TEST REPORT

Applicant:	Xuancheng Luxshare Precision Industry Co., Ltd.
Address:	No.5, Baishou Road, Hi - Tech Industrial Development Zone, Xuancheng, Anhui Province, P.R. China
Equipment Type:	Wireless Charging Module
Model Name:	WCM_NFC_Int
Brand Name:	LuXshare
FCC ID:	2BBAQ-WCMNFCINT
Test Standard:	47 CFR Part 15 Subpart C ANSI C63.10-2013
Sample Arrival Date:	Oct. 16, 2024
Test Date:	Oct. 21, 2024 - Oct. 25, 2024
Date of Issue:	Dec. 02, 2024

ISSUED BY:

Shanghai Tejet Communications Technology Co., Ltd. Testing Center

Tested by: Chai Yong

Chai Yong

Checked by: Huang Chengkun

Huang Chengkun

Approved by: Chen Zidong

(Technical Director)

Chen Zidong

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Nov. 27, 2024	Initial Issue
Rev. 02	Dec. 02, 2024	Change the FCC ID The original report is invalid.

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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.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Xuancheng Luxshare Precision Industry Co., Ltd.
Address	No.5, Baishou Road, Hi - Tech Industrial Development Zone, Xuancheng, Anhui Province, P.R. China

2.2 Manufacturer Information

Manufacturer	Xuancheng Luxshare Precision Industry Co., Ltd.
Address	No.5, Baishou Road, Hi - Tech Industrial Development Zone, Xuancheng, Anhui Province, P.R. China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Wireless Charging Module
Model Name Under Test	WCM_NFC_Int
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	NFC WPT

The requirement for the following technical information of the EUT was tested in this report:

Modulation Type	Qi
Operating Frequency	122~132 kHz
Product Type	☐ Mobile ☐ Portable ☒ Fix Location
Antenna Type	Coil Antenna
About Product	The EUT support the Qi technology, and they have the same operating frequency.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	Verdict
1	Antenna Requirement	15.203	Pass Note1
2	Radiated Emission	15.209,15.215(b)	Pass
3	Conducted Emission, AC Ports	15.207	N/A Note2
4	20 dB Bandwidth	15.215(c)	Pass
Note 1: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203. Note 2: The EUT is only used in vehicle environment. So the Conducted Emission test is not applicable. Note 3:WCM_NFC_Int has two configuration.The configuration 1 has fan component, configuration 2 has no fan component. And others hardware circuit and software were all the same. configuration 1 is considered as worst case after evaluation on both configurations, thus all tests are performed on configuration 1.			

3.1 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)

3.2 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 (9 kHz-30 MHz)	4.3 dB
Radiated emissions (30 MHz-1 GHz)	4.4 dB

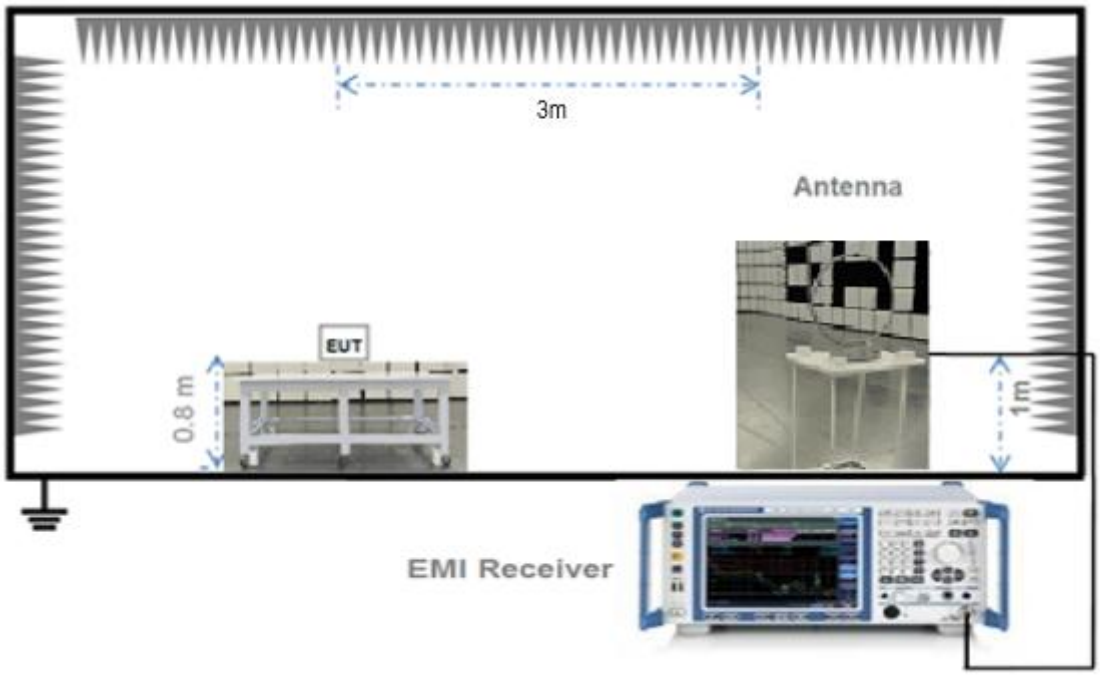
4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Relative Humidity	53% to 59%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+23.1℃ to +23.6℃
Working Voltage of the EUT	NV (Normal Voltage)	13.5 V

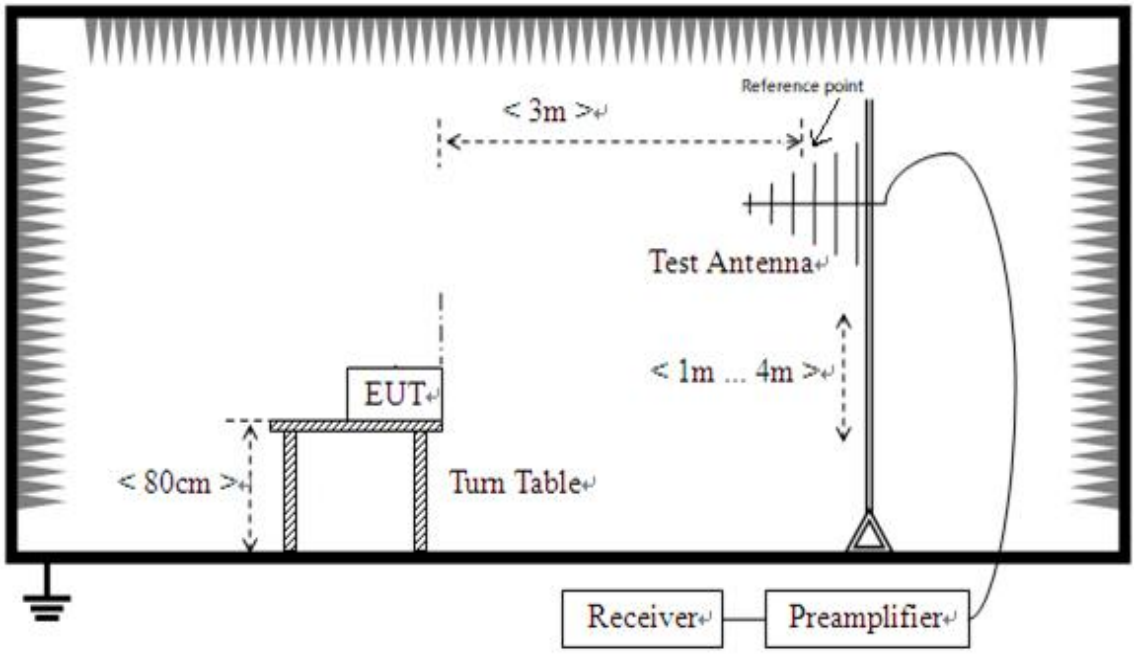
4.2 Test Setups

4.2.1 For Radiated Test (Below 30 MHz)



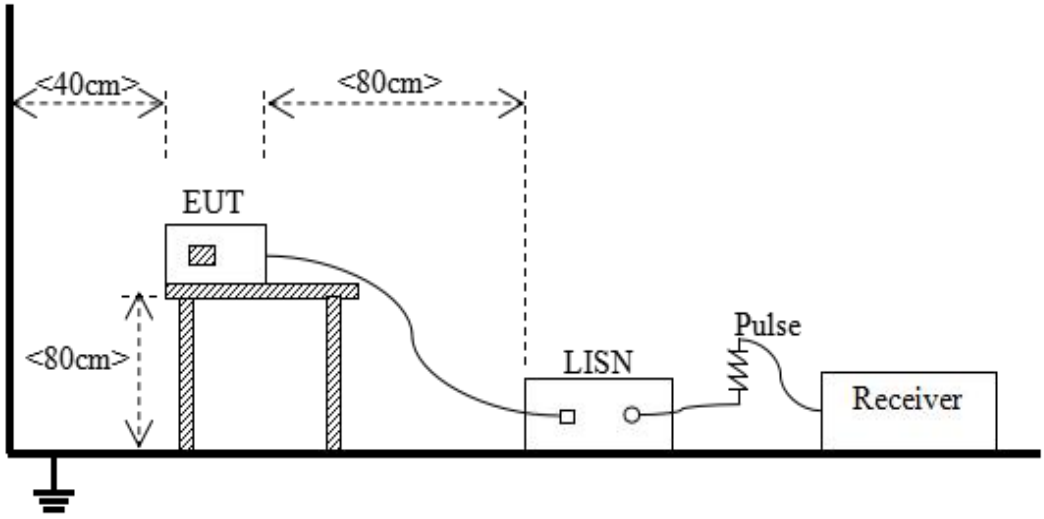
(Diagram 1)

4.2.2For Radiated Test (30 MHz-1 GHz)



(Diagram 2)

4.2.3 For AC Power Supply Port Test



(Diagram 3)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer EUT internal photos.

5.2 Emission Tests

5.2.1 Radiated Emission

5.2.1.1 Limit

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

NOTE:

1) Field Strength (dBμV/m) = 20*log [Field Strength (μV/m)].

2) In the emission tables above, the tighter limit applies at the band edges.

3) For above 1000 MHz, limit field strength of harmonics: 54 dBμV/m@3 m (AV) and 74 dBμV/m@3 m (PK)

4) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). For example, at the frequency 9 kHz, limit @10m = 20*log (2400/f) + 40log (dlimit/dmeasure) where limit = 300m, dmeasure=10m. limit @10m = 20*log (2400/9) + 40log (300/10) = 107.5 (dBμV/m).

5) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided, When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements). For example, at the frequency 30 MHz, limit @10m = 20*log (100) + 20log (dlimit/dmeasure) where limit = 3m, dmeasure=10m. limit @10m = 20*log (100) + 20log (3/10) = 29.5 (dBμV/m).

5.2.1.2 Test Setup

Refer to 4.2 section (test setup 1 to test setup 2) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.2.1.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. 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. The power of the EUT transmitting frequency should be ignored.

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

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for 30 MHz < f < 1 GHz, 10 kHz for 150 kHz < f < 30 MHz, 300 Hz for f < 150 kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.2.1.4 Test Result and Test Equipment List

Please refer to ANNEX A.1.

NOTE:

1. Results (dBμV/m) = Reading (dBμV) + 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

5.2.2 Conduct Emission

5.2.2.1 Test Limit

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

1) The limit is applicable to Class B ITE.
2) The lower limit shall apply at the band edges.
3) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.

5.2.2.2 Test Setup

Refer to 4.2 section test (test setup 3) for conducted emission, the photo of test setup please refer to ANNEX B.

5.2.2.3 Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω/50 μH 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.

5.2.2.4 Test Result and Test Equipment List

Please refer to ANNEX A.2.

NOTE:

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

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

2. Factor = Insertion loss + Cable loss

3. Margin = Limit – Results

5.2.3 20 dB Bandwidth

5.2.3.1 Limit

FCC §15.215(c)

The 20 dB bandwidth is known as the 99% emission bandwidth, or 20 dB bandwidth (10*log1%=20 dB) taking the total RF output power.

5.2.3.2 Test Setup

Refer to 4.2 section test (test setup 1) for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3.3 Test Procedure

The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while the EUT is operating in transmission mode.

Use the following spectrum analyzer settings:

Span = between 2 to 5 times the OBW

RBW = 1% to 5% the OBW

VBW ≥ 3RBW

Sweep = auto

Detector function = peak

Trace = max hold

The 99% emission bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while the EUT is operating in transmission mode.

Use the following spectrum analyzer settings:

Span = between 1.5 to 5 times the OBW

RBW = 1% to 5% OBW

VBW ≥ 3RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate, Allow the trace to stabilize.

5.2.3.4 Test Result and Test Equipment List

Please refer to ANNEX A.3.

ANNEX A TEST RESULTS

A.1 Radiated Emission

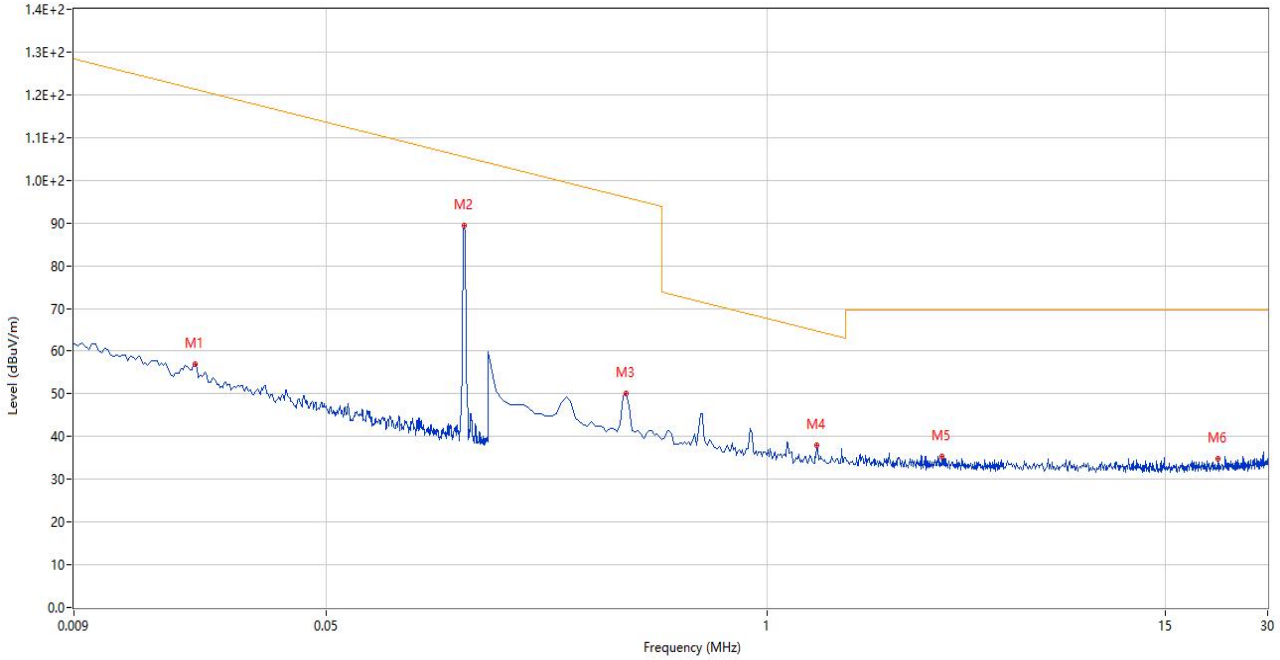
Note 1: This frequency which near 128 kHz with circle should be ignored because they are Qi carrier frequency.

Note 2: All Radiated Emissions tests were performed in X, Y, Z axis direction of EUT. And only the worst X axis test condition was recorded in this test report.

Sample No.	S05	Temperature	23.1℃
Humidity	59%RH	Pressure	101kPa
Test Engineer	Chai Yong	Test Date	2024.10.21

Test Data and Plot

9 kHz to 30 MHz, ANT-V



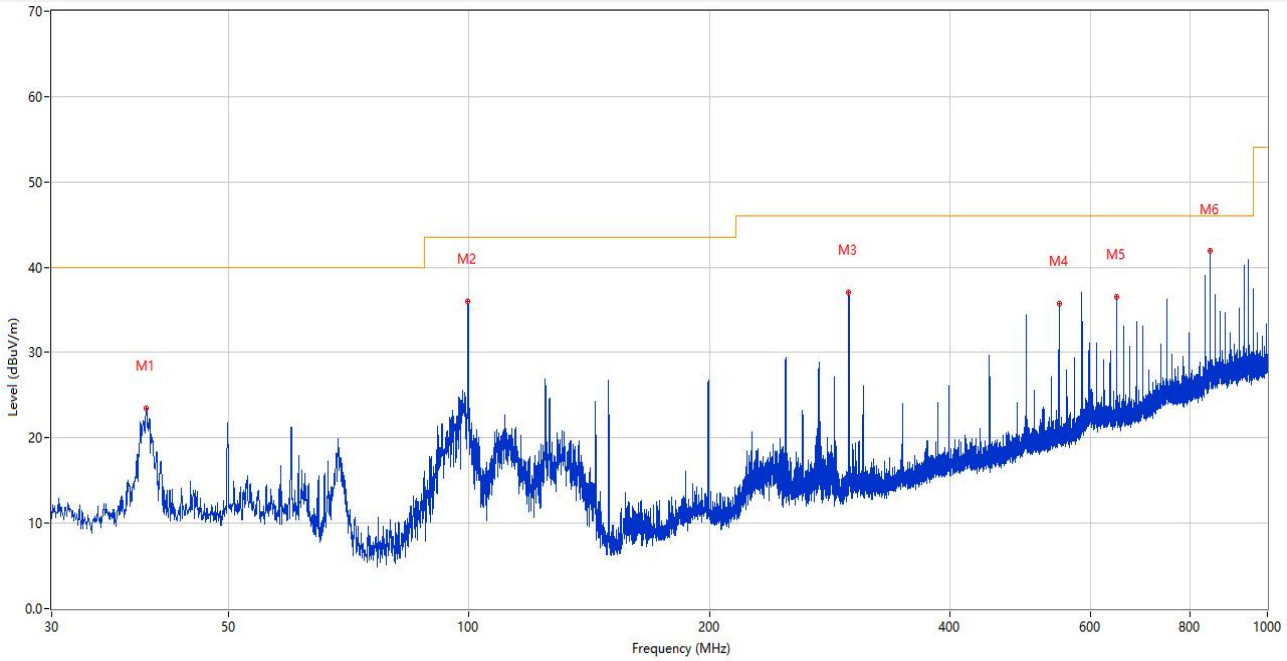
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	0.021	57.04	19.39	121.3	64.26	Peak	3.00	100	Vertical	Pass
2	0.128	89.32	19.07	105.5	16.18	Peak	99.00	100	Vertical	N/A
3	0.384	50.02	18.98	95.9	45.88	Peak	260.00	100	Vertical	Pass
4	1.403	37.93	19.13	64.7	26.77	Peak	305.00	100	Vertical	Pass
5	3.286	35.39	19.39	69.5	34.11	Peak	129.00	100	Vertical	Pass
6	21.458	34.77	19.45	69.5	34.73	Peak	66.00	100	Vertical	Pass

Equipment Information						
Description	Manufacturer	Model	Equipment No	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	BH-EMC-L015	2024.07.09	2025.07.08	☒
Test Antenna-Loop	SCHWARZBECK	FMZB 1519B	BH-EMC-L067	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.	S05	Temperature	23.1℃
Humidity	59%RH	Pressure	101kPa
Test Engineer	Chai Yong	Test Date	2024.10.21

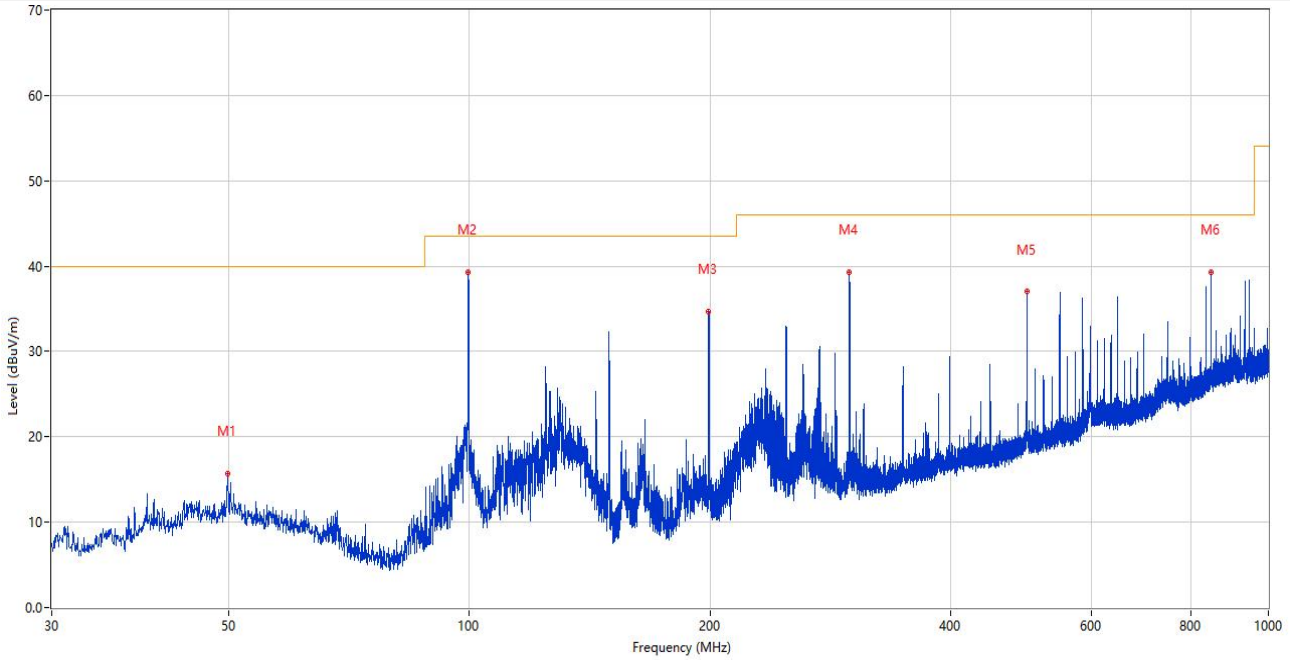
Test Data and Plot

30 MHz to 1 GHz, ANT-V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	39.409	23.49	-26.11	40.0	16.51	Peak	280.00	100	Vertical	Pass
2	99.695	36.00	-26.12	43.5	7.50	Peak	356.00	100	Vertical	Pass
3	299.030	37.10	-23.21	46.0	8.90	Peak	245.00	100	Vertical	Pass
4	548.271	35.68	-16.95	46.0	10.32	Peak	310.00	100	Vertical	Pass
5	647.938	36.52	-14.47	46.0	9.48	Peak	197.00	100	Vertical	Pass
6	847.419	41.86	-10.52	46.0	4.14	Peak	154.00	100	Vertical	Pass

30 MHz to 1 GHz, ANT-H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	49.837	15.75	-24.52	40.0	24.25	Peak	228.00	200	Horizontal	Pass
2	99.646	39.32	-26.12	43.5	4.18	Peak	271.00	200	Horizontal	Pass
3	199.314	34.73	-25.74	43.5	8.77	Peak	252.00	100	Horizontal	Pass
4	299.030	39.28	-23.21	46.0	6.72	Peak	274.00	100	Horizontal	Pass
5	498.365	36.98	-18.16	46.0	9.02	Peak	245.00	100	Horizontal	Pass
6	847.177	39.32	-10.51	46.0	6.68	Peak	268.00	100	Horizontal	Pass

Equipment Information						
Description	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	SCHWARZBECK	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	/		☒

A.2 Conducted Emission

Note: Not applicable.

A.3 20 dB Bandwidth

Note: Because the measured signal is CW adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

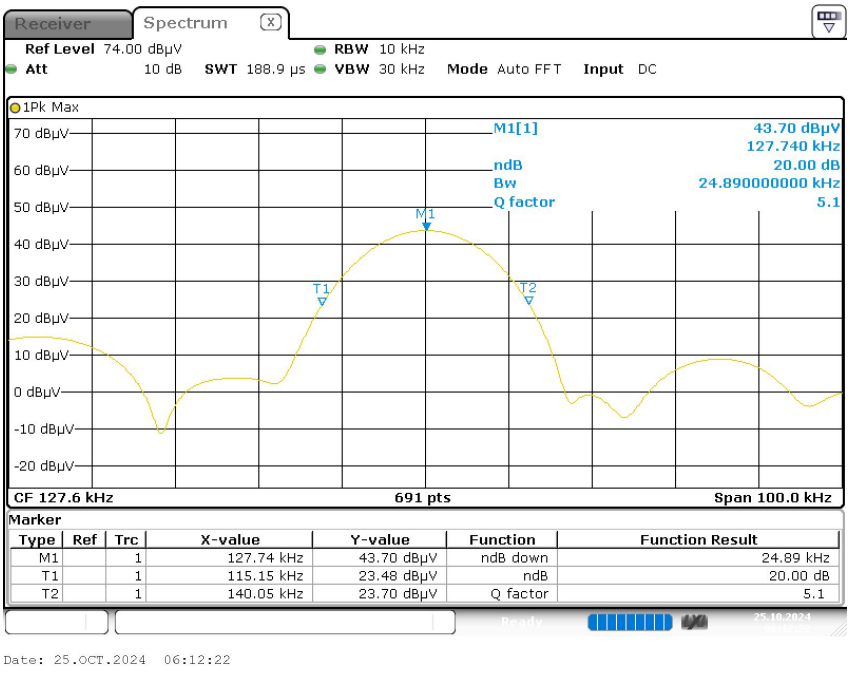
Sample No.	S05	Temperature	23.6℃
Humidity	53%RH	Pressure	101kPa
Test Engineer	Chai Yong	Test Date	2024.10.25

Test Data

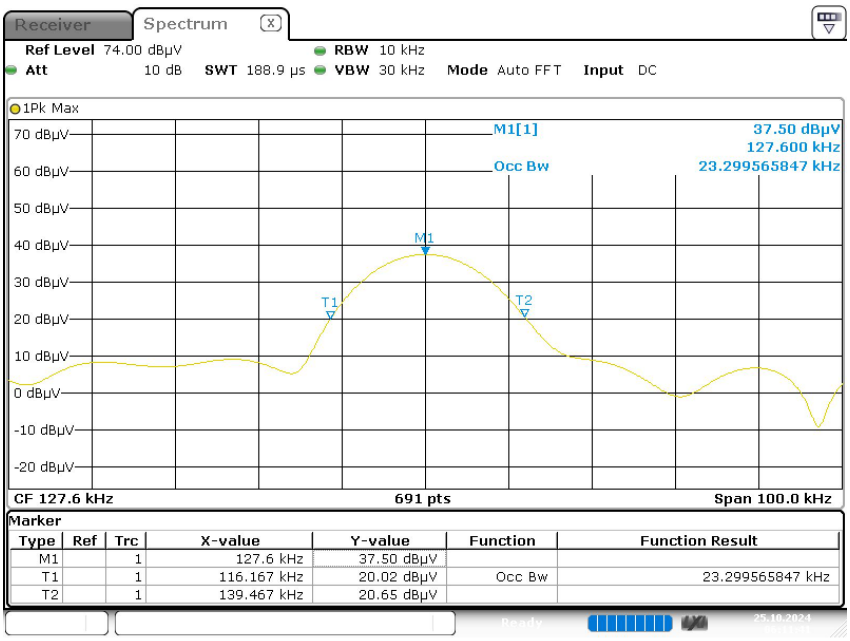
Frequency (MHz)	Emission Bandwidth (20dB down) (kHz)	Occupied Bandwidth (99%) (kHz)
0.128	24.89	23.30

Test Plots

Emission Bandwidth



99% Occupied Bandwidth



Date: 25.OCT.2024 06:11:42

Equipment Information						
Description	Manufacturer	Model	Equipment No	Cal. Date	Cal. Due	Use
EMI Receiver	R&S	ESRP3	BH-EMC-L010	2024.02.19	2025.02.18	☒
Test Antenna-Loop	SCHWARZBECK	FMZB 1519B	BH-EMC-L067	2024.03.11	2027.03.10	☒
Anechoic Chamber	YiHeng	9m*6m*6m	BH-EMC-L001	2024.04.18	2027.04.17	☒

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SH2460269-AE-2.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SH2460269-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SH2460269-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--