

TEST REPORT

Applicant: Shanghai Xiangcheng Communication Technology Co., Ltd
Address: 6th Floor, Building 10, No.3000, Longdong Avenue, Pudong New District, Shanghai
Equipment Type: Intelligent Mobile Data Capture Terminal
Model Name: Ranger1 K/G (refer to section 2.3)
Brand Name: N/A
FCC ID: 2A2UU-MF-T0523
Test Standard: 47 CFR Part 15 Subpart B
ANSI C63.4-2014
Sample Arrival Date: Mar. 06, 2024
Test Date: Mar. 09, 2024 - Apr. 18, 2024
Date of Issue: May 22, 2024

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Xin Liao

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(Technical Director)

Xin Liao

Zhenxiang Liu

Zm Liao

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>May 22, 2024</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	Shanghai Xiangcheng Communication Technology Co., Ltd
Address	6th Floor, Building 10, No.3000, Longdong Avenue, Pudong New District, Shanghai

2.2 Manufacturer Information

Manufacturer	Shanghai Xiangcheng Communication Technology Co., Ltd
Address	6th Floor, Building 10, No.3000, Longdong Avenue, Pudong New District, Shanghai

2.3 General Description for Equipment under Test (EUT)

EUT Name	Intelligent Mobile Data Capture Terminal
Model Name Under Test	Ranger1 K/G
Series Model Name	S45 GRIP, T0523, TP60 S
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the applicant)
Hardware Version	V1.1
Software Version	1.0
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Note: Tested all mode on model Ranger1 K/G, other models only have inconsistent names, so there is no need to compensate for differential testing.	

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery 1	
	Brand Name	N/A
	Model No.	F50053MA
	Serial No.	N/A
	Capacity	5100 mAh/19.635Wh
	Rated Voltage	3.85 V
	Limit Charge Voltage	4.4 V
	Manufacturer	Guangdong Fenghua New Energy Co., Ltd.
Ancillary Equipment 2	Battery 2	
	Brand Name	N/A
	Model No.	ZWD251216VT
	Serial No.	N/A

	Capacity	30 mAh/ 0.114Wh
	Rated Voltage	3.8 V
	Limit Charge Voltage	4.38 V
Ancillary Equipment 3	Power Adapter	
	Brand Name	N/A
	Model No.	LM-603U-050200U02UL (US Plug)
	Serial No.	N/A
	Rated Input	100-240V~, 50/60Hz, 0.35A
	Rated Output	5.0V= 2.0A
Ancillary Equipment 4	USB Cable	
	Length (Approx.)	1m
Note 1: Letter in () means plug type.		
Note 2: All batteries are tested, only the worst data of F50053MA shown in this report.		

2.5 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network LTE FDD Band 2/4/5/7 LTE TDD Band 38/41 Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) U-NII-1/2A/3, GPS, GLONASS, BDS, Galileo
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	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
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 2024.05.15	☒
SD Card	N/A	N/A	N/A	N/A	N/A	☒
Laptop	N/A	N/A	N/A	N/A	N/A	☒

4.2 Test Configurations

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

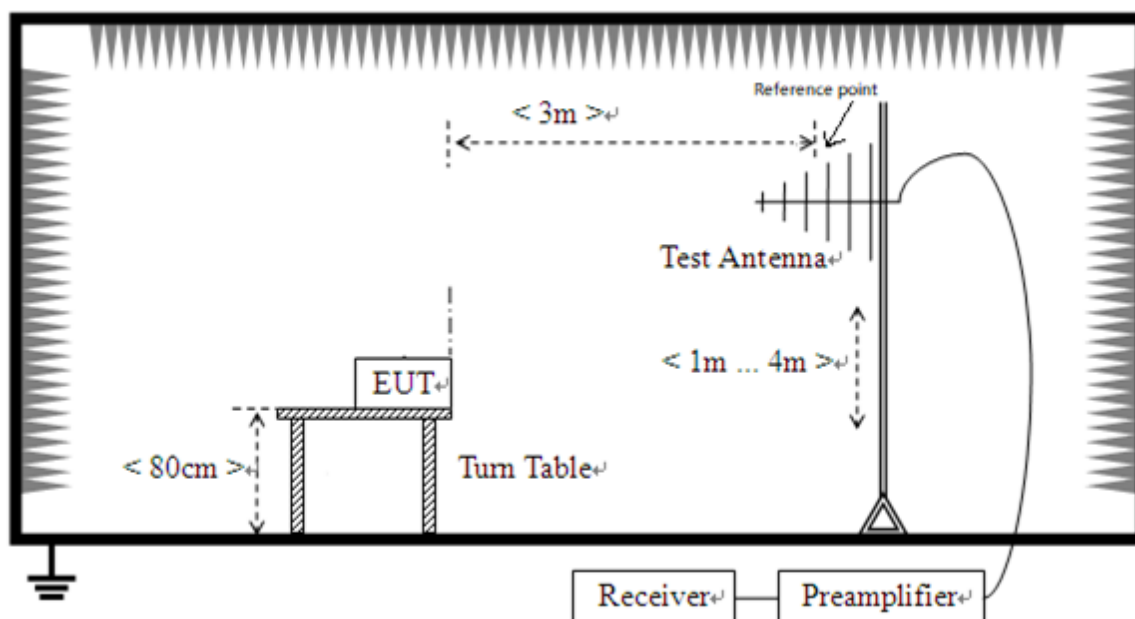
Test Mode Configuration	Description
Mode 1	<u>The Charging Test Mode</u> EUT + Adapter + USB Cable + Battery
Mode 2	<u>The Front Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card
Mode 3	<u>The Back Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card
Mode 4	<u>The Video Play Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card
Mode 5	<u>The Scanning Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card
Mode 6	<u>The USB Test Mode</u> EUT + USB Cable + Battery + SD Card + Laptop
Mode 7	<u>The GSM 850 RX Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card + GSM 850 RX
Mode 8	<u>The WCDMA Band 5 RX Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card + WCDMA Band 5 RX
Mode 9	<u>The FDD LTE Band 5 RX Test Mode</u> EUT + Adapter + USB Cable + Battery + SD Card + LTE Band 5 RX

Test Case	Test Mode Configuration	Worst Mode
Radiated Emission	Mode 1~Mode 9	2, 6
Conducted Emission, AC Ports	Mode 1~Mode 9	5, 6

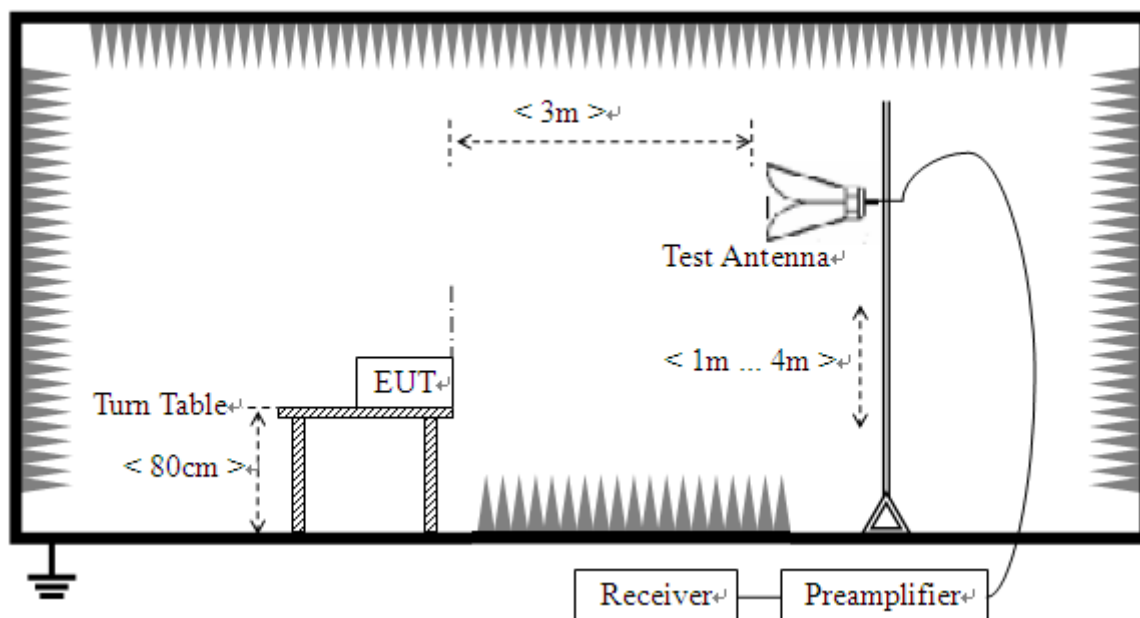
Note: All operation modes were tested, but only test data of the worst mode was presented in this report.

4.3 Test Setups

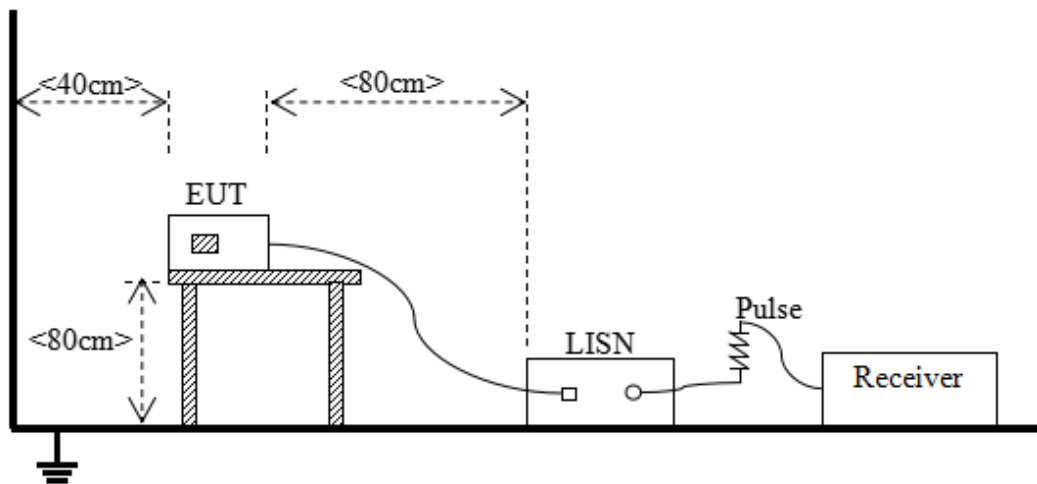
Test Setup 1



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 $\mu\text{V/m}$) = $20 \times \log [\text{Field Strength } (\mu\text{V/m})]$.
- 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:
 $L_{3m} = L_{10m} + 20 \times \log(d_{10m}/d_{3m})$
 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: $L_{3m} = 49.5 + 20 \times \log(10/3) = 60$ (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 (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 1: The symbol of “--” in the table which means not application.

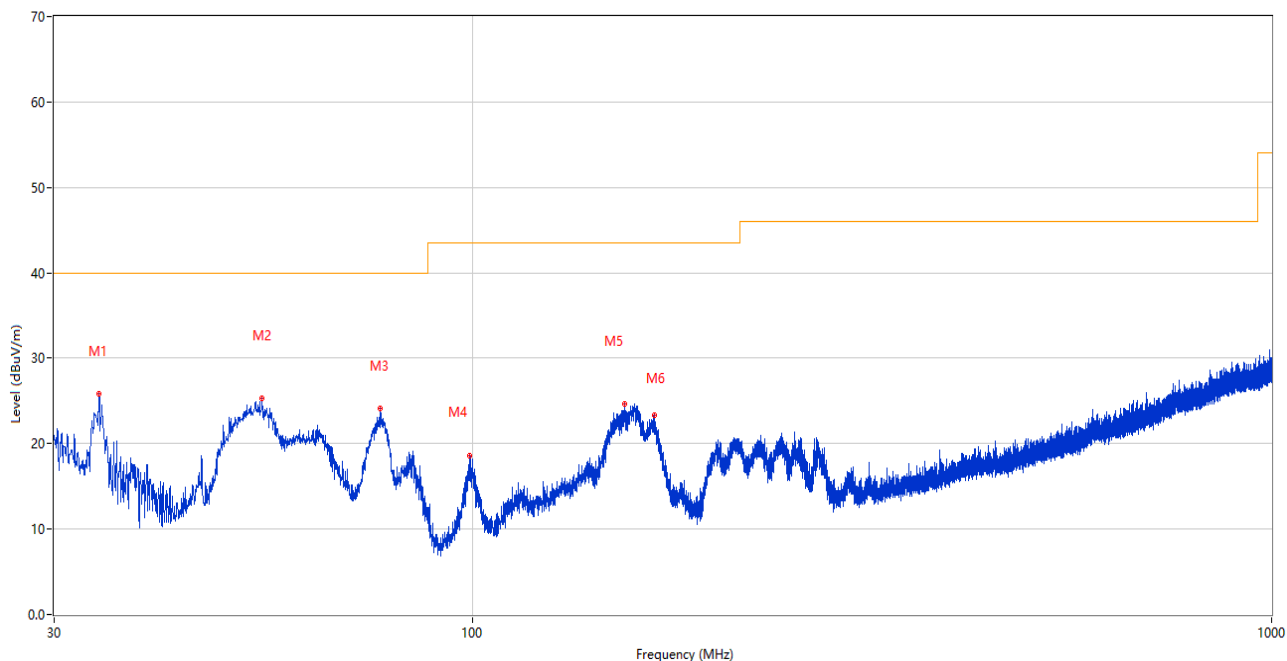
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The Radiated Emission is required to be investigated to the upper frequency of 5th harmonic of the highest internal frequency of EUT or 40 GHz, whichever is lower. The test results above 18GHz are only noise and are not recorded in the report.

Sample No.	S03	Temperature	22.4℃
Humidity	45%RH	Pressure	101kPa
Test Engineer	He Shichang	Test Date	2024.03.12 – 2024.04.18

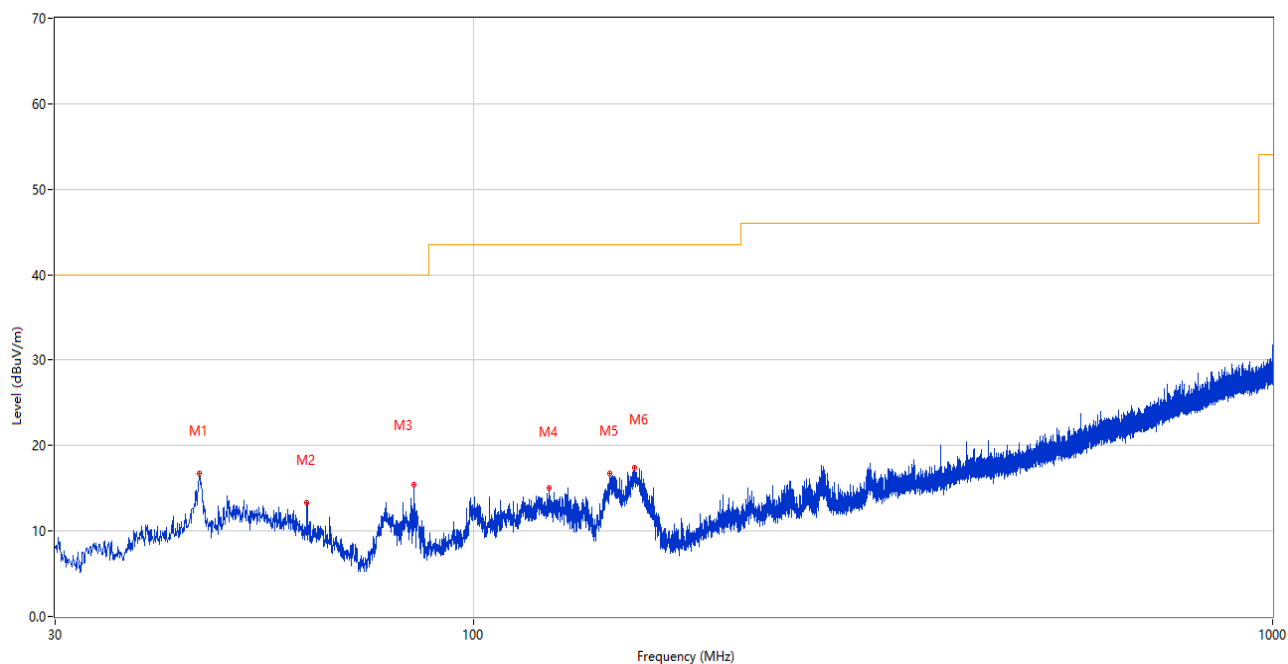
Test Mode 2

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	34.171	25.81	-28.73	40.0	14.19	Peak	190.00	100	Vertical	Pass
2	54.638	25.32	-25.65	40.0	14.68	Peak	21.00	100	Vertical	Pass
3	76.608	24.08	-31.16	40.0	15.92	Peak	248.00	100	Vertical	Pass
4	99.210	18.65	-26.85	43.5	24.85	Peak	137.00	100	Vertical	Pass
5	155.276	24.64	-29.84	43.5	18.86	Peak	220.00	100	Vertical	Pass
6	168.807	23.32	-29.26	43.5	20.18	Peak	125.00	100	Vertical	Pass

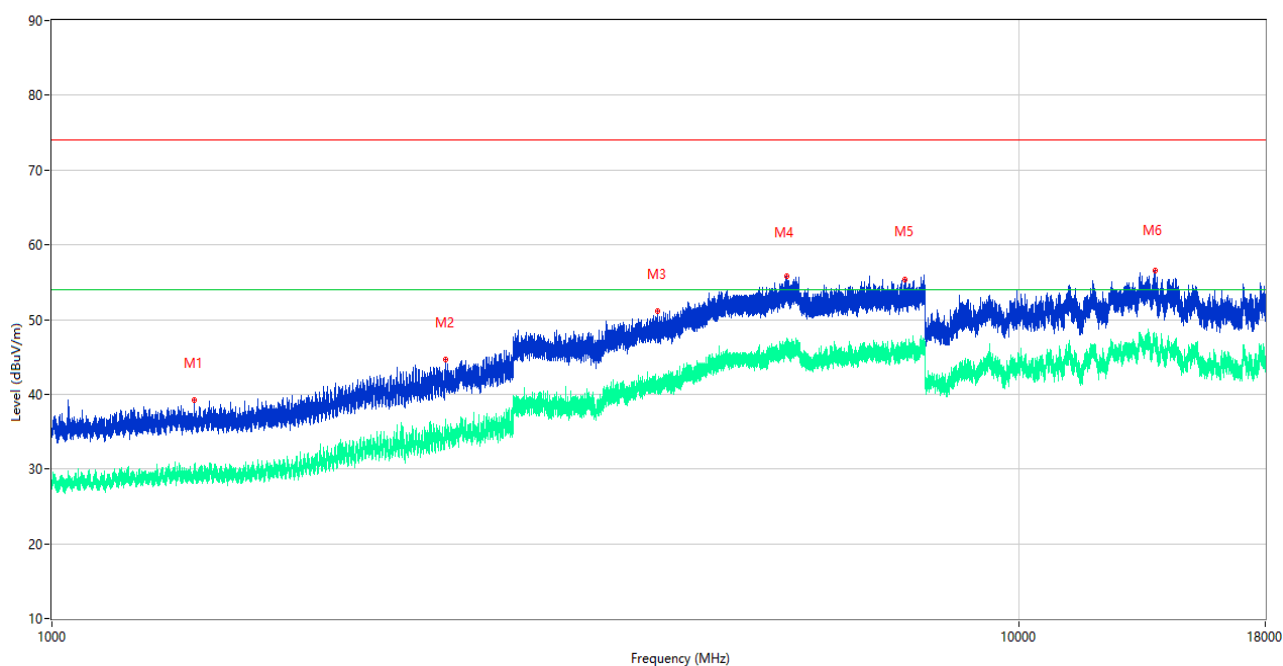
2) Test Antenna Horizontal, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	45.423	16.72	-25.53	40.0	23.28	Peak	140.00	100	Horizontal	Pass
2	61.962	13.30	-27.11	40.0	26.70	Peak	301.00	100	Horizontal	Pass
3	84.223	15.39	-30.06	40.0	24.61	Peak	129.00	200	Horizontal	Pass
4	124.429	14.96	-29.28	43.5	28.54	Peak	157.00	200	Horizontal	Pass
5	148.292	16.68	-30.14	43.5	26.82	Peak	170.00	200	Horizontal	Pass
6	159.156	17.43	-29.63	43.5	26.07	Peak	163.00	200	Horizontal	Pass

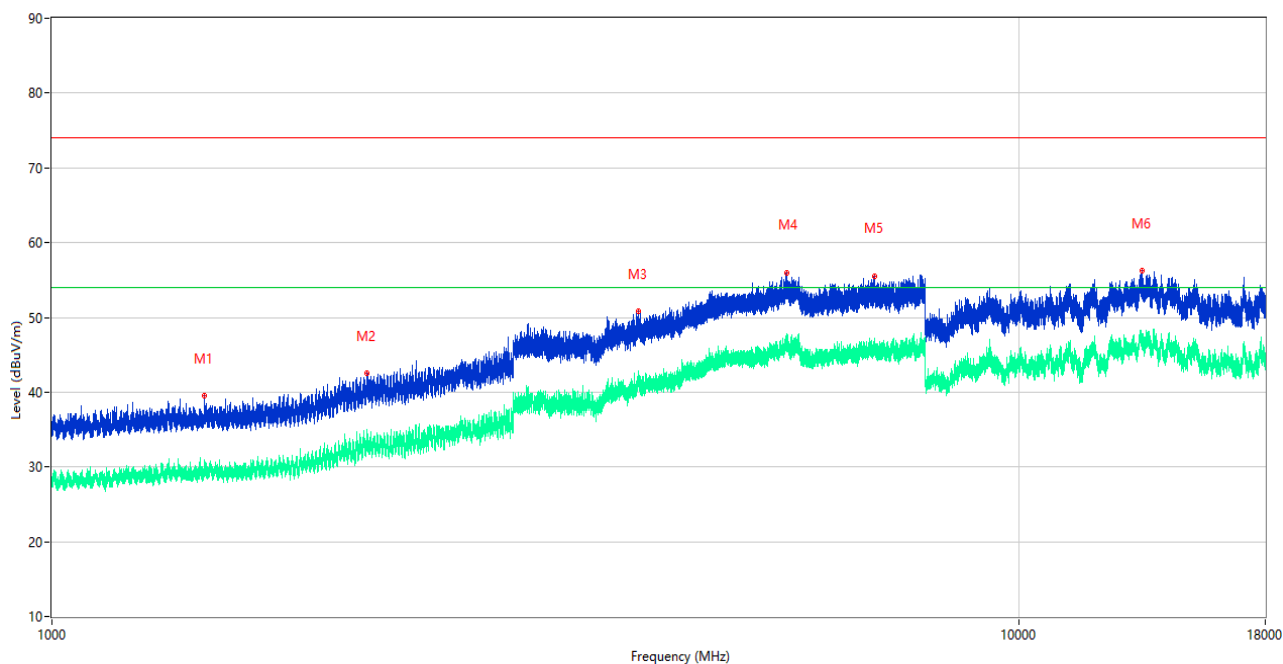
Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Below 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330120	2023.09.05	2024.09.04	☒
Amplifier (30-1GHz)	COM-MV	ZT30-1000M	B2017119081	2023.12.05	2024.12.04	☒
Test Antenna- Bi-Log	SCHWARZB ECK	VULB 9168	9168-00867	2022.04.12	2025.04.11	☒
Anechoic Chamber (#2)	YiHeng	9m*6m*6m	142	2021.08.19	2024.08.18	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

3) Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1404.400	39.24	-15.83	74.0	34.76	Peak	273.00	100	Vertical	Pass
1**	1404.400	29.84	-15.83	54.0	24.16	AV	273.00	100	Vertical	Pass
2	2555.800	44.69	-10.48	74.0	29.31	Peak	7.00	100	Vertical	Pass
2**	2555.800	35.29	-10.48	54.0	18.71	AV	7.00	100	Vertical	Pass
3	4231.000	51.07	-0.74	74.0	22.93	Peak	344.00	100	Vertical	Pass
3**	4231.000	40.65	-0.74	54.0	13.35	AV	344.00	100	Vertical	Pass
4	5753.500	55.86	3.42	74.0	18.14	Peak	99.00	100	Vertical	Pass
4**	5753.500	46.83	3.42	54.0	7.17	AV	99.00	100	Vertical	Pass
5	7637.250	55.33	2.56	74.0	18.67	Peak	244.00	100	Vertical	Pass
5**	7637.250	45.90	2.56	54.0	8.10	AV	244.00	100	Vertical	Pass
6	13837.500	56.53	5.33	74.0	17.47	Peak	184.00	100	Vertical	Pass
6**	13837.500	46.49	5.33	54.0	7.51	AV	184.00	100	Vertical	Pass

4) Test Antenna Horizontal, 1 GHz – 18 GHz

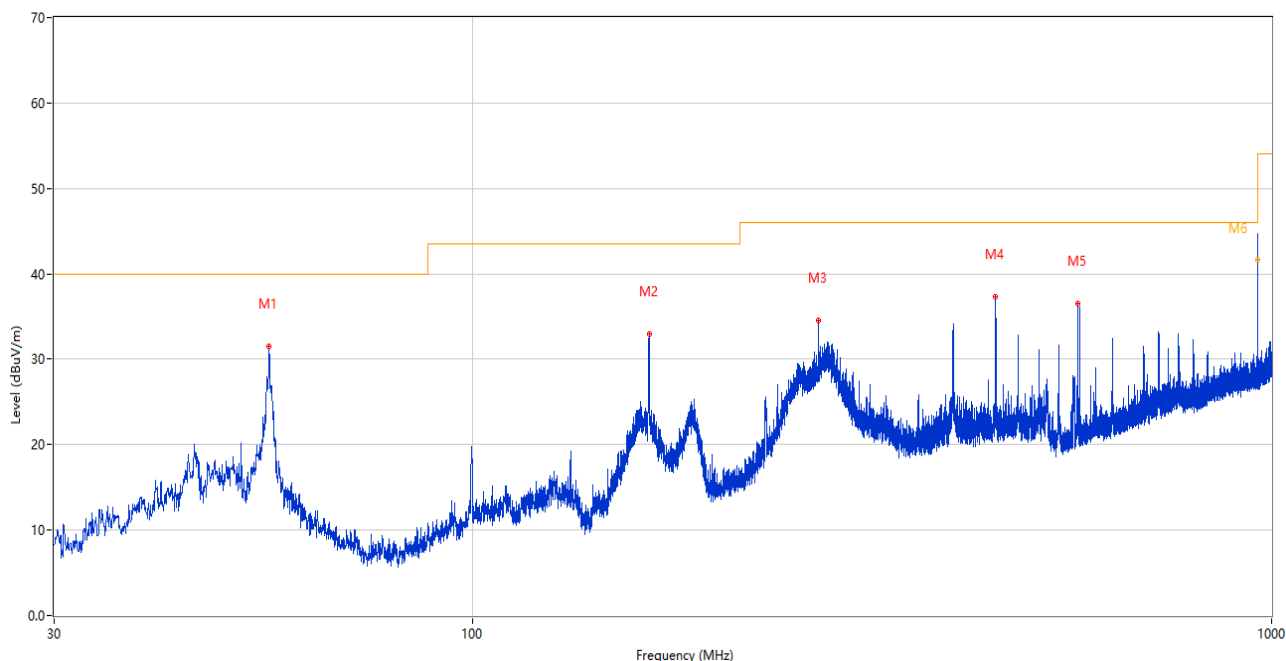


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1437.200	39.53	-15.91	74.0	34.47	Peak	100.00	100	Horizontal	Pass
1**	1437.200	29.33	-15.91	54.0	24.67	AV	100.00	100	Horizontal	Pass
2	2117.000	42.47	-12.77	74.0	31.53	Peak	131.00	100	Horizontal	Pass
2**	2117.000	33.14	-12.77	54.0	20.86	AV	131.00	100	Horizontal	Pass
3	4041.500	50.76	-1.29	74.0	23.24	Peak	117.00	100	Horizontal	Pass
3**	4041.500	41.34	-1.29	54.0	12.66	AV	117.00	100	Horizontal	Pass
4	5756.250	55.93	3.33	74.0	18.07	Peak	89.00	100	Horizontal	Pass
4**	5756.250	46.70	3.33	54.0	7.30	AV	89.00	100	Horizontal	Pass
5	7093.250	55.49	1.99	74.0	18.51	Peak	62.00	100	Horizontal	Pass
5**	7093.250	46.49	1.99	54.0	7.51	AV	62.00	100	Horizontal	Pass
6	13412.000	56.31	4.76	74.0	17.69	Peak	85.00	100	Horizontal	Pass
6**	13412.000	46.61	4.76	54.0	7.39	AV	85.00	100	Horizontal	Pass

Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Above 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330120	2023.09.05	2024.09.04	☒
Amplifier (1-12GHz)	Advanced Microwave	WLA652A	1740103	2023.12.05	2024.12.04	☒
Amplifier (0.8-21GHz)	Mini-Circuits	ZVA-213-S+	225321316	2023.12.05	2024.12.04	☒
Amplifier (18-40GHz)	COM-MV	KA LNA18- 40G-01	18050001	2023.12.05	2024.12.04	☒
Test Antenna- Horn	SCHWARZB ECK	BBHA 9120D	01917	2022.06.09	2025.06.08	☒
Test Antenna- Horn	A-INFOMW	LB- 180400KF	J211060273	2021.07.02	2024.07.01	☒
Anechoic Chamber (#2)	YiHeng	9m*6m*6m	142	2021.08.19	2024.08.18	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

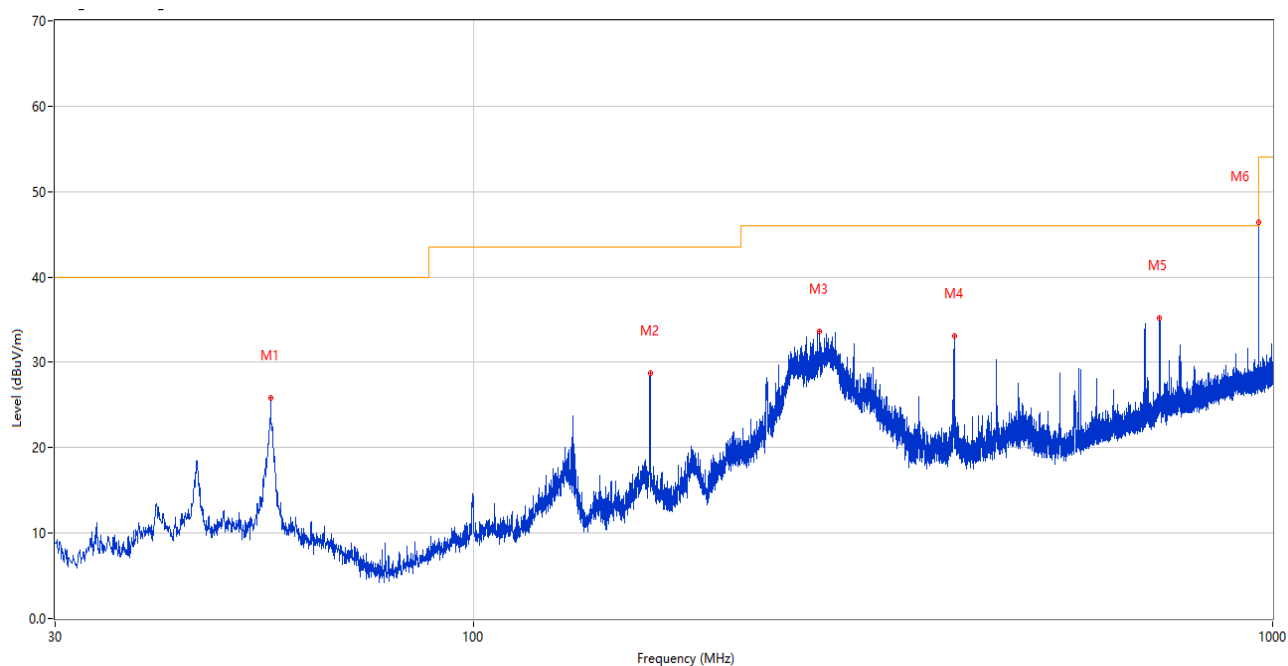
Test Mode 6

5) 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	55.705	31.53	-25.96	40.0	8.47	Peak	290.00	100	Vertical	Pass
2	166.624	32.93	-29.24	43.5	10.57	Peak	240.00	100	Vertical	Pass
3	270.948	34.51	-24.40	46.0	11.49	Peak	311.00	200	Vertical	Pass
4	451.659	37.27	-19.85	46.0	8.73	Peak	150.00	100	Vertical	Pass
5	572.133	36.58	-16.98	46.0	9.42	Peak	130.00	100	Vertical	Pass
6	959.987	44.68	-9.29	46.0	1.32	Peak	185.00	100	Vertical	N/A
6*	959.987*	41.71	-9.29	46.0	4.29	QP	185.00	100	Vertical	Pass

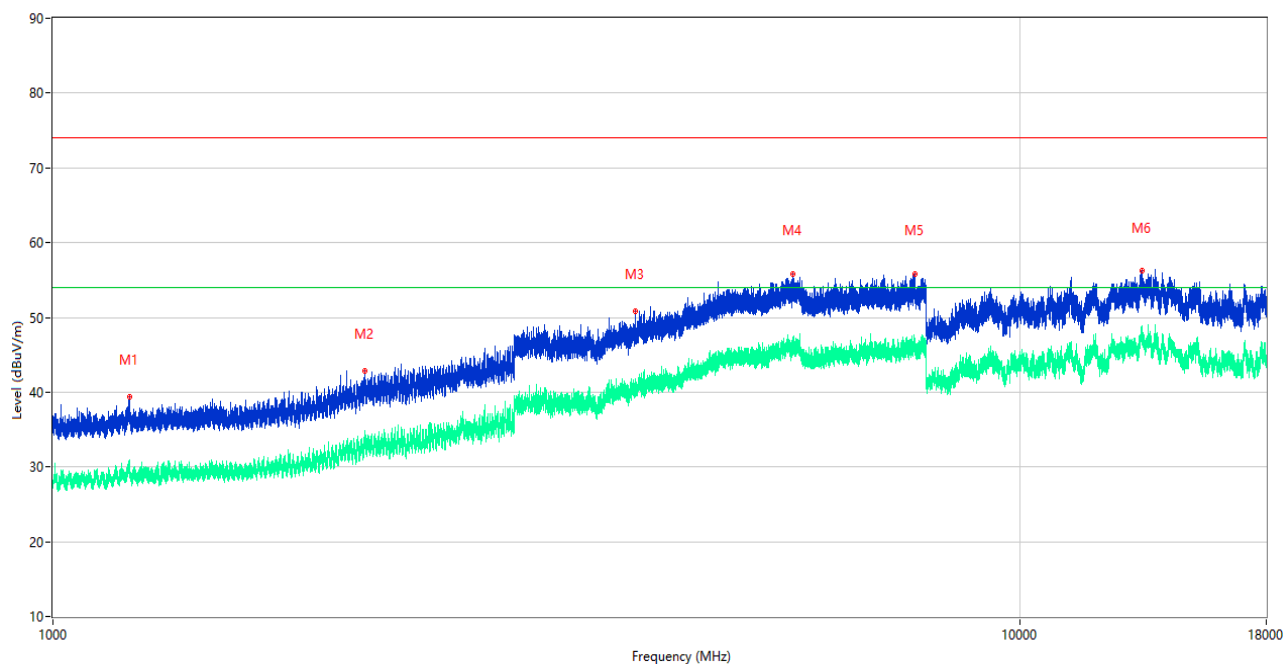
6) Test Antenna Horizontal, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	55.802	25.88	-25.97	40.0	14.12	Peak	328.00	200	Horizontal	Pass
2	166.624	28.69	-29.24	43.5	14.81	Peak	152.00	200	Horizontal	Pass
3	270.851	33.66	-24.40	46.0	12.34	Peak	59.00	100	Horizontal	Pass
4	399.909	33.07	-20.95	46.0	12.93	Peak	254.00	100	Horizontal	Pass
5	722.532	35.17	-13.51	46.0	10.83	Peak	228.00	200	Horizontal	Pass
6	960.036	46.45	-9.29	54.0	7.55	Peak	333.00	100	Horizontal	Pass

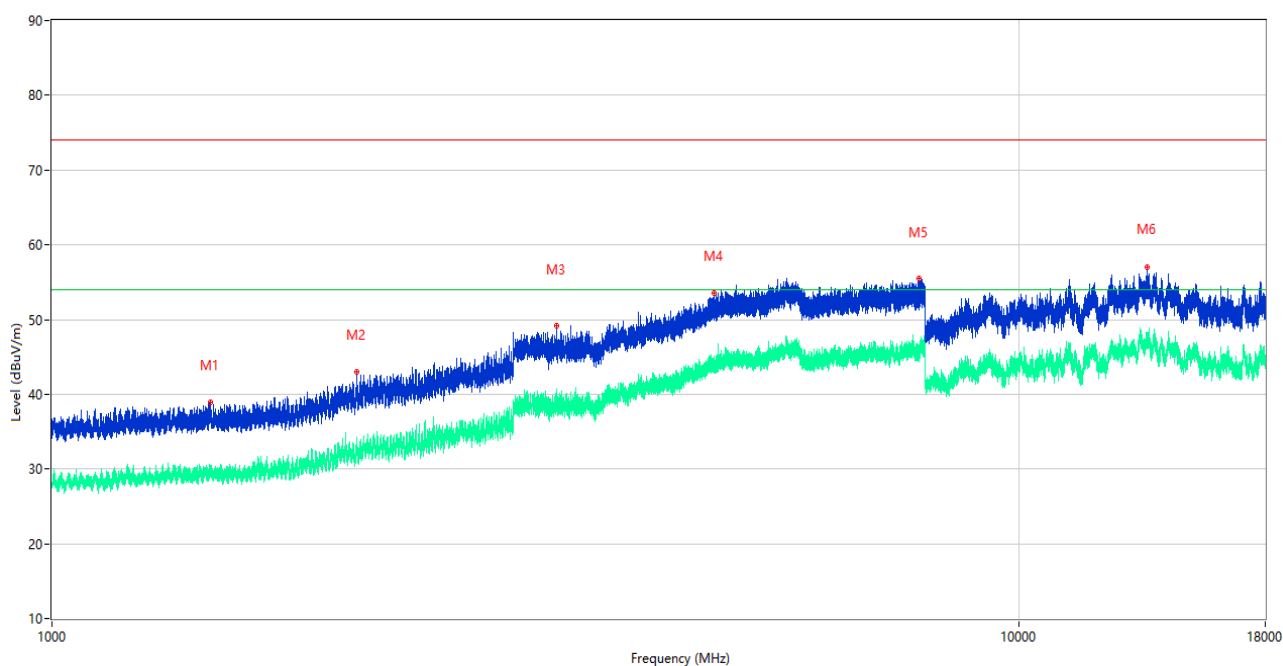
Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Below 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330120	2023.09.05	2024.09.04	☒
Amplifier (30-1GHz)	COM-MV	ZT30-1000M	B2017119081	2023.12.05	2024.12.04	☒
Test Antenna- Bi-Log	SCHWARZB ECK	VULB 9168	9168-00867	2022.04.12	2025.04.11	☒
Anechoic Chamber (#2)	YiHeng	9m*6m*6m	142	2021.08.19	2024.08.18	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

7) Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1199.800	39.33	-16.21	74.0	34.67	Peak	229.00	100	Vertical	Pass
1**	1199.800	30.02	-16.21	54.0	23.98	AV	229.00	100	Vertical	Pass
2	2100.800	42.88	-12.89	74.0	31.12	Peak	121.00	100	Vertical	Pass
2**	2100.800	34.02	-12.89	54.0	19.98	AV	121.00	100	Vertical	Pass
3	4003.500	50.86	-1.51	74.0	23.14	Peak	353.00	100	Vertical	Pass
3**	4003.500	41.82	-1.51	54.0	12.18	AV	353.00	100	Vertical	Pass
4	5832.250	55.76	3.97	74.0	18.24	Peak	173.00	100	Vertical	Pass
4**	5832.250	47.39	3.97	54.0	6.61	AV	173.00	100	Vertical	Pass
5	7788.000	55.78	3.15	74.0	18.22	Peak	353.00	100	Vertical	Pass
5**	7788.000	46.43	3.15	54.0	7.57	AV	353.00	100	Vertical	Pass
6	13381.000	56.19	5.03	74.0	17.81	Peak	360.00	100	Vertical	Pass
6**	13381.000	47.67	5.03	54.0	6.33	AV	360.00	100	Vertical	Pass

8) Test Antenna Horizontal, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1459.700	38.94	-15.84	74.0	35.06	Peak	256.00	100	Horizontal	Pass
1**	1459.700	30.27	-15.84	54.0	23.73	AV	256.00	100	Horizontal	Pass
2	2066.400	42.94	-12.95	74.0	31.06	Peak	313.00	100	Horizontal	Pass
2**	2066.400	34.32	-12.95	54.0	19.68	AV	313.00	100	Horizontal	Pass
3	3327.500	49.21	-4.20	74.0	24.79	Peak	235.00	100	Horizontal	Pass
3**	3327.500	40.80	-4.20	54.0	13.20	AV	235.00	100	Horizontal	Pass
4	4846.000	53.48	1.73	74.0	20.52	Peak	318.00	100	Horizontal	Pass
4**	4846.000	44.24	1.73	54.0	9.76	AV	318.00	100	Horizontal	Pass
5	7898.250	55.50	2.29	74.0	18.50	Peak	180.00	100	Horizontal	Pass
5**	7898.250	45.07	2.29	54.0	8.93	AV	180.00	100	Horizontal	Pass
6	13578.000	57.05	4.73	74.0	16.95	Peak	42.00	100	Horizontal	Pass
6**	13578.000	47.37	4.73	54.0	6.63	AV	42.00	100	Horizontal	Pass

Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
Frequency Above 1 GHz						
EMI Receiver	Keysight	N9038A	MY55330120	2023.09.05	2024.09.04	☒
Amplifier (1-12GHz)	Advanced Microwave	WLA652A	1740103	2023.12.05	2024.12.04	☒
Amplifier (0.8-21GHz)	Mini-Circuits	ZVA-213-S+	225321316	2023.12.05	2024.12.04	☒
Amplifier (18-40GHz)	COM-MV	KA LNA18- 40G-01	18050001	2023.12.05	2024.12.04	☒
Test Antenna- Horn	SCHWARZB ECK	BBHA 9120D	01917	2022.06.09	2025.06.08	☒
Test Antenna- Horn	A-INFOMW	LB- 180400KF	J211060273	2021.07.02	2024.07.01	☒
Anechoic Chamber (#2)	YiHeng	9m*6m*6m	142	2021.08.19	2024.08.18	☒
Description	Supplier	Name	Version	/		Use
Test Software	BALUN	BL410-E	V22.930	/		☒

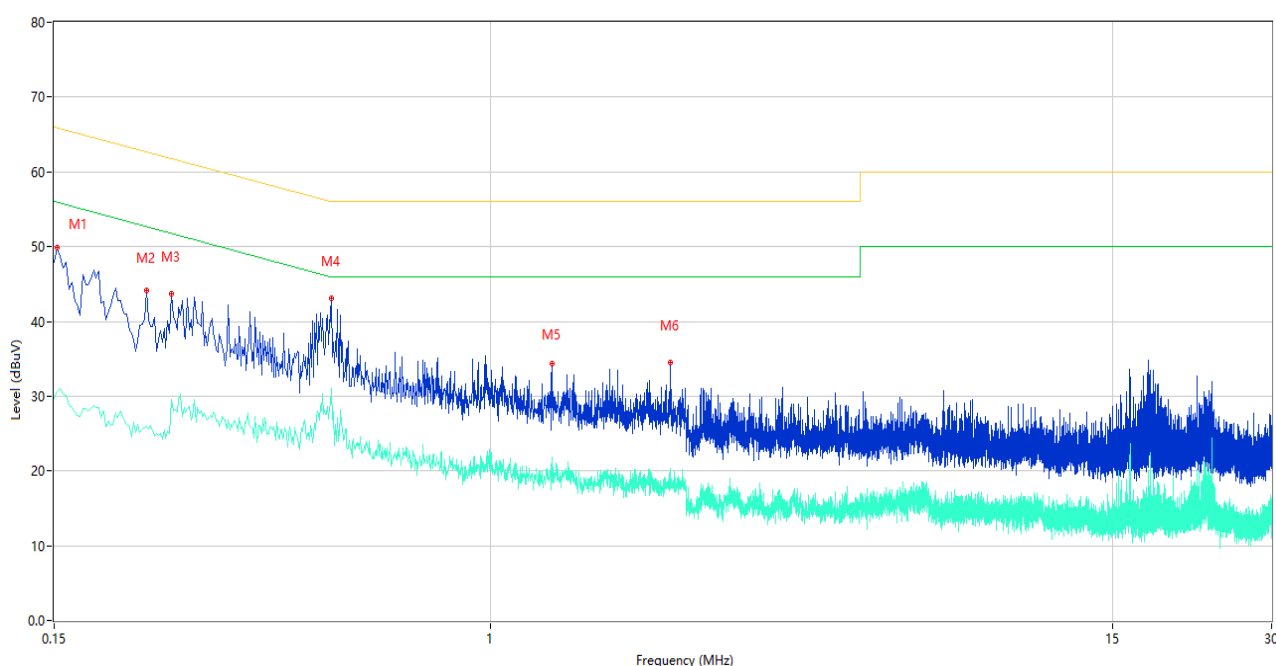
A.2 Conducted Emission, AC Ports

Note: 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. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Sample No.	S03	Temperature	22.4℃
Humidity	45%RH	Pressure	101kPa
Test Engineer	Yang Yang	Test Date	2024.03.13 – 2024.03.26

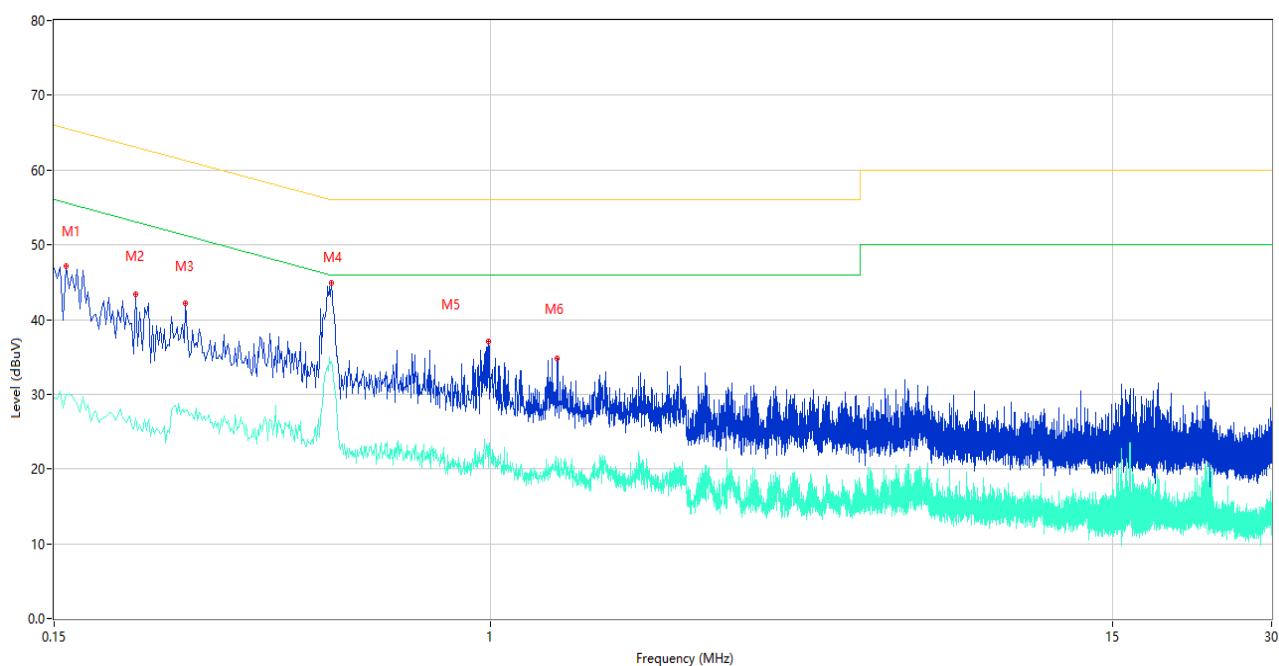
Test Mode 5

1) AC Ports - L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.152	49.80	9.47	65.89	16.09	Peak	L	Pass
1**	0.152	30.65	9.47	55.89	25.24	AV	L	Pass
2	0.224	44.10	9.42	62.67	18.57	Peak	L	Pass
2**	0.224	25.89	9.42	52.67	26.78	AV	L	Pass
3	0.250	43.68	9.43	61.76	18.08	Peak	L	Pass
3**	0.250	29.60	9.43	51.76	22.16	AV	L	Pass
4	0.502	43.12	9.69	56.00	12.88	Peak	L	Pass
4**	0.502	31.10	9.69	46.00	14.90	AV	L	Pass
5	1.308	34.33	9.77	56.00	21.67	Peak	L	Pass
5**	1.308	21.90	9.77	46.00	24.10	AV	L	Pass
6	2.194	34.52	9.73	56.00	21.48	Peak	L	Pass
6**	2.194	20.32	9.73	46.00	25.68	AV	L	Pass

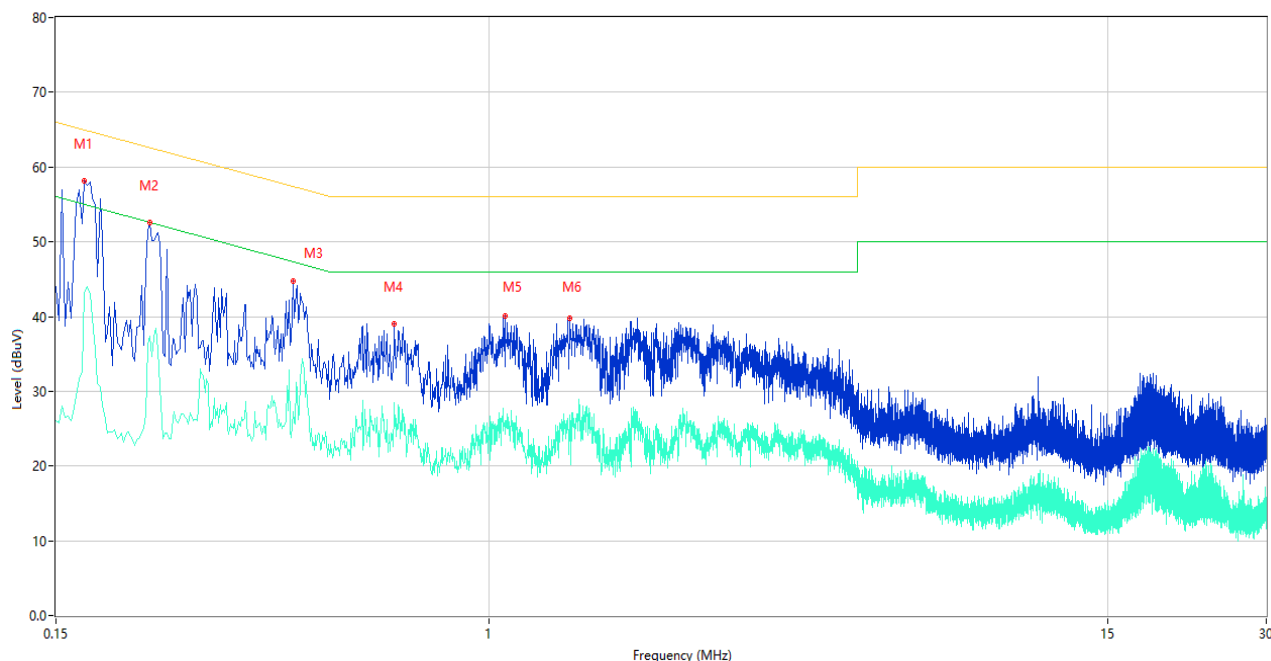
2) AC Ports - N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.158	47.12	9.46	65.57	18.45	Peak	N	Pass
1**	0.158	29.99	9.46	55.57	25.58	AV	N	Pass
2	0.214	43.44	9.42	63.05	19.61	Peak	N	Pass
2**	0.214	26.78	9.42	53.05	26.27	AV	N	Pass
3	0.266	42.18	9.43	61.24	19.06	Peak	N	Pass
3**	0.266	27.87	9.43	51.24	23.37	AV	N	Pass
4	0.502	44.91	9.69	56.00	11.09	Peak	N	Pass
4**	0.502	34.29	9.69	46.00	11.71	AV	N	Pass
5	0.994	37.03	9.69	56.00	18.97	Peak	N	Pass
5**	0.994	23.01	9.69	46.00	22.99	AV	N	Pass
6	1.338	34.78	9.76	56.00	21.22	Peak	N	Pass
6**	1.338	20.00	9.76	46.00	26.00	AV	N	Pass

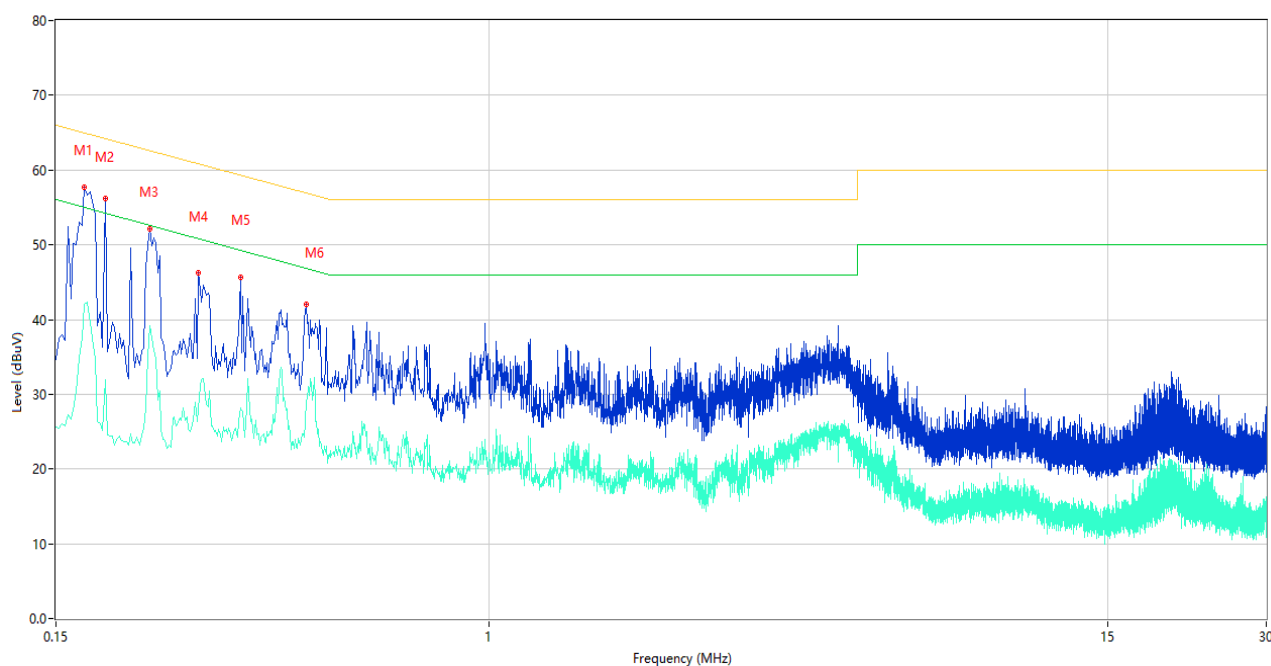
Test Mode 6

3) AC Ports - L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.170	58.20	9.45	64.96	6.76	Peak	L	Pass
1**	0.170	43.25	9.45	54.96	11.71	AV	L	Pass
2	0.226	52.51	9.43	62.60	10.09	Peak	L	Pass
2**	0.226	37.31	9.43	52.60	15.29	AV	L	Pass
3	0.424	44.77	9.97	57.37	12.60	Peak	L	Pass
3**	0.424	27.27	9.97	47.37	20.10	AV	L	Pass
4	0.660	39.02	9.73	56.00	16.98	Peak	L	Pass
4**	0.660	28.48	9.73	46.00	17.52	AV	L	Pass
5	1.070	40.06	9.56	56.00	15.94	Peak	L	Pass
5**	1.070	26.05	9.56	46.00	19.95	AV	L	Pass
6	1.422	39.74	9.94	56.00	16.26	Peak	L	Pass
6**	1.422	26.87	9.94	46.00	19.13	AV	L	Pass

4) AC Ports - N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.170	57.73	9.45	64.96	7.23	Peak	N	Pass
1**	0.170	41.98	9.45	54.96	12.98	AV	N	Pass
2	0.186	56.13	9.43	64.21	8.08	Peak	N	Pass
2**	0.186	31.88	9.43	54.21	22.33	AV	N	Pass
3	0.226	52.14	9.43	62.60	10.46	Peak	N	Pass
3**	0.226	39.11	9.43	52.60	13.49	AV	N	Pass
4	0.280	46.25	9.43	60.82	14.57	Peak	N	Pass
4**	0.280	28.03	9.43	50.82	22.79	AV	N	Pass
5	0.336	45.67	9.36	59.30	13.63	Peak	N	Pass
5**	0.336	28.25	9.36	49.30	21.05	AV	N	Pass
6	0.448	42.05	9.93	56.91	14.86	Peak	N	Pass
6**	0.448	29.24	9.93	46.91	17.67	AV	N	Pass

Equipment Information						
Equipment Name	Supplier	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2023.09.05	2024.09.04	☒
LISN	SCHWARZB ECK	NSLK 8127	8127-687	2023.05.16	2024.05.15	☒
ISN	TESEQ	ISN T800	34449	2023.11.10	2024.11.09	☐
ISN	TESEQ	ISN T8-Cat6	53561	2023.04.23	2024.04.22	☐
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-SZ2430302-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2430302-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2430302-AI.PDF”.

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--END OF REPORT--