TEST REPORT

Report No.:	BCTC2311852194E
Applicant:	Hongmen Advanced Technology Corporation
Product Name:	Servo gate series
Test Model:	HM-SFDZ
Tested Date:	2024-03-26 to 2024-04-02
Issued Date:	2024-04-19

Shenzhen BCTC Testing Co., Ltd.

FCC ID:	2AERTHM-SFDZ
Product Name:	Servo gate series
Trademark:	N/A
Model/Type Reference:	HM-SFDZ
Prepared For:	Hongmen Advanced Technology Corporation
Address:	Hongmen Technology Park, jihua Road shangxue section, xiashujing buji, Shenzhen, Guangdong 518100, China
Manufacturer:	Hongmen Advanced Technology Corporation
Address:	Hongmen Technology Park, jihua Road shangxue section, xiashujing buji, Shenzhen, Guangdong 518100, China
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2024-03-25
Sample Tested Date:	2024-03-26 to 2024-04-02
Issue Date:	2024-04-19
Report Number:	BCTC2311852194E
Test Standards:	FCC Part 15B ANSI C63.4:2014
Test Results:	PASS

Tested by:

Eric Yang/Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2311852194E	2024-04-19	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

Standard	Test Item	Test result
FCC Part 15B	Conducted Emission	Pass
FCC Part 15B	Radiated Emission	Pass

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product 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.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.10
Radiated Emission(30MHz~200MHz)	4.60
Radiated Emission(200MHz~1000MHz)	5.20

4. Product Information And Test Setup

4.1 Product Information

Ratings: 100-240V~; 5A Max. 50/60Hz
Antenna installation: Spring antenna
Antenna Gain: 0 dBi

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted emissions from the AC mains power ports (150KHz-30MHz) ☒Class B	Working	AC 120V/60Hz
Radiated emissions(30MHz-1GHz) ☒Class B	Working	AC 120V/60Hz

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

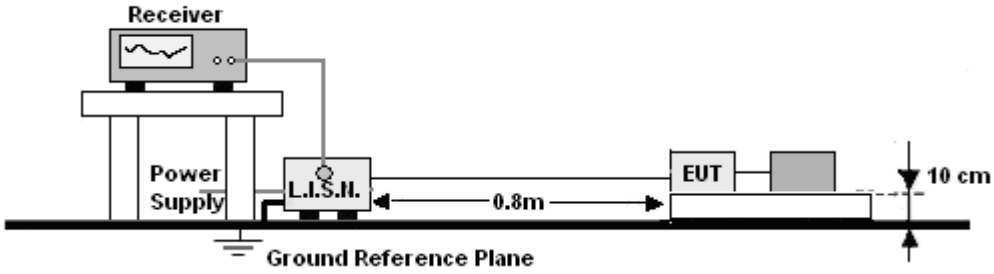
Conducted Emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD 9561-F	01323	Sept. 22, 2023	Sept. 21, 2024

Radiated Emissions Test (966 Chamber#01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 29, 2023	May 28, 2024
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 31, 2023	May 30, 2024
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emission At The Mains Terminals Test

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Class B devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

Notes:
1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

For mains ports:

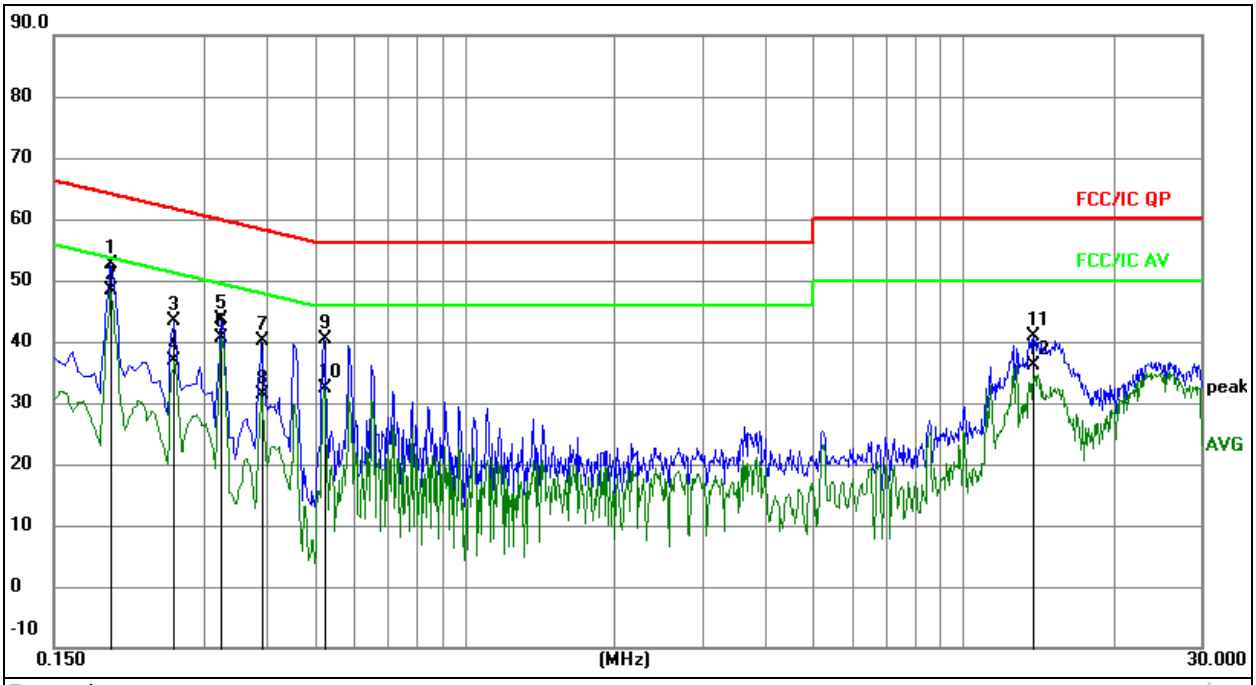
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

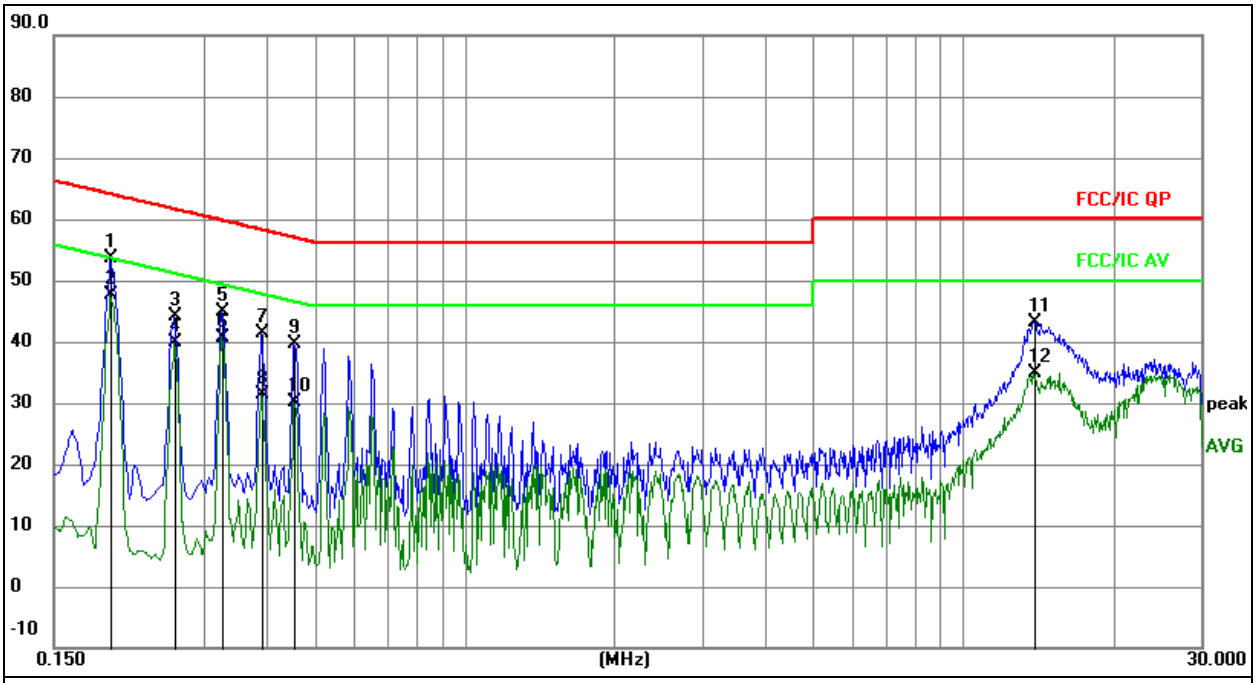
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase:	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1945	32.73	19.82	52.55	63.84	-11.29	QP
2	*	0.1945	28.59	19.82	48.41	53.84	-5.43	AVG
3		0.2615	23.63	19.83	43.46	61.38	-17.92	QP
4		0.2615	17.12	19.83	36.95	51.38	-14.43	AVG
5		0.3251	23.88	19.83	43.71	59.58	-15.87	QP
6		0.3251	20.70	19.83	40.53	49.58	-9.05	AVG
7		0.3914	20.38	19.84	40.22	58.03	-17.81	QP
8		0.3914	11.66	19.84	31.50	48.03	-16.53	AVG
9		0.5210	20.54	19.84	40.38	56.00	-15.62	QP
10		0.5210	12.57	19.84	32.41	46.00	-13.59	AVG
11		13.8411	21.07	19.88	40.95	60.00	-19.05	QP
12		13.8411	16.34	19.88	36.22	50.00	-13.78	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase:	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



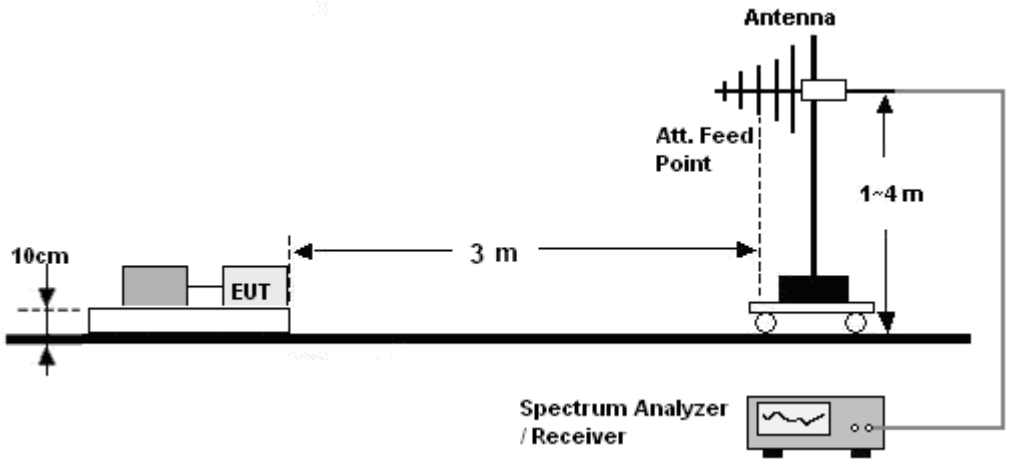
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1949	33.78	19.82	53.60	63.83	-10.23	QP
2	*	0.1949	27.75	19.82	47.57	53.83	-6.26	AVG
3		0.2625	24.34	19.83	44.17	61.35	-17.18	QP
4		0.2625	19.95	19.83	39.78	51.35	-11.57	AVG
5		0.3255	25.07	19.83	44.90	59.57	-14.67	QP
6		0.3255	20.92	19.83	40.75	49.57	-8.82	AVG
7		0.3930	21.46	19.84	41.30	58.00	-16.70	QP
8		0.3930	11.42	19.84	31.26	48.00	-16.74	AVG
9		0.4560	19.82	19.84	39.66	56.77	-17.11	QP
10		0.4560	10.19	19.84	30.03	46.77	-16.74	AVG
11		13.8525	23.26	19.88	43.14	60.00	-16.86	QP
12		13.8525	15.05	19.88	34.93	50.00	-15.07	AVG

7. Radiation Emission Test

7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



7.2 Limit

Limits for Class B devices

Frequency (MHz)	limits at 3m dB(μV/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Note: The lower limit shall apply at the transition frequencies.

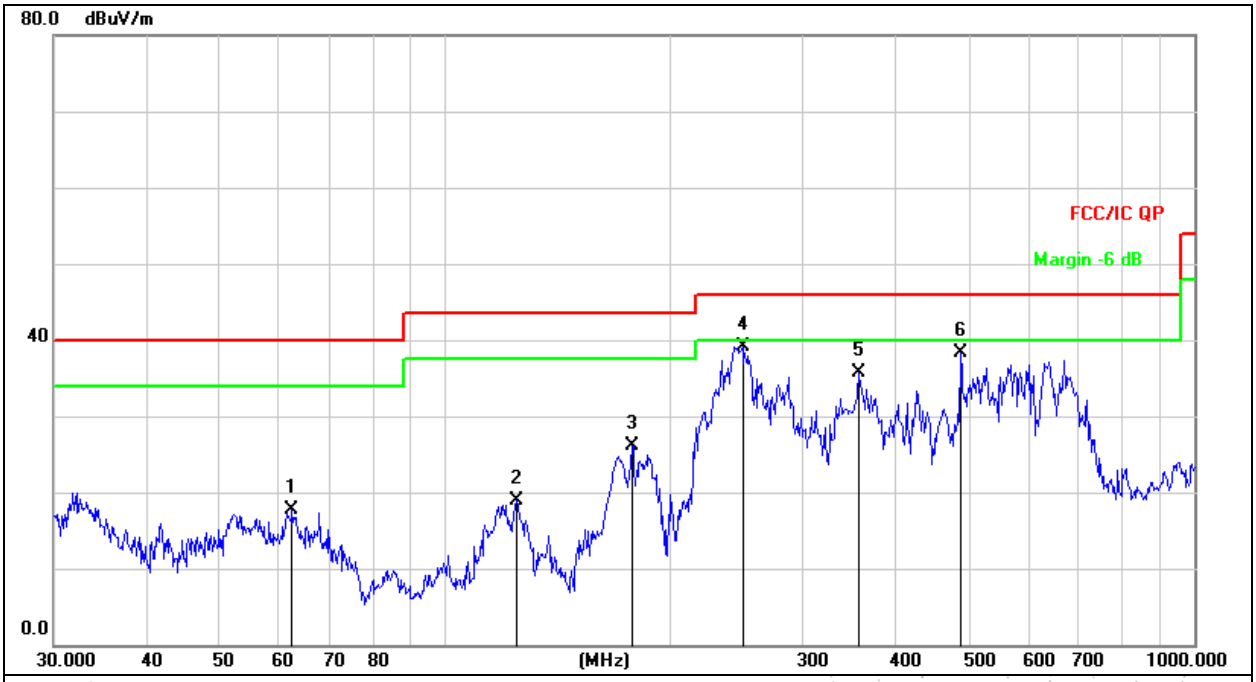
7.3 Test Procedure

30MHz ~ 1GHz:
a. The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Result

30MHz ~ 1GHz:

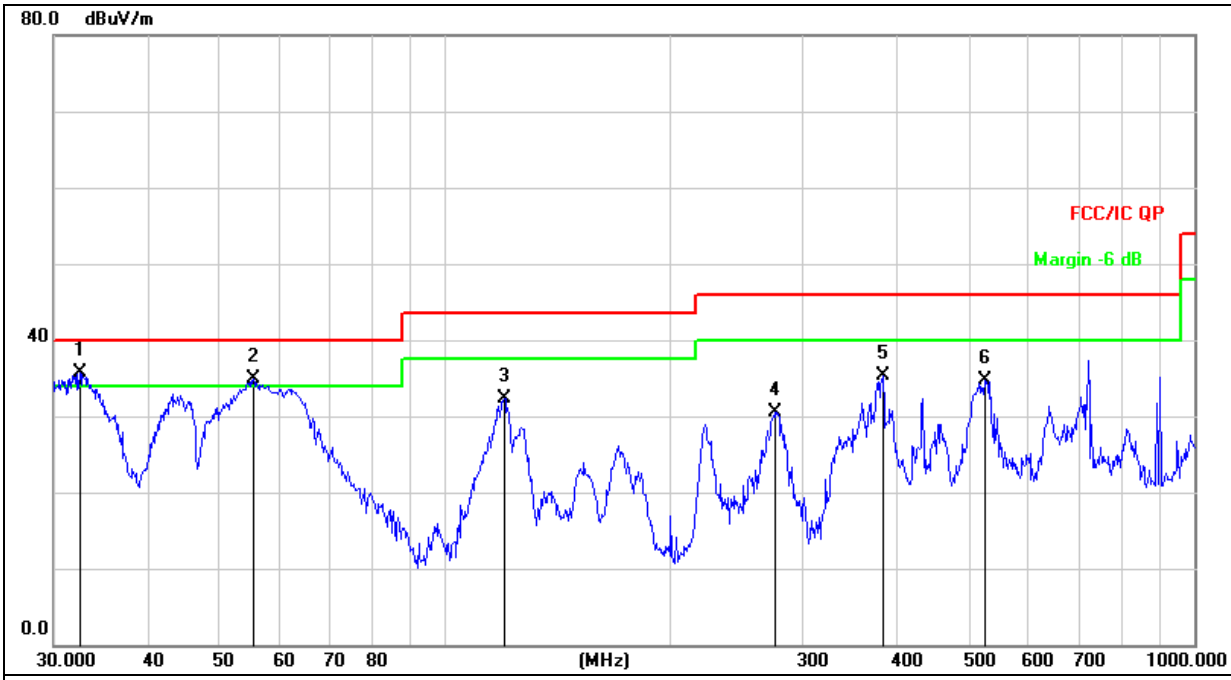
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase:	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		62.4314	33.66	-15.92	17.74	40.00	-22.26	QP
2		124.5690	36.56	-17.65	18.91	43.50	-24.59	QP
3		177.5092	43.45	-17.39	26.06	43.50	-17.44	QP
4	*	249.4250	53.43	-14.31	39.12	46.00	-6.88	QP
5		356.6758	47.00	-11.39	35.61	46.00	-10.39	QP
6		487.3151	47.19	-8.93	38.26	46.00	-7.74	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase:	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Working

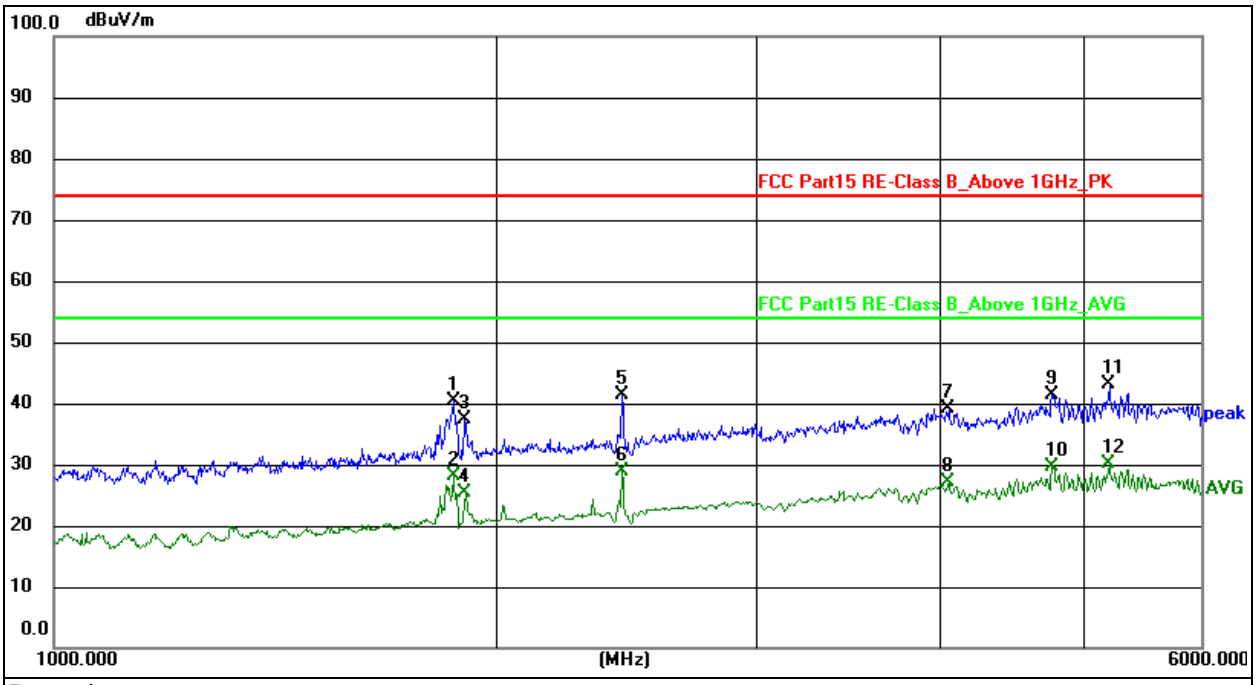


Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	32.5198	51.91	-16.16	35.75	40.00	-4.25	QP
2	!	55.4147	49.45	-14.63	34.82	40.00	-5.18	QP
3		119.8556	49.66	-17.32	32.34	43.50	-11.16	QP
4		275.1570	44.19	-13.76	30.43	46.00	-15.57	QP
5		383.9318	46.32	-11.05	35.27	46.00	-10.73	QP
6		524.5541	44.09	-9.48	34.61	46.00	-11.39	QP

Above 1GHz:

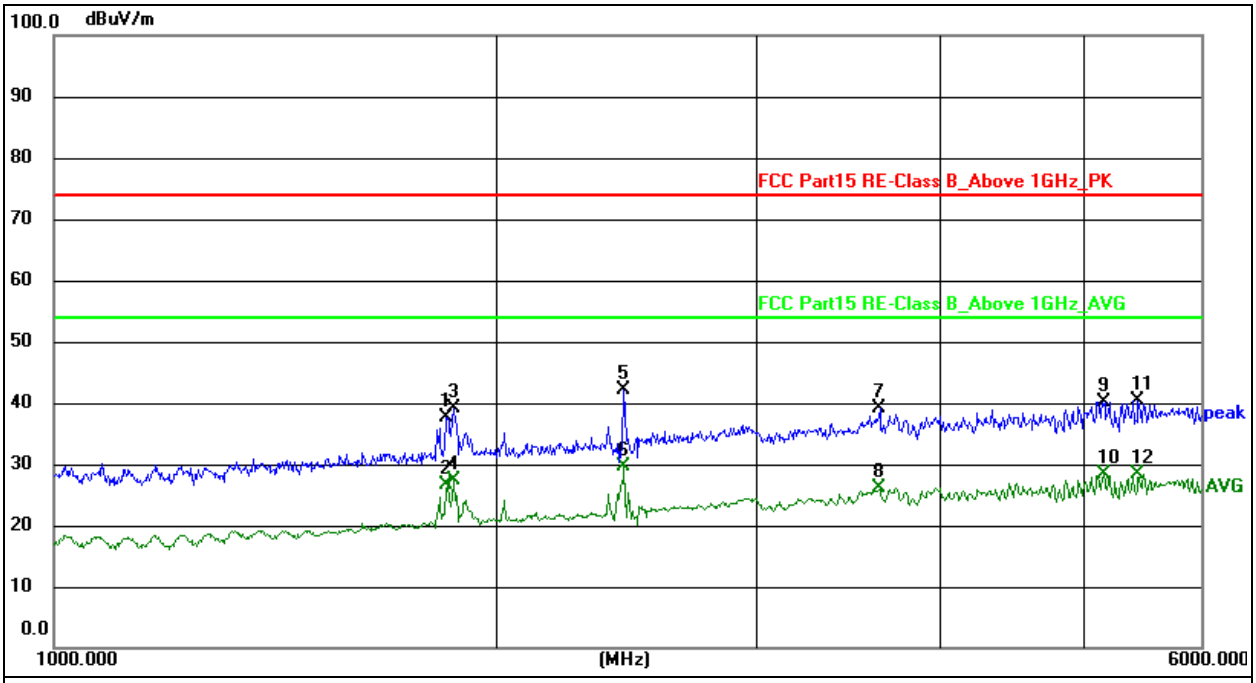
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1865.506	66.86	-26.51	40.35	74.00	-33.65	peak
2	1865.506	54.73	-26.51	28.22	54.00	-25.78	AVG
3	1899.233	63.80	-26.40	37.40	74.00	-36.60	peak
4	1899.233	51.80	-26.40	25.40	54.00	-28.60	AVG
5	2427.643	66.31	-24.84	41.47	74.00	-32.53	peak
6	2427.643	53.81	-24.84	28.97	54.00	-25.03	AVG
7	4045.367	60.64	-21.41	39.23	74.00	-34.77	peak
8	4045.367	48.47	-21.41	27.06	54.00	-26.94	AVG
9	4761.784	61.40	-19.92	41.48	74.00	-32.52	peak
10	4761.784	49.58	-19.92	29.66	54.00	-24.34	AVG
11	5198.752	62.40	-19.24	43.16	74.00	-30.84	peak
12 *	5198.752	49.48	-19.24	30.24	54.00	-23.76	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
AC 120V/60Hz	Test Mode:	Working	Working



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

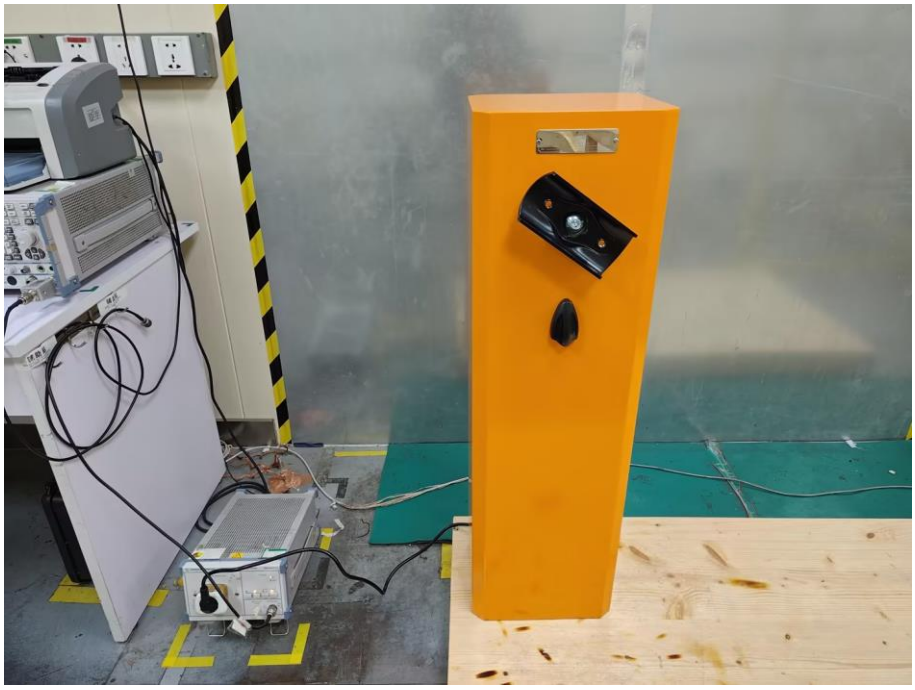
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1845.558	64.32	-26.57	37.75	74.00	-36.25	peak
2	1845.558	53.12	-26.57	26.55	54.00	-27.45	AVG
3	1865.506	65.69	-26.51	39.18	74.00	-34.82	peak
4	1865.506	53.87	-26.51	27.36	54.00	-26.64	AVG
5	2431.997	67.05	-24.83	42.22	74.00	-31.78	peak
6 *	2431.997	54.34	-24.83	29.51	54.00	-24.49	AVG
7	3633.029	61.26	-22.12	39.14	74.00	-34.86	peak
8	3633.029	48.20	-22.12	26.08	54.00	-27.92	AVG
9	5161.626	59.51	-19.27	40.24	74.00	-33.76	peak
10	5161.626	47.77	-19.27	28.50	54.00	-25.50	AVG
11	5436.920	59.48	-19.01	40.47	74.00	-33.53	peak
12	5436.920	47.28	-19.01	28.27	54.00	-25.73	AVG

8. EUT Photographs

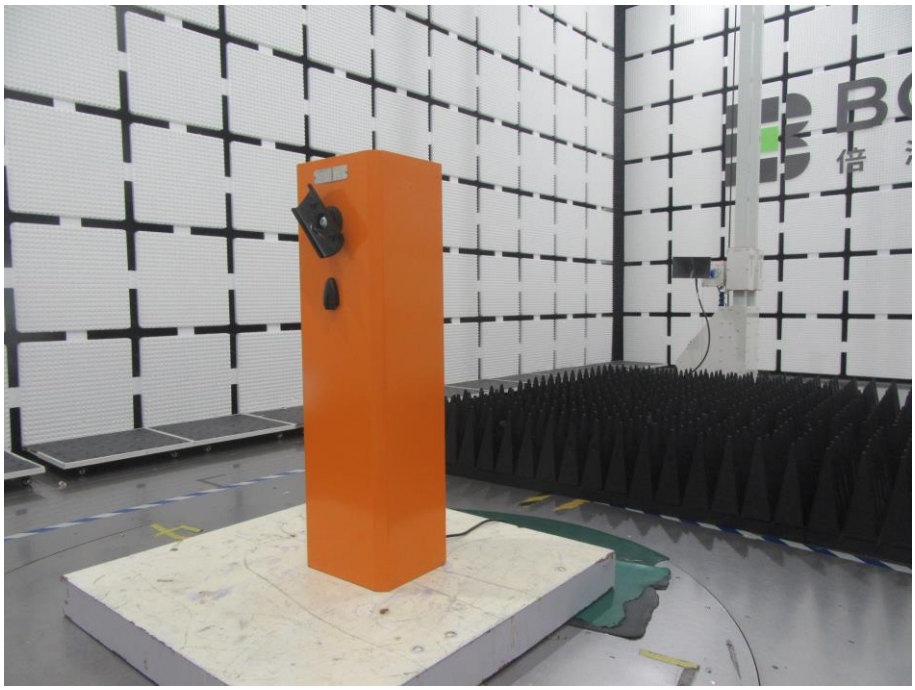
EUT Photo

9. EUT Test Setup Photographs

Conducted Emission



Radiated Emission



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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