

TEST REPORT

Applicant: MonoLets, Inc.
Address: 701 W Evelyn Ave, Suite B, Mountain View CA
94041 USA
Equipment Type: Cellular Tracker
Model Name: Cellular Tracker v7.0
Brand Name: MonoLets Cellular Tracker
FCC ID: 2BLATMLCELTRK072409
ISED Number: 33091-CT072410
Test Standard: 47 CFR Part 15 Subpart B
ICES-003 (Issue 7, October 2020)
ANSI C63.4-2014
Sample Arrival Date: Sep. 11, 2024
Test Date: Sep. 11, 2024
Date of Issue: Jan. 06, 2025

ISSUED BY:

Shanghai Tejet Communications Technology Co., Ltd. Testing Center



Tested by: Chai Yong

Checked by: Huang Chengkun

Approved by: Chen Zidong
(Technical Director)

Chai Yong

Huang Chengkun

Chen Zidong

Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jan. 06, 2025</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1 GENERAL INFORMATION	4
1.1 Test Laboratory	4
1.2 Test Location	4
2 PRODUCT INFORMATION	5
2.1 Applicant Information	5
2.2 Manufacturer Information	5
2.3 General Description for Equipment under Test (EUT)	5
2.4 Ancillary Equipment	6
2.5 Technical Information	6
3 SUMMARY OF TEST RESULTS	7
3.1 Test Standards	7
3.2 Verdict	7
3.3 Decision Rule	7
3.4 Test Uncertainty	7
4 GENERAL TEST CONFIGURATIONS	8
4.1 Test Enclosure List	8
4.2 Test Configurations	8
4.3 Test Setups	9
5 TEST ITEMS	11
5.1 Emission Tests	11
5.1.1 Radiated emission	11
5.1.2 Conducted emission	14
ANNEX A TEST RESULTS AND TEST EQUIPMENT LIST	15
A.1 Radiated emission	15
A.2 Conducted emission	22

ANNEX B TEST SETUP PHOTOS	23
ANNEX C EUT EXTERNAL PHOTOS	23
ANNEX D EUT INTERNAL PHOTOS	23

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Address	1st to 2nd floors, Building 1, No. 222 Xuanlan Road, Xuanqiao Town, Pudong New District, Shanghai

1.2 Test Location

Name	Shanghai Tejet Communications Technology Co., Ltd. Testing Center
Location	1st to 2nd floors, Building 1, No. 222 Xuanlan Road, Xuanqiao Town, Pudong New District, Shanghai
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1352. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are CN0142.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	MonoLets, Inc.
Address	701 W Evelyn Ave, Suite B, Mountain View CA 94041 USA

2.2 Manufacturer Information

Manufacturer	MonoLets, Inc.
Address	701 W Evelyn Ave, Suite B, Mountain View CA 94041 USA

2.3 General Description for Equipment under Test (EUT)

Equipment Type	Cellular Tracker
Model Name Under Test	Cellular Tracker v7.0
Series Model Name	N/A
Description of Model Name Differentiation	N/A
Hardware Version	7.0
Software Version	Test software
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	DuraCell
	Model No.	AAA
	Serial No.	N/A
	Capacity	1200 mAh
	Rated Voltage	1.5 V
	Limit Charge Voltage	N/A

2.5 Technical Information

Network and wireless connectivity	4G Network LTE CAT-M1 B2/4/5/12/13/25/26/66 Bluetooth, GPS
Classification of equipment	Class B
Highest frequency generated or used in the device or on which the device operates (MHz)	2483.5 MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B	Unintentional Radiators
2	ICES-003 (Issue 7, October 2020)	Information Technology Equipment (Including Digital Apparatus)
3	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	ISED Rule	Test Verdict	Remark
1	Radiated Emission	15.109	ICES-003, 3.2.2	Pass	--
2	Conducted Emission, AC Ports	15.107	ICES-003, 3.2.1	N/A	Note 1
Note 1: The EUT is powered by battery, so this test item is not applicable.					

3.3 Decision Rule

- ☐ No Need
- ☒ Use General conformity decision rule (Consider uncertainty or not ☒ No ☐ Yes)
- ☐ Use Special Conformity Decision Rule (Consider uncertainty or not ☐ No ☐ Yes)

3.4 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#1	4.4 dB
Radiated emissions (1 GHz-18 GHz) -966#1	5.2 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Enclosure List

Note: Not applicable.

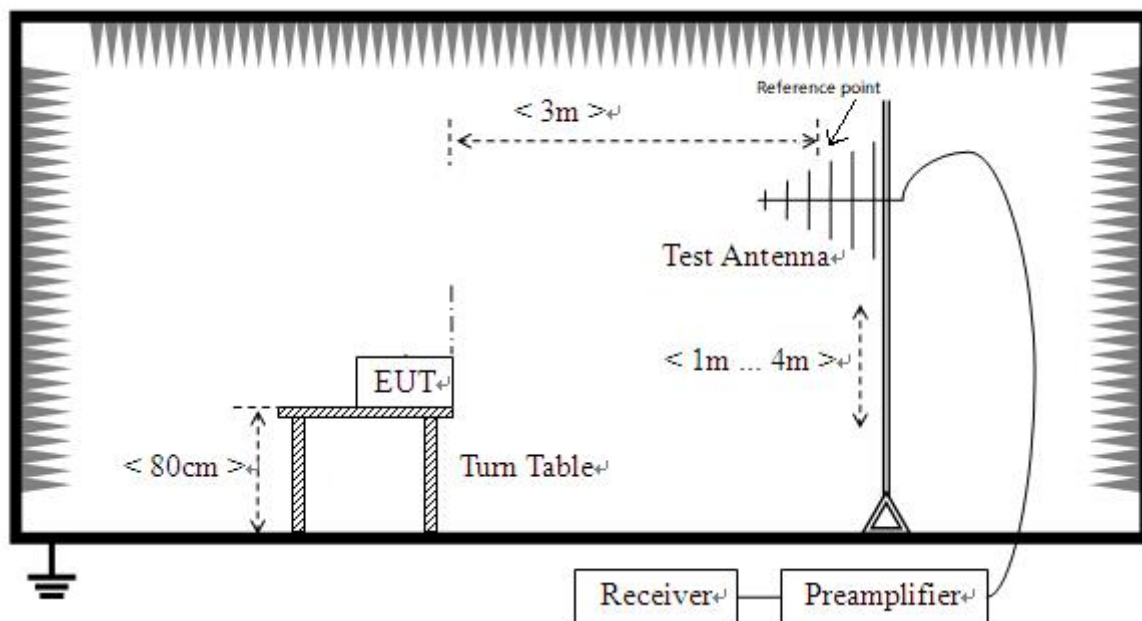
4.2 Test Configurations

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

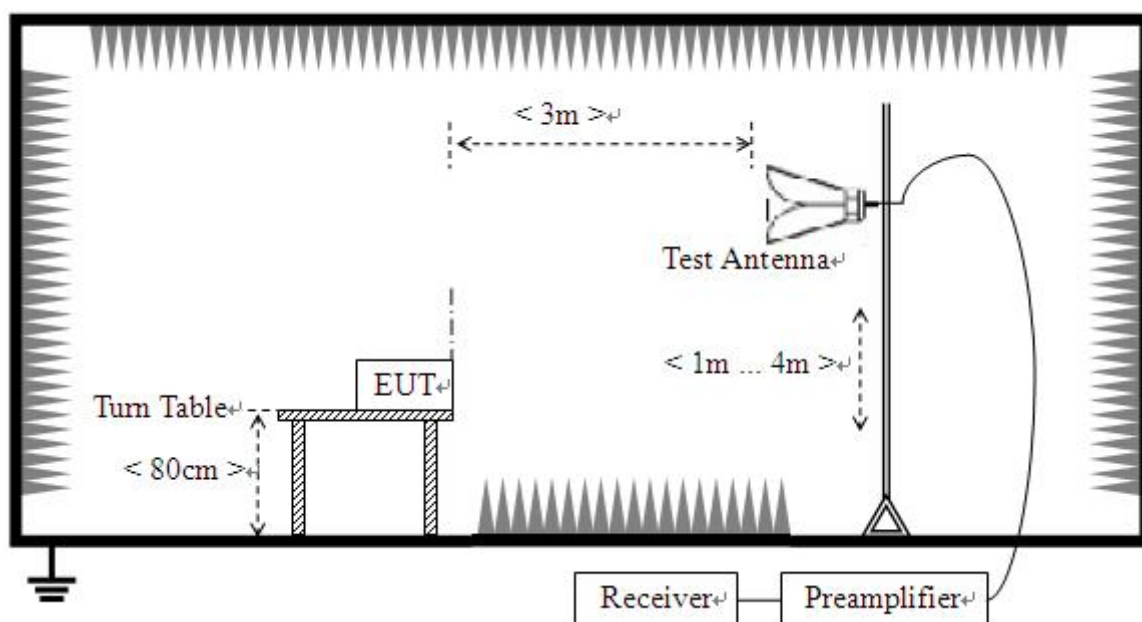
Test Mode Configuration	Description
Mode 1	<u>The Normal Working Test Mode</u> EUT + Battery

4.3 Test Setups

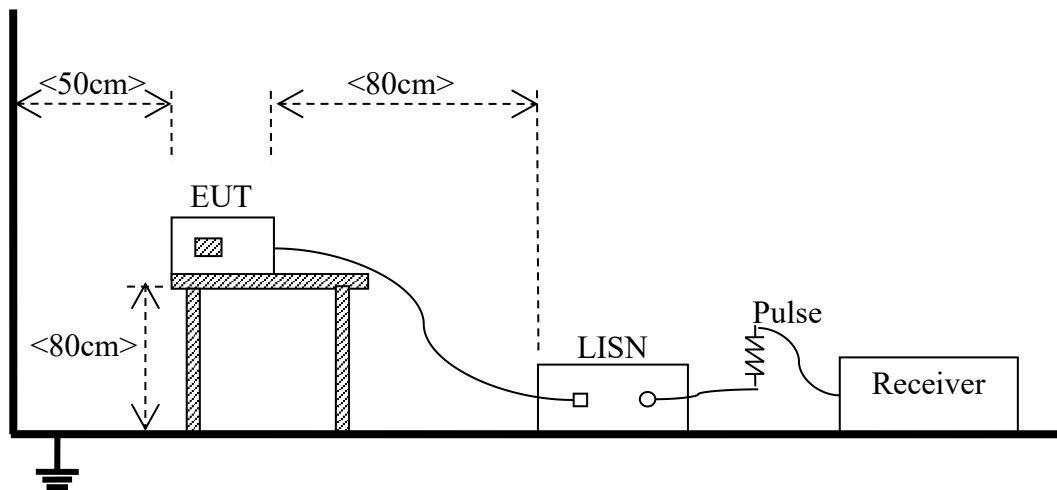
Test Setup 1



Radiated Emission (30 MHz-1 GHz)



Radiated Emission (above 1 GHz)

Test Setup 2

Conducted emission, AC ports

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated emission

5.1.1.1 Limit

FCC:

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) The limits using ANSI C63.4-2014.
- 4) For 30-1000 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.	

ISED:

Frequency range (MHz)	Class A (at 3 m) Quasi-peak (dB μ V/m)	Class B (at 3 m) Quasi-peak (dB μ V/m)
30 - 88	50.0	40.0
88 - 216	54.0	43.5
216 - 230	56.9	46.0
230 - 960	57.0	47.0
960 - 1000	60.0	54.0
Note: The more stringent limit applies at transition frequencies.		

Frequency range (GHz)	Class A (3 m) Average (dB μ V/m)	Class A (3 m) Peak (dB μ V/m)	Class B (3 m) Average (dB μ V/m)	Class B (3 m) Peak (dB μ V/m)
1 - F_M	60	80	54	74
Note: 1. The highest measurement frequency, F_M , in GHz, shall be determined as next Table. 2. The measurement bandwidth shall be 1 MHz or greater. 3. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test. 4. The test site shall have been validated at the distance used for radiated emission measurements on the ITE or digital apparatus under test				

Highest internal frequency (F_X)	Highest measurement frequency (F_M)
$F_X \leq 108 \text{ MHz}$	1GHz
$108 \text{ MHz} \leq F_X \leq 500 \text{ MHz}$	2GHz
$500 \text{ MHz} \leq F_X \leq 1 \text{ GHz}$	5GHz
$F_X \geq 1 \text{ GHz}$	$5 * F_X$ up to a maximum of 40 GHz
Note: F_X is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.	

5.1.1.2 Test setup

Please refer to 4.2 section description of test setup of test setup 1. The photo of test setup please refer to ANNEX B.

5.1.1.3 Test procedure

1. The test employing the methods of measurement described in the publication referenced in Section 3(b) (ANSI C63.4);
2. 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.
3. 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.
4. 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.
5. 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/m) + 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

5.1.2.1 Limit

Frequency range (MHz)	Class A		Class B	
	Quasi-peak (dB μ V)	Average (dB μ V)	Quasi-peak (dB μ V)	Average (dB μ V)
0.15 - 0.50	79	66	66 to 56	56 to 46
0.50 - 5	73	60	56	46
5 - 30	73	60	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.
- 3) The limit using ANSI C63.4.

5.1.2.2 Test setup

Please refer to 4.2 section description of test setup of test setup 2. The photo of test setup please refer to ANNEX B.

5.1.2.3 Test procedure

1. The test employing the methods of measurement described in the publication referenced in Section 3(b) (ANSI C63.4);
2. 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.
3. 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 AND TEST EQUIPMENT LIST

A.1 Radiated emission

Note 1: Measurements shall be made with a quasi-peak measuring receiver in the frequency range 30 MHz to 1000 MHz. To reduce the testing time, a peak measuring receiver may be used instead of a quasi-peak measuring receiver. In case of dispute, measurement with a quasi-peak measuring receiver will take precedence.

Note 2: The FCC limit is stricter than the IC and only reflects FCC Radiated Emission test data.

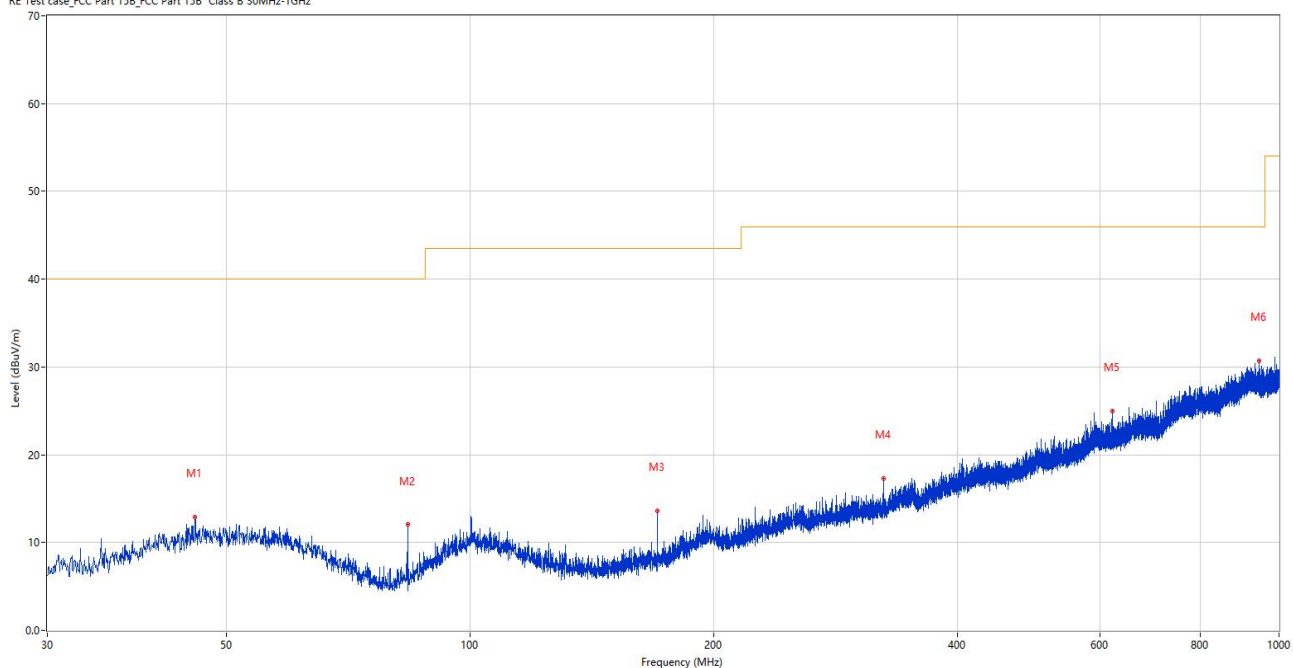
Note 3: When the EUT is on, it will automatically emit Bluetooth signal and cannot be turned off. So the marked spikes near 2400 MHz with circle should be ignored because they are Bluetooth carrier frequencies.

Sample No.	SC-SH2490025-S03	Temperature	20.3°C
Humidity	56%RH	Test Voltage	DC 5V
Test Engineer	Hao Longda	Test Date	2024.09.11

Test Mode 1

A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz

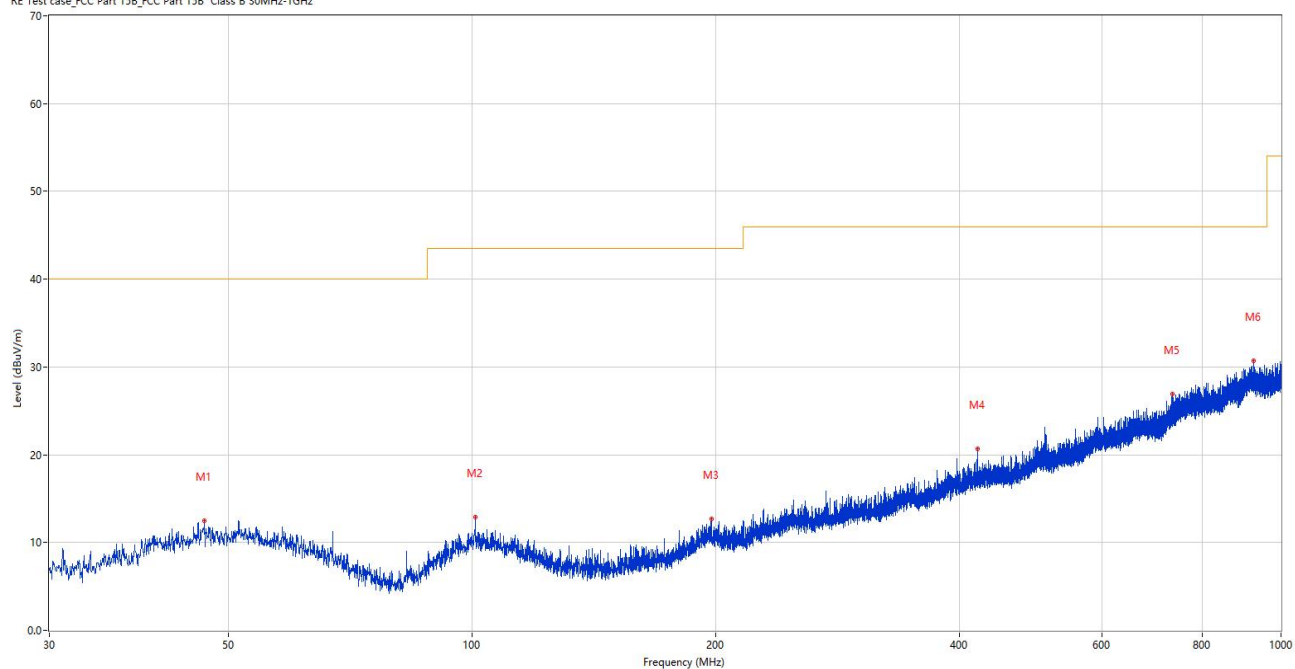
RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	45.714	12.93	-25.94	40.0	27.07	Peak	180.00	100	Vertical	Pass
2	83.641	12.04	-31.14	40.0	27.96	Peak	81.00	200	Vertical	Pass
3	170.359	13.58	-29.19	43.5	29.92	Peak	132.00	200	Vertical	Pass
4	324.346	17.29	-23.40	46.0	28.71	Peak	101.00	100	Vertical	Pass
5	622.719	24.96	-15.54	46.0	21.04	Peak	288.00	200	Vertical	Pass
6	943.982	30.74	-9.33	46.0	15.26	Peak	170.00	200	Vertical	Pass

A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz

RE Test case_FCC Part 15B_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	46.684	12.46	-25.84	40.0	27.54	Peak	105.00	200	Horizontal	Pass
2	100.955	12.87	-26.79	43.5	30.63	Peak	206.00	100	Horizontal	Pass
3	197.471	12.66	-26.37	43.5	30.84	Peak	0.00	200	Horizontal	Pass
4	421.977	20.69	-20.24	46.0	25.31	Peak	120.00	100	Horizontal	Pass
5	734.608	26.93	-13.25	46.0	19.07	Peak	323.00	100	Horizontal	Pass
6	925.407	30.72	-9.13	46.0	15.28	Peak	15.00	200	Horizontal	Pass

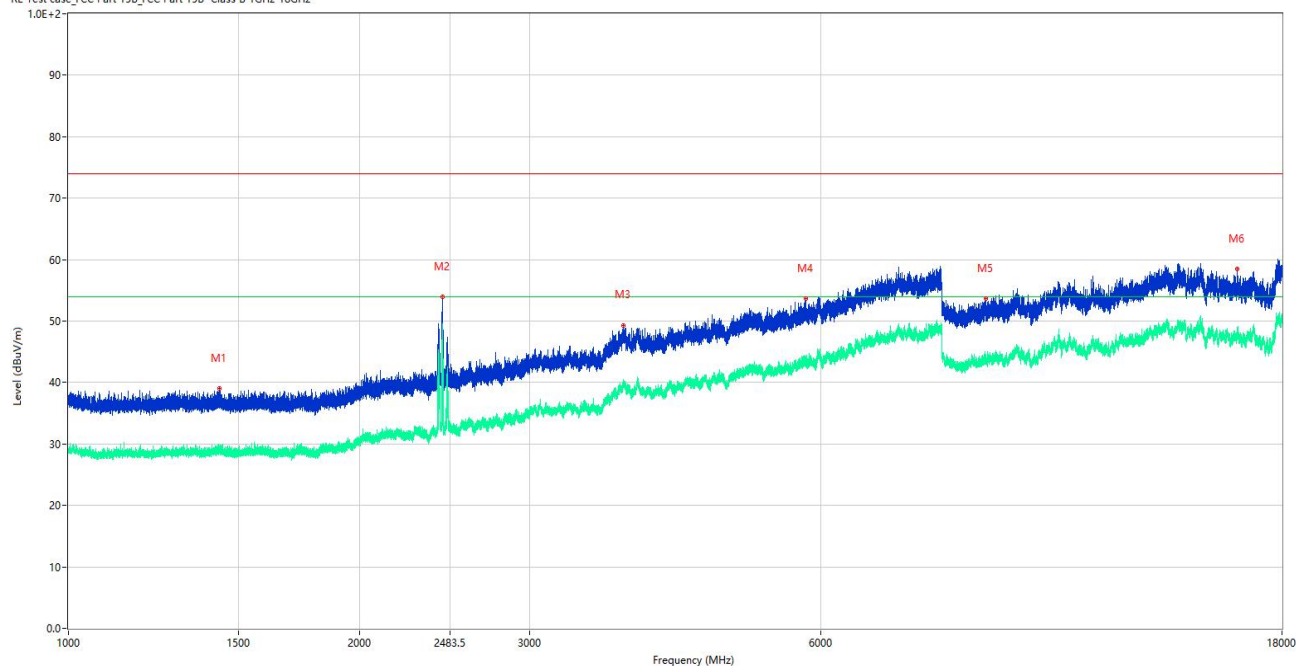
Equipment Information						
Equipment Name	Manufacturer	Model	Equipment No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	BH-EMC-L015	2024.07.09	2025.07.08	☒
Test Antenna-Bi-Log	SCHWARZB ECK	VULB 9163	BH-EMC-L008	2024.03.11	2027.03.10	☒
Anechoic Chamber	YiHeng	9m*6m*6m	BH-EMC-L001	2024.04.18	2027.04.17	☒
Description	Manufacturer	Name	Version	/		Use
Test Software	BALUN	BL410-E	V21.919	/		☒

Sample No.	SC-SH2490025	Temperature	20.3°C
Humidity	56%RH	Test Voltage	DC 5V
Test Engineer	Hao Longda	Test Date	2024.09.11

Test Mode 1

A.1.3 Test Antenna Vertical, 1 GHz – 18 GHz

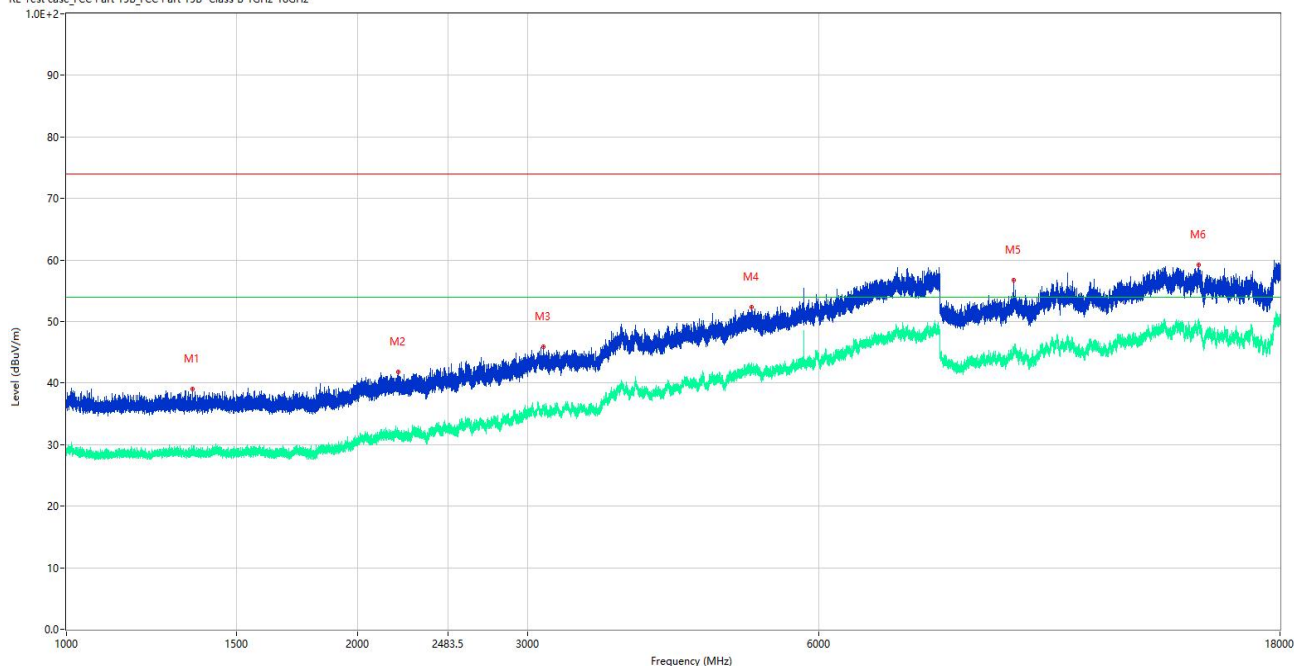
RE Test case_FCC Part 15B_FCC Part 15B Class B 1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1433.400	39.07	-15.93	74.0	34.93	Peak	254.00	100	Vertical	Pass
1**	1433.400	28.74	-15.93	54.0	25.26	AV	254.00	100	Vertical	Pass
2	2437.600	53.98	-11.66	74.0	20.02	Peak	290.00	100	Vertical	N/A
2**	2437.600	48.09	-11.66	54.0	5.91	AV	290.00	100	Vertical	N/A
3	3748.250	49.33	-3.30	74.0	24.67	Peak	277.00	100	Vertical	Pass
3**	3748.250	39.66	-3.30	54.0	14.34	AV	277.00	100	Vertical	Pass
4	5789.750	53.68	0.89	74.0	20.32	Peak	360.00	100	Vertical	Pass
4**	5789.750	42.77	0.89	54.0	11.23	AV	360.00	100	Vertical	Pass
5	8895.500	53.68	2.42	74.0	20.32	Peak	194.00	100	Vertical	Pass
5**	8895.500	43.10	2.42	54.0	10.90	AV	194.00	100	Vertical	Pass
6	16174.500	58.44	6.14	74.0	15.56	Peak	30.00	100	Vertical	Pass
6**	16174.500	47.68	6.14	54.0	6.32	AV	30.00	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 18 GHz

RE Test case_FCC Part 15B_FCC Part 15B Class B 1GHz-18GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1349.900	39.01	-15.88	74.0	34.99	Peak	357.00	100	Horizontal	Pass
1**	1349.900	28.28	-15.88	54.0	25.72	AV	357.00	100	Horizontal	Pass
2	2202.400	41.78	-12.78	74.0	32.22	Peak	72.00	100	Horizontal	Pass
2**	2202.400	31.36	-12.78	54.0	22.64	AV	72.00	100	Horizontal	Pass
3	3117.250	45.84	-7.07	74.0	28.16	Peak	360.00	100	Horizontal	Pass
3**	3117.250	35.71	-7.07	54.0	18.29	AV	360.00	100	Horizontal	Pass
4	5109.000	52.31	-0.52	74.0	21.69	Peak	177.00	100	Horizontal	Pass
4**	5109.000	42.27	-0.52	54.0	11.73	AV	177.00	100	Horizontal	Pass
5	9547.000	56.77	3.07	74.0	17.23	Peak	296.00	100	Horizontal	Pass
5**	9547.000	44.64	3.07	54.0	9.36	AV	296.00	100	Horizontal	Pass
6	14828.500	59.23	9.19	74.0	14.77	Peak	180.00	100	Horizontal	Pass
6**	14828.500	49.44	9.19	54.0	4.56	AV	180.00	100	Horizontal	Pass

Equipment Information						
Equipment Name	Manufacturer	Model	Equipment No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	BH-EMC-L015	2024.07.09	2025.07.08	☒
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	BH-EMC-L044	2024.03.11	2027.03.10	☒
Anechoic Chamber	YiHeng	9m*6m*6m	BH-EMC-L001	2024.04.18	2027.04.17	☒
Description	Manufacturer	Name	Version	/		Use
Test Software	BALUN	BL410-E	V21.919	/		☒

A.2 Conducted emission

Note: Not applicable.

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SH2490649-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SH2490649-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SH2490649-AI.PDF”.

Statement

1. The Testing Center 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. For the report with Accreditation Symbol, the items marked with "☆" are not within the accredited scope.
3. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the test report stamp.
4. The test data and results are only valid for the tested samples provided by the customer.
5. This report shall not be partially reproduced without the written permission of the Testing Center.
6. Any objection shall be raised to the Testing Center within 30 days after receiving the report.

--END OF REPORT--