

TEST REPORT

Application No.: SHEM2402000792MD
Applicant: Zhejiang Shengyuan Compressor Manufacturing Co., Ltd.
Address of Applicant: Danya Industrial Park, Zeguo, Wenling City, Zhejiang, China
Manufacturer: Zhejiang Shengyuan Compressor Manufacturing Co., Ltd.
Address of Manufacturer: Danya Industrial Park, Zeguo, Wenling City, Zhejiang, China
Factory: Zhejiang Shengyuan Compressor Manufacturing Co., Ltd.
Address of Factory: Danya Industrial Park, Zeguo, Wenling City, Zhejiang, China
Equipment Under Test (EUT):
EUT Name: Single-phase AC asynchronous motor
Model No.: ML80-4-0.55kW-B3, ML80-4-0.55kW-B34, ML80-2-0.75kW-B34, ML80-4-0.75kW-B3, ML80-4-0.75kW-B34, ML90S-2-1.1kW-B3, ML90S-2-1.1kW-B34, ML90S-4-1.1kW-B34, ML90L-4-1.5kW-B3, ML90L-4-1.5kW-B34, ML90L-2-2.2kW-B3(IP44), ML90L-2-2.2kW-B3(IP55), ML90L-2-1.5kW-B34, ML90L-2-2.2kW-B34, ML100L-2-3.0kW-B3, ML112L-2-4.0kW-B3, ML132L-2-5.5kW-B3
Remark: Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : EN 60034-1:2010 Clause 13
Date of Receipt: 2024-02-04
Date of Test: 2024-03-03 to 2024-03-06
Date of Issue: 2024-03-07

Test Result:	Pass, refer to Test Summary for the details.
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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

SHEM-TRF-001 Rev. 02 Sep01, 2023

Report No.:SHEM240200079201

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Revision Record			
Version	Description	Date	Remark
00	Original	2024-03-07	/

Authorized for issue by:				
Tested By		<i>Sunny Zhou</i>		
		Sunny Zhou/Project Engineer		
Approved By		<i>Parlam zhan</i>		
		Parlam Zhan/Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at DC Mains Terminals (150kHz-30MHz)	EN 60034-1:2010 Clause 13	EN 55011:2016+A1:2021	Group 1 Class B of EN 55011	Pass
Radiated Emissions (30MHz-1GHz)	EN 60034-1:2010 Clause 13	EN 55011:2016+A1:2021	Group 1 Class B of EN 55011	Pass

Note1: There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model ML90L-2-2.2kW-B3(IP55) was tested since their differences were model number and appearance.

Note2: The tests are follow the requirement of client.



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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4 General Information

4.1 Details of E.U.T.

Power supply: 220-240V 50Hz

Test voltage: AC230V/50Hz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
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The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty & Decision Rule

Measurement Uncertainty:

No.	Item	Measurement Uncertainty (U_{Lab})	U_{CISPR}
1	Conducted Emission at mains port using AMN	3.4dB (9kHz to 150kHz)	3.8dB (9kHz to 150kHz)
		2.9dB (150kHz to 30MHz)	3.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	2.2dB (9kHz to 30MHz)	2.9dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.6dB (150kHz to 30MHz)	5.0dB (150kHz to 30MHz)
4	Radiated Power	3.4dB (30MHz to 300MHz)	4.5dB (30MHz to 300MHz)
5	Radiated emission	5.7dB (30MHz-1GHz)	6.3dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)	5.2dB (1GHz-6GHz)
		5.0dB (6GHz-18GHz)	5.5dB (6GHz-18GHz)
6	Radiated disturbance (disturbance current in a LLAS)	2.6dB (9kHz to 30MHz)	3.3dB (9kHz to 30MHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Decision Rule:

- CISPR 16-4-2 for emission measurements is as below described.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

U_{LAB} less than U_{CISPR} , therefore:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.4 Test Location

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

Witness test at:

OViS Testing Technology (Zhejiang) Co., Ltd.

Building 31, Feiyue Park, Xiachen Street, Jiaojiang District, Taizhou City, Zhejiang Province, China
Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).
3. Sample source: sent by customer.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.
Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 EMS Monitor

Visual: Working status of EUT.

5 Equipment List

Conducted Emissions at DC Mains Power Port (150kHz-30MHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
EMI test receiver	R&S	ESR3	OViS-YQ132	2024-5-21
Three-phase artificial power supply network LISN	AFJ	LT32C	OViS-YQ133	2024-5-22

Radiated Emissions (30MHz-1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Due Date
EMI test receiver	R&S	WSR3	OViS-YQ132	2024-5-21
Receiving antenna	Schwarzbeck	VULB 9163	OViS-YQ141	2024-05-26
Preamplifier	Noyetec	NYPAA0930	OViS-YQ142	2024-05-21

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	EN 60034-1:2010 Clause 13
Test Method:	EN 55011:2016+A1:2021
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV) - 56dB(μV) quasi-peak, 56dB(μV) - 46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

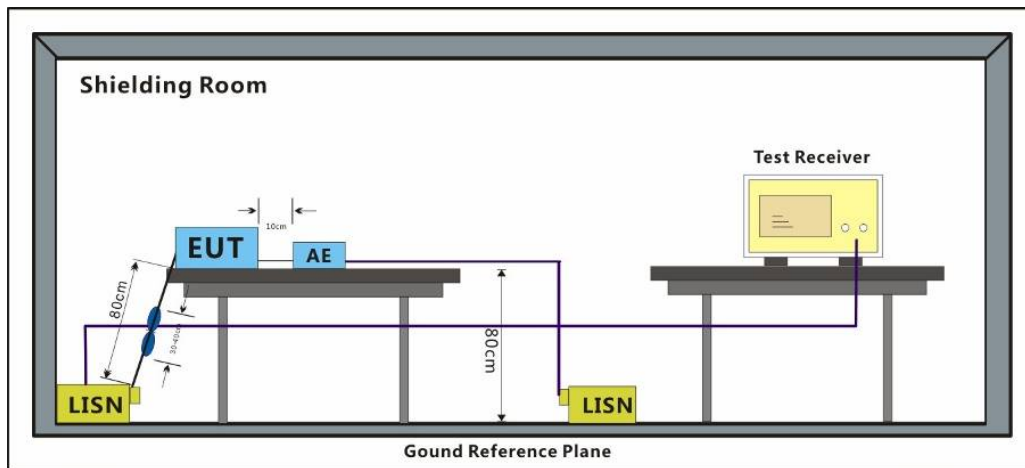
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 13.9 °C Humidity: 39 % RH Atmospheric Pressure: 1010 mbar

Test mode 00: keep the EUT running continual.

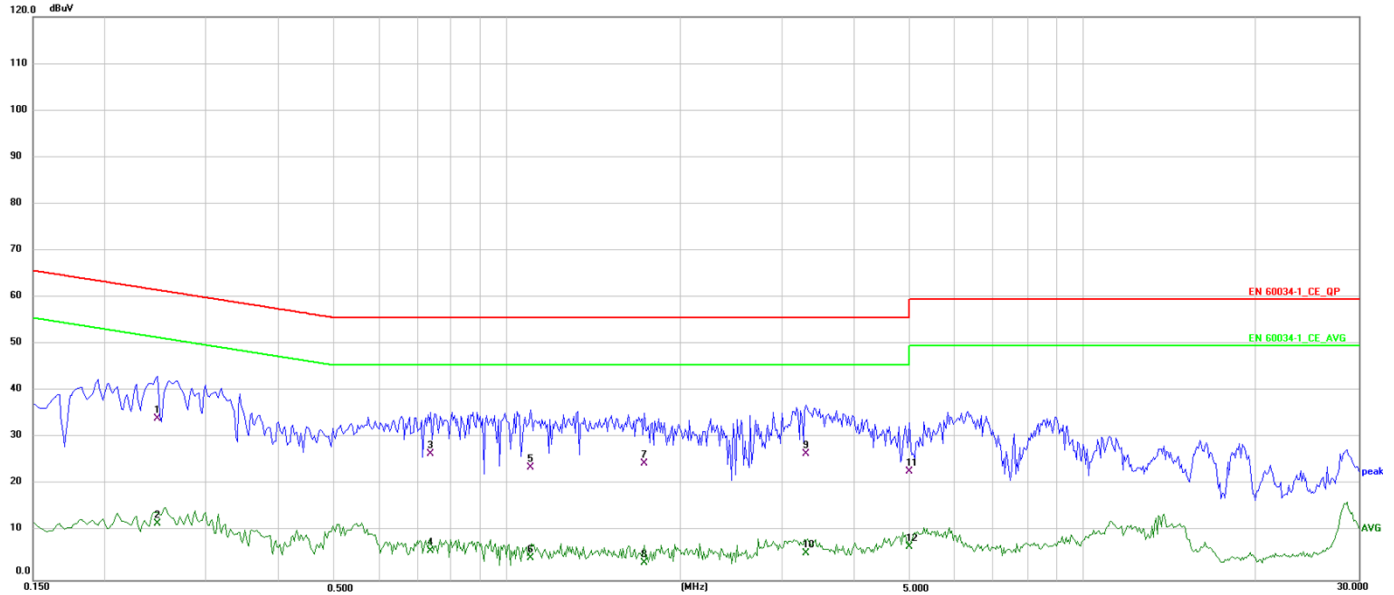
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

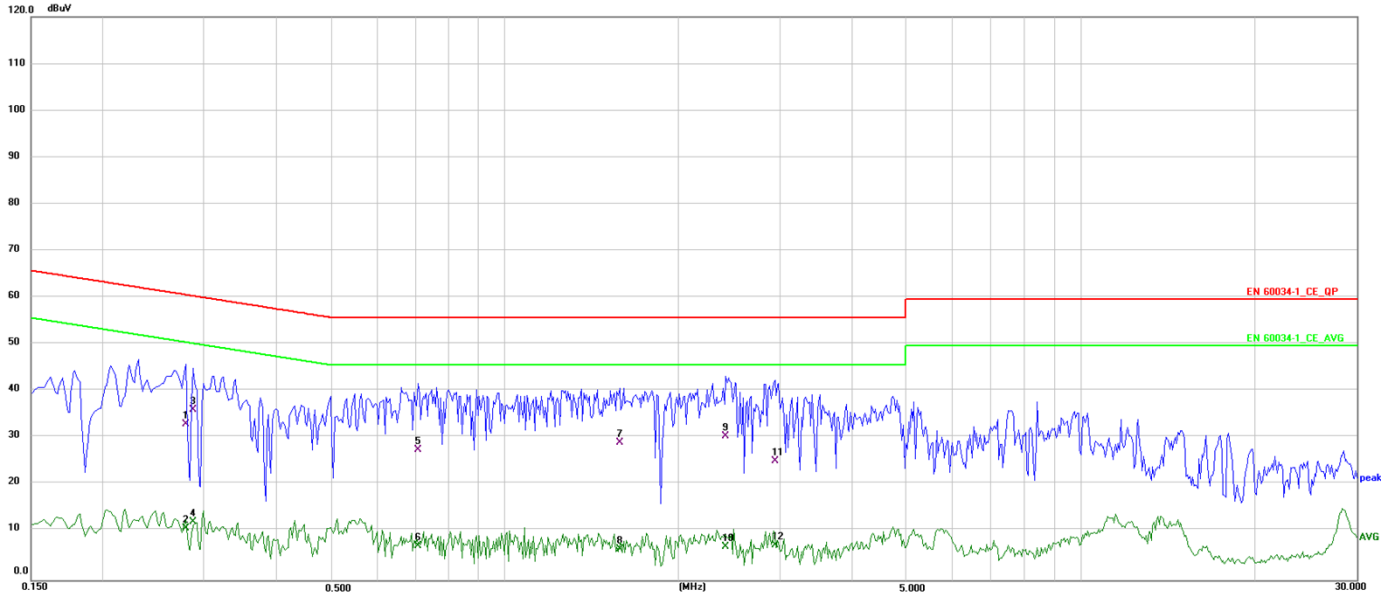
An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Mode:00; Line:Live Line



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1 *	0.2460	23.74	10.75	34.49	61.89	-27.40	QP	
2	0.2460	1.51	10.75	12.26	51.89	-39.63	AVG	
3	0.7380	16.10	10.85	26.95	56.00	-29.05	QP	
4	0.7380	-4.44	10.85	6.41	46.00	-39.59	AVG	
5	1.0980	13.30	10.89	24.19	56.00	-31.81	QP	
6	1.0980	-5.99	10.89	4.90	46.00	-41.10	AVG	
7	1.7340	14.00	10.98	24.98	56.00	-31.02	QP	
8	1.7340	-7.07	10.98	3.91	46.00	-42.09	AVG	
9	3.2980	15.98	11.05	27.03	56.00	-28.97	QP	
10	3.2980	-5.10	11.05	5.95	46.00	-40.05	AVG	
11	4.9940	12.14	11.12	23.26	56.00	-32.74	QP	
12	4.9940	-3.92	11.12	7.20	46.00	-38.80	AVG	

Mode:00; Line:Neutral Line



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
1	0.2780	22.54	10.76	33.30	60.88	-27.58	QP	
2	0.2780	0.40	10.76	11.16	50.88	-39.72	AVG	
3 *	0.2860	25.66	10.78	36.44	60.64	-24.20	QP	
4	0.2860	1.72	10.78	12.50	50.64	-38.14	AVG	
5	0.7060	17.13	10.77	27.90	56.00	-28.10	QP	
6	0.7060	-3.42	10.77	7.35	46.00	-38.65	AVG	
7	1.5820	18.61	10.85	29.46	56.00	-26.54	QP	
8	1.5820	-4.15	10.85	6.70	46.00	-39.30	AVG	
9	2.4100	19.83	10.91	30.74	56.00	-25.26	QP	
10	2.4100	-3.62	10.91	7.29	46.00	-38.71	AVG	
11	2.9460	14.61	10.92	25.53	56.00	-30.47	QP	
12	2.9460	-3.29	10.92	7.63	46.00	-38.37	AVG	

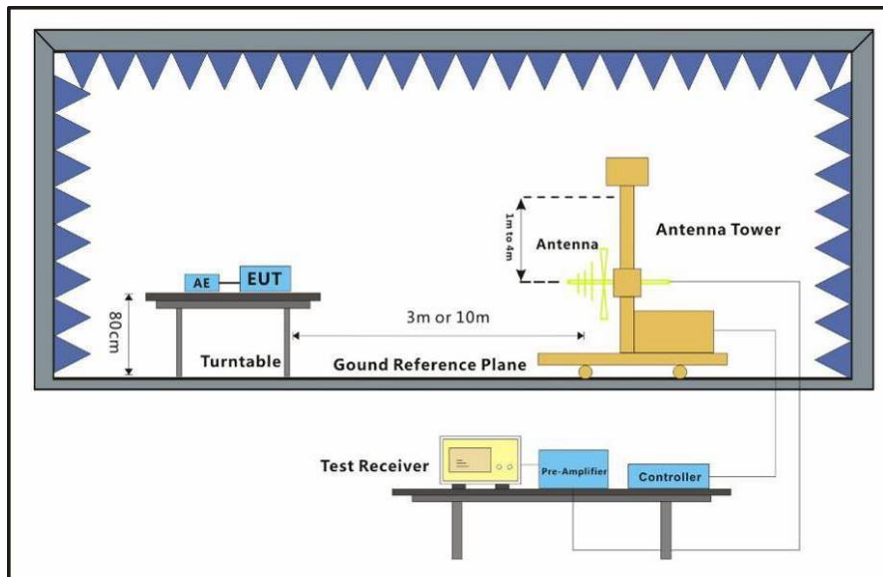
6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	EN 60034-1:2010 Clause 13
Test Method:	EN 55011:2016+A1:2021
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB(μ V/m) quasi-peak
230MHz-1000MHz	47 dB(μ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.2.1 E.U.T. Operation

Operating Environment:			
Temperature:	13.9 °C	Humidity:	39 % RH
		Atmospheric Pressure:	1010 mbar
Test mode	00: keep the EUT running continual.		

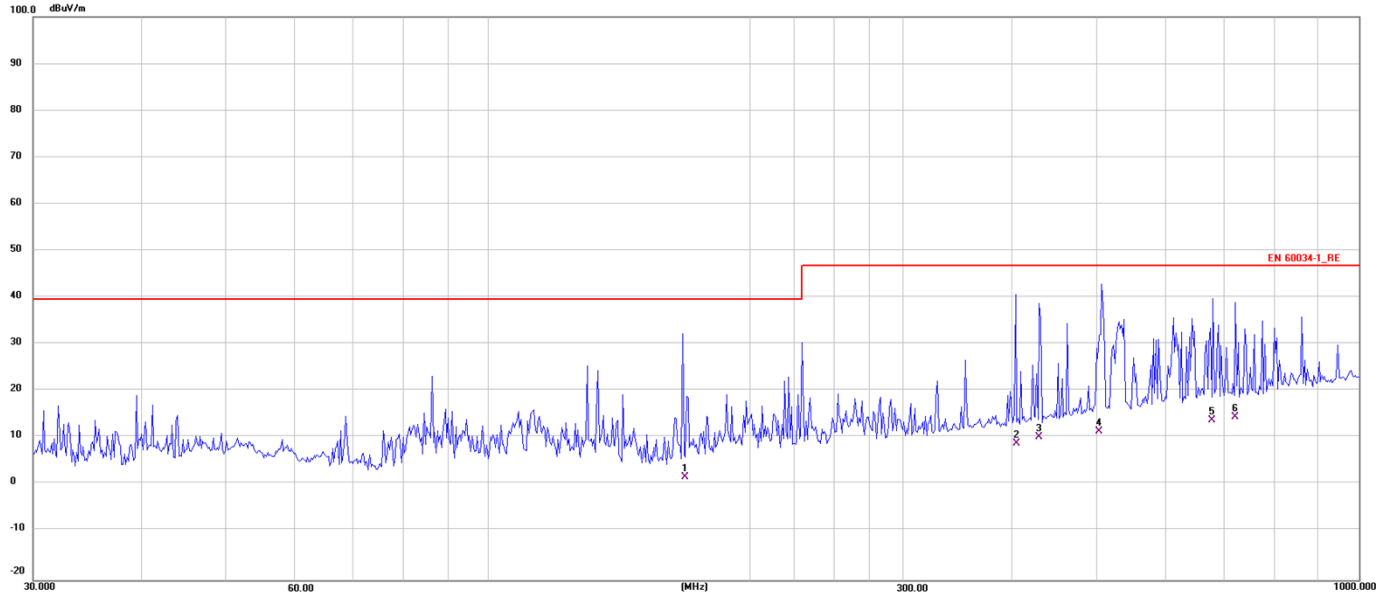
6.2.2 Test Setup Diagram



6.2.3 Measurement Data

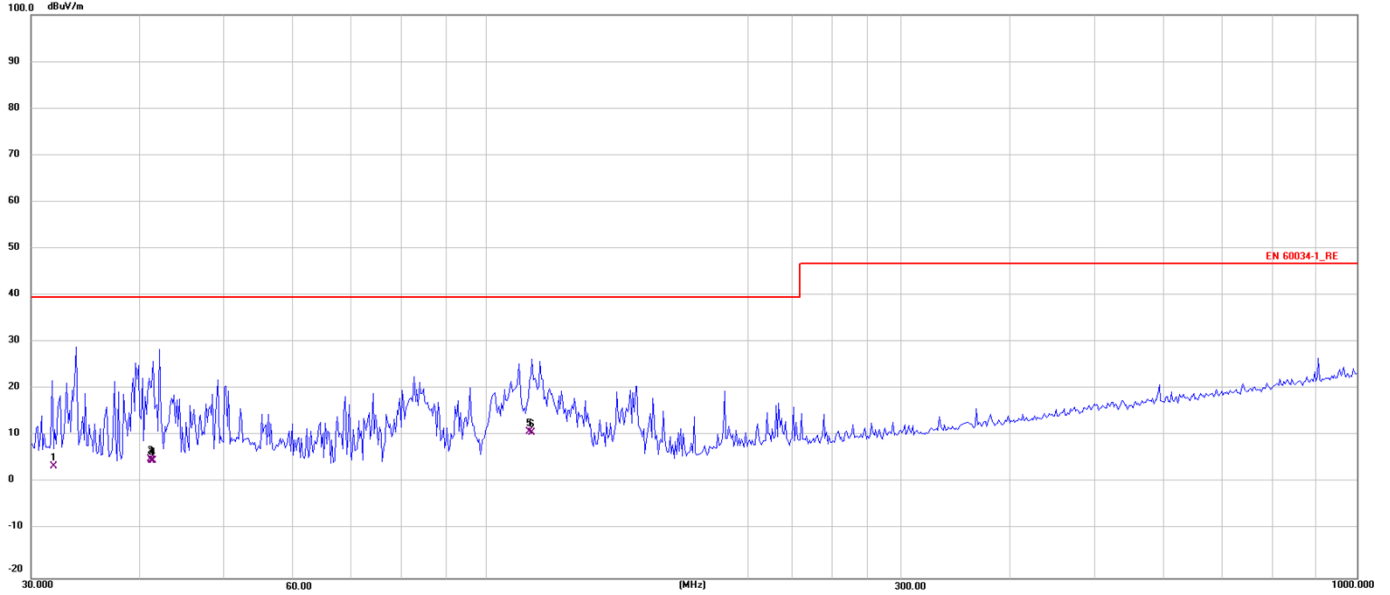
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by broadband antenna with 2 orthogonal polarities.

Mode:00; Polarization:Horizontal



No	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	168.6104	35.43	-33.40	2.03	40.00	-37.97	QP	100	0	
2	405.6576	34.48	-25.21	9.27	47.00	-37.73	QP	100	0	
3	430.7316	35.02	-24.50	10.52	47.00	-36.48	QP	100	0	
4	504.4911	34.16	-22.36	11.80	47.00	-35.20	QP	100	0	
5	679.8201	34.21	-20.01	14.20	47.00	-32.80	QP	100	0	
6 *	722.1505	34.44	-19.59	14.85	47.00	-32.15	QP	100	0	

Mode:00; Polarization:Vertical



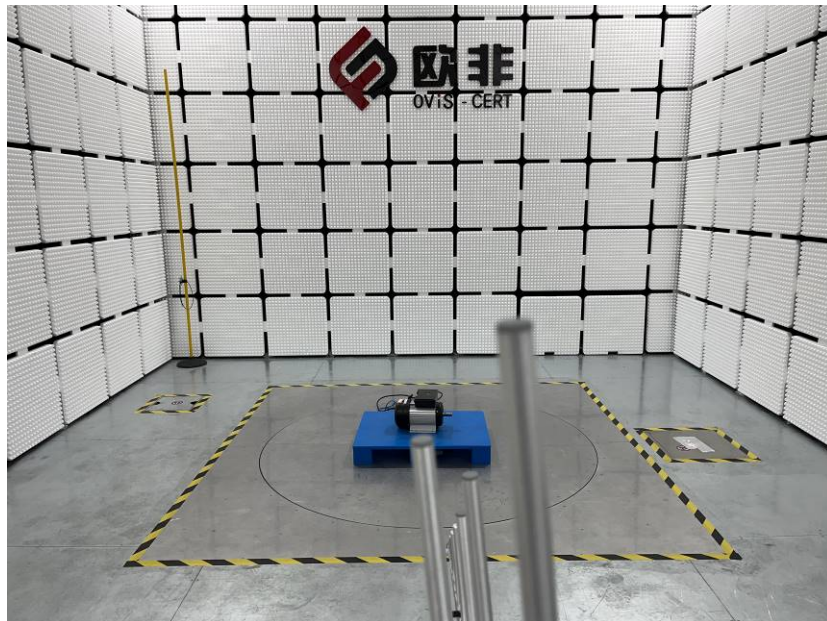
No	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	31.9405	34.40	-30.44	3.96	40.00	-36.04	QP	100	0	
2	41.1568	35.72	-30.24	5.48	40.00	-34.52	QP	100	0	
3	41.3040	35.32	-30.20	5.12	40.00	-34.88	QP	100	0	
4	41.4849	35.36	-30.21	5.15	40.00	-34.85	QP	100	0	
5 *	112.4501	42.93	-31.59	11.34	40.00	-28.66	QP	100	0	
6	113.2276	42.84	-31.68	11.16	40.00	-28.84	QP	100	0	

7 Photographs

7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



7.2 Radiated Emissions (30MHz-1GHz) Test Setup



7.3 EUT Constructional Details (EUT Photos)







- End of the Report -