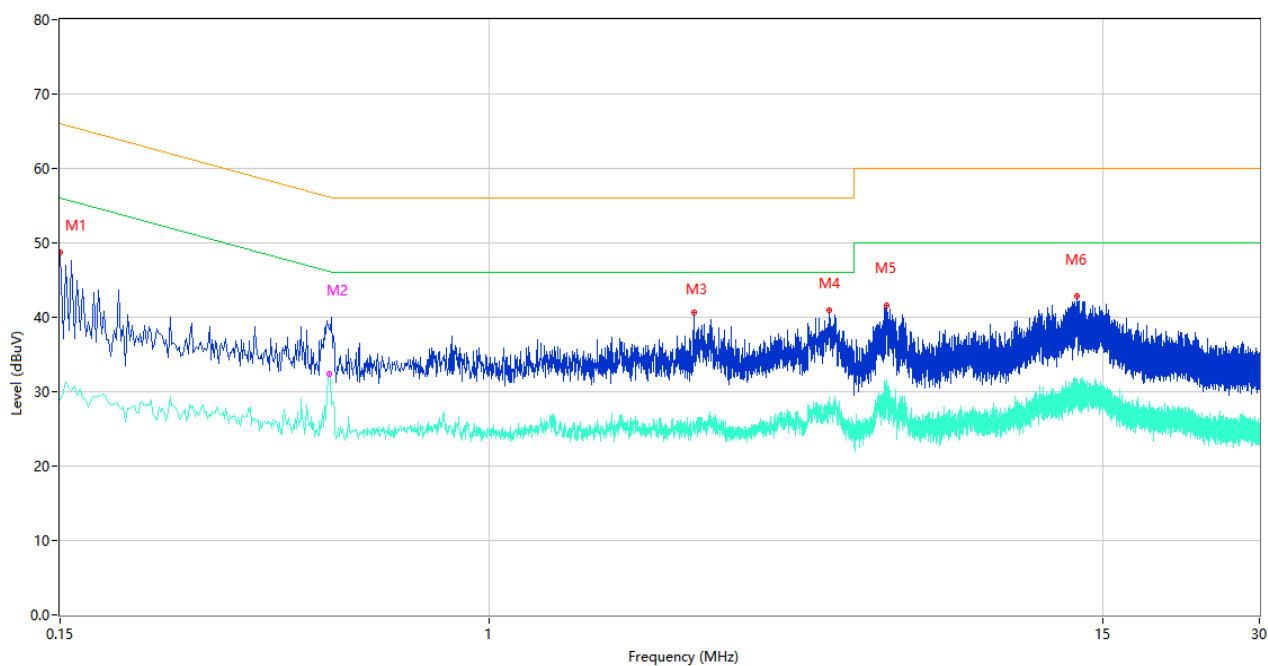
Test Mode 1

1) AC Ports - L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	53.68	9.78	66.00	12.32	Peak	L	Pass
1**	0.150	36.87	9.78	56.00	19.13	AV	L	Pass
2	0.174	49.21	9.78	64.77	15.56	Peak	L	Pass
2**	0.174	31.19	9.78	54.77	23.58	AV	L	Pass
3	0.486	37.75	9.99	56.24	18.49	Peak	L	Pass
3**	0.486	31.41	9.99	46.24	14.83	AV	L	Pass
4	0.824	36.50	10.57	56.00	19.50	Peak	L	Pass
4**	0.824	24.82	10.57	46.00	21.18	AV	L	Pass
5	2.502	41.21	10.16	56.00	14.79	Peak	L	Pass
5**	2.502	26.06	10.16	46.00	19.94	AV	L	Pass
6	12.812	43.18	10.46	60.00	16.82	Peak	L	Pass
6**	12.812	29.76	10.46	50.00	20.24	AV	L	Pass

2) AC Ports - N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	48.75	9.78	66.00	17.25	Peak	N	Pass
1**	0.150	28.88	9.78	56.00	27.12	AV	N	Pass
2	0.492	38.64	9.99	56.13	17.49	Peak	N	Pass
2**	0.492	32.43	9.99	46.13	13.70	AV	N	Pass
3	2.474	40.61	10.18	56.00	15.39	Peak	N	Pass
3**	2.474	25.73	10.18	46.00	20.27	AV	N	Pass
4	4.482	41.00	10.35	56.00	15.00	Peak	N	Pass
4**	4.482	28.15	10.35	46.00	17.85	AV	N	Pass
5	5.774	41.60	10.36	60.00	18.40	Peak	N	Pass
5**	5.774	28.47	10.36	50.00	21.53	AV	N	Pass
6	13.426	42.81	10.34	60.00	17.19	Peak	N	Pass
6**	13.426	31.77	10.34	50.00	18.23	AV	N	Pass

Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2024.08.01	2025.07.31	☒
LISN	SCHWARZB ECK	NSLK 8127	8127-687	2024.05.09	2025.05.08	☒
Shielded Room	YiHeng Electronic Co., Ltd	3.5m*3.1m*2. 8m	112	2022.02.19	2025.02.18	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2510601-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2510601-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2510601-AI.PDF”.

Statement

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--END OF REPORT--