



FCC PART 15.249 TEST REPORT

On Behalf of

LEEDARSON LIGHTING CO., LTD.

Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China

FCC ID: 2AB2Q14PR1800STW1MS

Model: 14aSA-PR1800ST-W1MS-01, 14aSy-PR1800ST-W1MS-xx

(Where "y" may be "A" to "Z", which designates for different enclosure pattern design,

"xx" may be "00" to "99", which designates for different beam angle, color of eyelet contact, different package of style and CCT.)

November 19, 2024

This Report Concerns:

☒ Original Report

Equipment Type:

LED Lamp

Test Engineer:

LBI Li / *LBI Li*

Report Number:

QCT24JR-2299E-01

Test Date:

November 11~18, 2024

Reviewed By:

Vincent Yang *Vincent Yang*

Approved By:

Kendy Wang / *Kendy Wang*



Prepared By:

Shenzhen QC Testing Laboratory Co., Ltd.

East of 1/F., Building E, Xinghong Science Park, No.111,
Shuiku Road, Fenghuanggang, Xixiang Street, Bao'an
District, Shenzhen, Guangdong, China

Tel: 0755-23008269

Fax: 0755-23726780



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Revision History of This Test Report

Report Number	Description	Issued Date
QCT24JR-2299E-01	Initial Issue	2024-11-19



1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Description:	LED Lamp
Model No.:	14aSA-PR1800ST-W1MS-01, 14aSy-PR1800ST-W1MS-xx (Where "y" may be "A" to "Z", which designates for different enclosure pattern design, "xx" may be "00" to "99", which designates for different beam angle, color of eyelet contact, different package of style and CCT.)
Model Difference:	All models in each series have similar construction with the same diagram circuit and PCB layout, but difference is the enclosure pattern design and package of style and CCT. All tests were conducted on the models (14aSA-PR1800ST-W1MS-01) and the test result was passed.
Tested Model:	14aSA-PR1800ST-W1MS-01
Sample(s) Status:	Engineer sample
Operation Frequency:	5820MHz
Channel numbers:	1
Modulation type:	FSK
Antenna Type:	Microwave antenna
Antenna gain*1:	3dBi
Power supply:	AC 120V/60Hz
Trade Mark:	LEEDARSON
Applicant:	LEEDARSON LIGHTING CO., LTD.
Address:	Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China
Manufacturer:	LEEDARSON LIGHTING CO., LTD.
Address:	Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China
Sample No.:	Y24J2299E01YN

Note: *1This information provided by Manufacturer, SZ QC Lab is not responsible for the accuracy of this information.

1.2 System Test Configuration

1.2.1 Support Equipment

N/A

1.2.2 Test mode and voltage

Transmitting mode: Keep the EUT in continuously transmitting.

Test voltage: AC 120V/60Hz



1.3 Test Facility

Test Firm : Shenzhen QC Testing Laboratory Co., Ltd.

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

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

CNAS – Registration No.: L8464

The EMC Laboratory has been accredited by CNAS, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

A2LA Certificate Number: 6759.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 561109

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 29628

CAB identifier: CN0141

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

1.4 Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	$\pm 1.42 \times 10^{-4}\%$
RF output power, conducted	$\pm 1.06\text{dB}$
Power Spectral Density, conducted	$\pm 1.06\text{dB}$
Unwanted Emissions, conducted	$\pm 2.51\text{dB}$
AC Power Line Conducted Emission	$\pm 1.80\text{dB}$
Radiated Spurious Emission test (9kHz-30MHz)	$\pm 2.66\text{dB}$
Radiated Spurious Emission test (30MHz-1000MHz)	$\pm 4.04\text{dB}$
Radiated Spurious Emission test (1000MHz-18000MHz)	$\pm 4.70\text{ dB}$
Radiated Spurious Emission test (18GHz-40GHz)	$\pm 4.80\text{dB}$
Temperature	$\pm 0.8^{\circ}\text{C}$
Humidity	$\pm 3.2\%$
DC and low frequency voltages	$\pm 0.1\%$
Time	$\pm 5\%$
Duty cycle	$\pm 5\%$

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



2. Summary of Test Results

Test Item	Section	Result
Antenna Requirement	15.203	Pass
Conduction Emission	15.207	Pass
Radiated Emissions	15.205, 15.209, 15.249	Pass
20dB Bandwidth	15.215 (c)	Pass

Note: 1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10:2013
3.. All indications of Pass/Fail in this report are opinions expressed by Shenzhen QC Testing Laboratory Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.



3. List of Test and Measurement Instruments

3.1 Conducted Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	Rohde&Schwarz	ESIB 7	2277573376	2024.03.14	2025.03.13
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	101820	2024.08.06	2025.08.05
3	Artificial Mains Network	SCHWARZBECK	NSLK8126	8126200	2024.08.06	2025.08.05
4	PULSE LIMITER	Rohde&Schwarz	ESH3-Z2	100058	2024.03.14	2025.03.13

Conducted Emission Measurement Software: TS+ JS32-CE Ver 5.0.0

3.2 Radiated Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1.	EMI Test Receiver	R&S	ESIB 7	2277573376	2024.03.14	2025.03.13
2.	EMI Test Receiver	ESPI3	ESPI3	101131	2024.03.14	2025.03.13
3.	Spectrum Analyzer	Rohde&Schwarz	FSV 40	101458	2024.03.14	2025.03.13
4.	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9168	VULB9168-588	2023.04.01	2025.03.31
5.	Loop Antenna	EMCO	6502	2133	2023.03.18	2025.03.17
6.	horn antenna	SCHWARZBECK	BBHA9120D	2069	2023.04.01	2025.03.31
7.	Horn Antenna	COM-MW	ZLB7-18-40G-950	12221225	2023.01.12	2025.01.09
8.	Pre-amplifier	MITEQ	TTA0001-18	2063645	2024.03.27	2025.03.26
9.	Pre-amplifier	COM-MW	DLAN-18000-40000-02	10229104	2024.03.14	2025.03.13
10.	966 Camber	ZhongYU	9*6*6	/	2023.05.08	2026.05.07

Radiated Emission Measurement Software: EZ_EMC Ver QCT03A2 RE+



3.3 RF Conducted test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1.	Wideband Radio Communication Tester	Rohde & Schwarz	CW500	151583	2024.03.14	2025.03.13
2.	Spectrum Analyzer	ROHDE&SCHWARZ	FSV 40	101458	2024.03.14	2025.03.13
3.	Signal Generator	Agilent	N5182A	MY50141563	2024.03.14	2025.03.13
4.	RF Automatic Test System	MW	MW100-RFCB/ MW100-PSB	MW2007004	2024.03.14	2025.03.13

RF Conducted Measurement Software: MTS 8310 Ver 2.0.0.0



4. Antenna requirement

Standard requirement: FCC Part15 C Section 15.203

15.203 requirement:

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, 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.

EUT Antenna: The antenna is Microwave antenna, reference to the Internal Photos for details.

5. Conducted Emissions

5.1 Applicable Standard

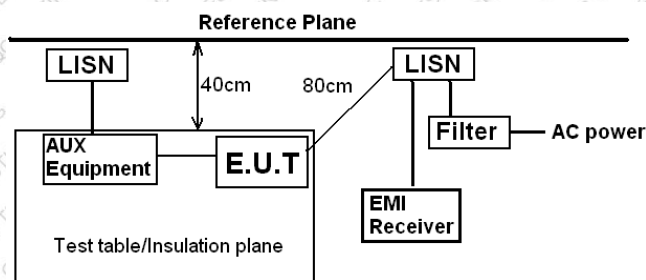
FCC Part15 C Section 15.207

5.2 Limit

Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Note *: The level decreases linearly with the logarithm of the frequency.

5.3 Test setup



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedance Stabilization Network
Test table height=0.8m

5.4 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.
RBW=9 kHz, VBW=30 kHz, Sweep time=auto

5.5 Test procedure

1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.
2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).
3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

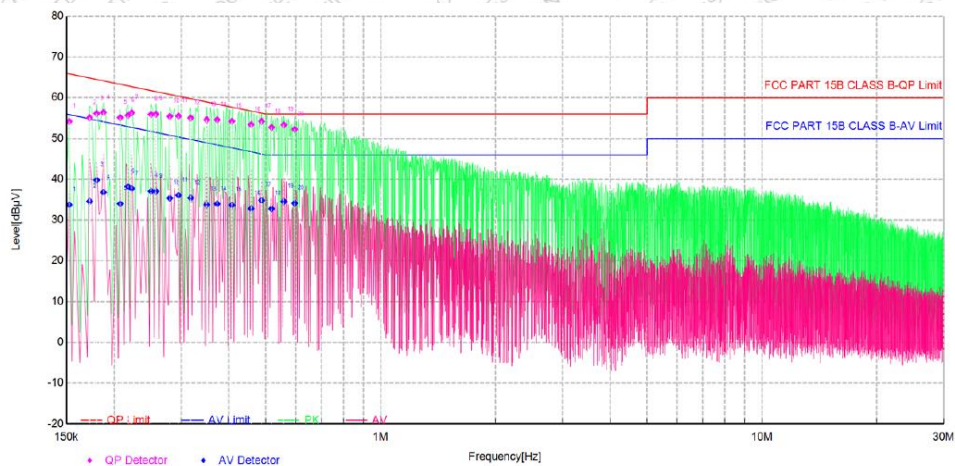
5.6 Test Data

Temperature	23°C	Humidity	52%
ATM Pressure	101.1kPa	Antenna Gain	3dBi
Test by	LBi Li	Test result	PASS



Measurement data:

Line:

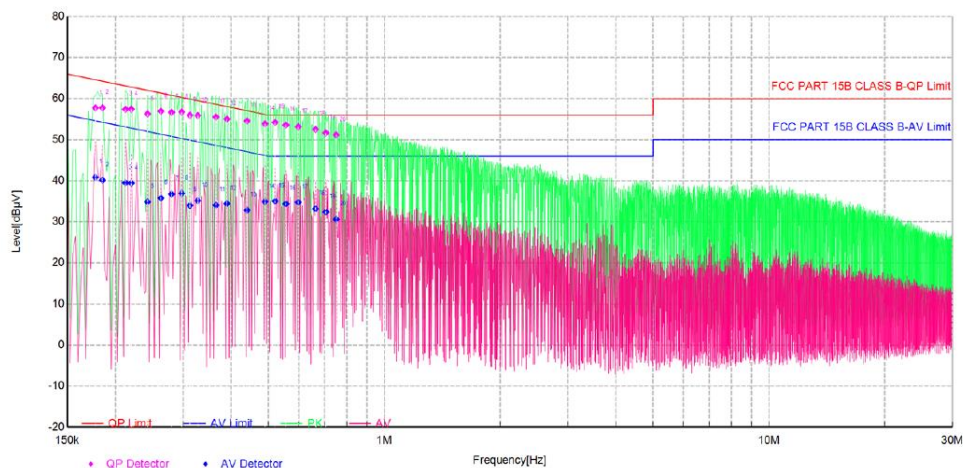


Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.1525	10.58	54.21	65.86	11.65	33.74	55.86	22.12	L	PASS
2	0.1725	10.62	55.11	64.84	9.73	34.59	54.84	20.25	L	PASS
3	0.1800	10.63	56.15	64.49	8.34	39.84	54.49	14.65	L	PASS
4	0.1875	10.65	56.41	64.15	7.74	36.82	54.15	17.33	L	PASS
5	0.2075	10.67	55.15	63.30	8.15	34.04	53.30	19.26	L	PASS
6	0.2175	10.68	55.69	62.91	7.22	38.22	52.91	14.69	L	PASS
7	0.2225	10.68	56.33	62.73	6.40	37.74	52.73	14.99	L	PASS
8	0.2500	10.68	55.91	61.76	5.85	37.09	51.76	14.67	L	PASS
9	0.2575	10.68	55.97	61.51	5.54	37.07	51.51	14.44	L	PASS
10	0.2800	10.69	55.44	60.82	5.38	35.38	50.82	15.44	L	PASS
11	0.2950	10.69	55.53	60.38	4.85	36.10	50.38	14.28	L	PASS
12	0.3175	10.71	55.06	59.77	4.71	35.42	49.77	14.35	L	PASS
13	0.3500	10.74	54.62	58.96	4.34	33.80	48.96	15.16	L	PASS
14	0.3725	10.75	54.62	58.44	3.82	33.99	48.44	14.45	L	PASS
15	0.4075	10.77	54.26	57.70	3.44	33.67	47.70	14.03	L	PASS
16	0.4575	10.75	53.44	56.74	3.30	32.81	46.74	13.93	L	PASS
17	0.4875	10.73	54.24	56.21	1.97	34.83	46.21	11.38	L	PASS
18	0.5175	10.73	52.75	56.00	3.25	32.78	46.00	13.22	L	PASS
19	0.5575	10.75	53.36	56.00	2.64	34.55	46.00	11.45	L	PASS
20	0.5950	10.75	52.27	56.00	3.73	34.16	46.00	11.84	L	PASS



Neutral:



Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.1775	10.48	57.73	64.60	6.87	40.84	54.60	13.76	N	PASS
2	0.1850	10.48	57.76	64.26	6.50	40.13	54.26	14.13	N	PASS
3	0.2125	10.54	57.40	63.11	5.71	39.51	53.11	13.60	N	PASS
4	0.2200	10.57	57.45	62.82	5.37	39.44	52.82	13.38	N	PASS
5	0.2425	10.64	56.30	62.01	5.71	34.87	52.01	17.14	N	PASS
6	0.2625	10.72	56.95	61.35	4.40	35.81	51.35	15.54	N	PASS
7	0.2800	10.78	56.67	60.82	4.15	36.78	50.82	14.04	N	PASS
8	0.2975	10.84	56.75	60.31	3.56	36.95	50.31	13.36	N	PASS
9	0.3125	10.82	55.97	59.90	3.93	34.00	49.90	15.90	N	PASS
10	0.3275	10.78	55.91	59.51	3.60	35.16	49.51	14.35	N	PASS
11	0.3650	10.68	55.55	58.61	3.06	34.06	48.61	14.55	N	PASS
12	0.3900	10.62	55.04	58.06	3.02	34.43	48.06	13.63	N	PASS
13	0.4400	10.59	54.59	57.06	2.47	32.87	47.06	14.19	N	PASS
14	0.4900	10.59	53.90	56.17	2.27	34.93	46.17	11.24	N	PASS
15	0.5200	10.61	54.22	56.00	1.78	35.04	46.00	10.96	N	PASS
16	0.5550	10.64	53.58	56.00	2.42	34.37	46.00	11.63	N	PASS
17	0.5975	10.68	53.16	56.00	2.84	34.77	46.00	11.23	N	PASS
18	0.6625	10.74	52.54	56.00	3.46	33.19	46.00	12.81	N	PASS
19	0.7050	10.77	51.66	56.00	4.34	32.43	46.00	13.57	N	PASS
20	0.7500	10.75	51.20	56.00	4.80	30.60	46.00	15.40	N	PASS

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.

6. Radiated Emission Method

6.1 Applicable Standard

FCC Part15 C Section 15.249

6.2 Limit

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

As per FCC Section 15.249

(c) Field strength limits are specified at a distance of 3 meters.

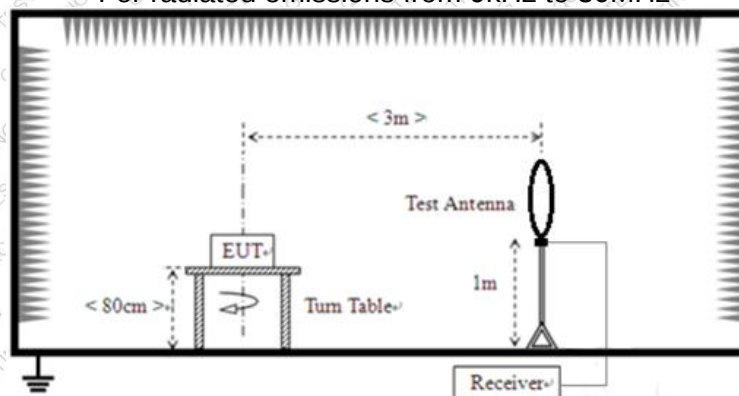
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

6.3 Receiver setup

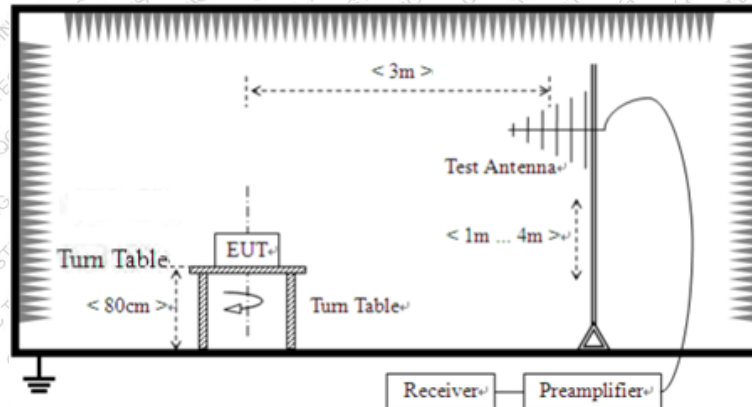
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

6.4 Test setup

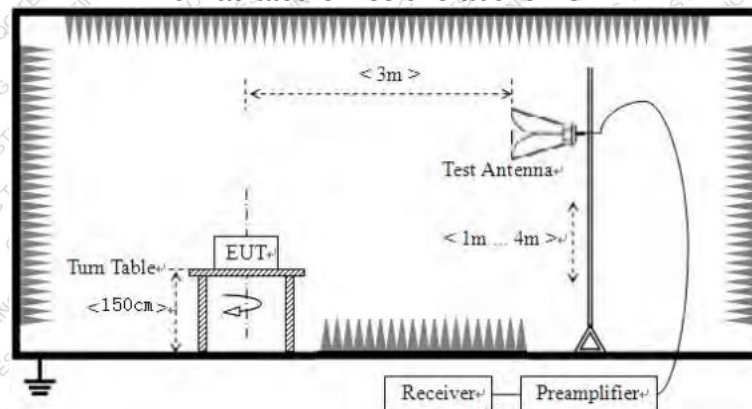
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



6.5 Test Procedure

1. The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.



6.6 Test Data

Temperature	25-26°C	Humidity	49-54%
ATM Pressure	101.1kPa	Antenna Gain	3dBi
Test by	LBi Li	Test result	PASS

Remarks:

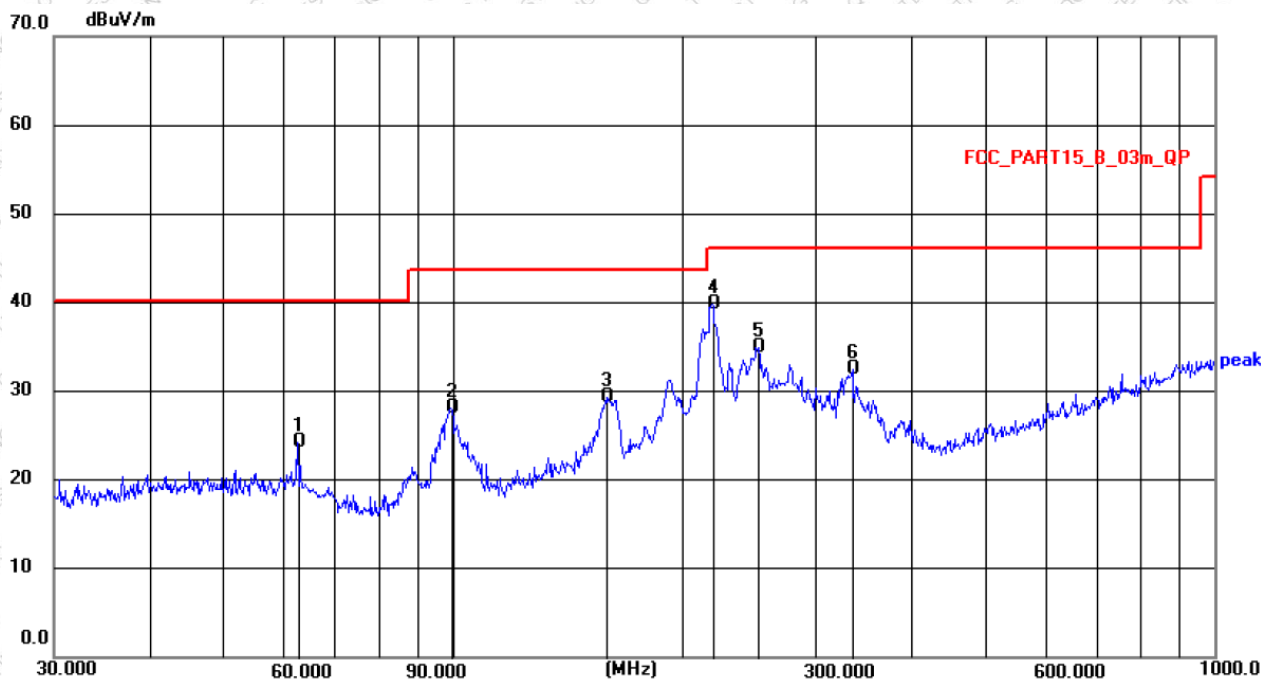
1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.
2. Data of measurement within frequency range 9kHz-30MHz, 18-40GHz are the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.



Measurement data:

Below 1GHz:

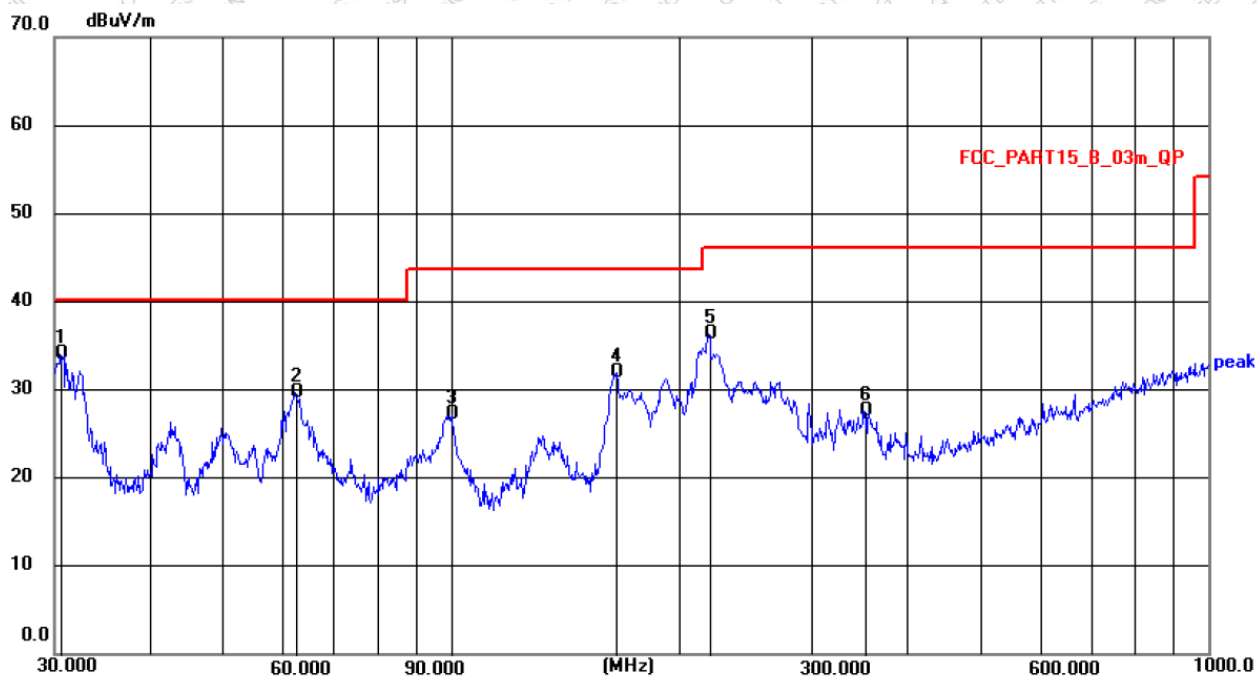
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	62.6507	10.83	13.48	24.31	40.00	15.69	QP
2	99.5281	17.18	10.96	28.14	43.50	15.36	QP
3	159.2251	14.57	14.71	29.28	43.50	14.22	QP
4 *	219.0753	27.53	12.29	39.82	46.00	6.18	QP
5	252.0627	21.40	13.43	34.83	46.00	11.17	QP
6	334.8589	16.83	15.70	32.53	46.00	13.47	QP



Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	30.5306	21.47	12.55	34.02	40.00	5.98	QP
2	62.4314	16.56	13.17	29.73	40.00	10.27	QP
3	100.2286	15.85	11.32	27.17	43.50	16.33	QP
4	165.4866	18.17	13.79	31.96	43.50	11.54	QP
5	219.0753	24.30	12.09	36.39	46.00	9.61	QP
6	351.7079	11.64	15.99	27.63	46.00	18.37	QP



Above 1G:

Frequency (MHz)	Read Level (dBμV)	polarization	Factor (dB/m)	Level (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)	Detector
5725	49.68	H	-3.87	45.81	74	28.19	peak
5725	49.51	V	-3.87	45.64	74	28.36	peak
5875	49.03	H	-3.76	45.27	74	28.73	peak
5875	50.28	V	-3.76	46.52	74	27.48	peak
17460	39.63	H	11.48	51.11	74	22.89	peak
17460	39.66	V	11.22	50.88	74	23.12	peak

Frequency (MHz)	Read Level (dBμV)	polarization	Factor (dB/m)	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)
5820	93.24	H	-3.8	89.44	93.98	4.54
5820	95.97	V	-3.8	92.17	93.98	1.81

Remarks:

1. Level = Reading + Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. If the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

7. 20dB Occupy Bandwidth

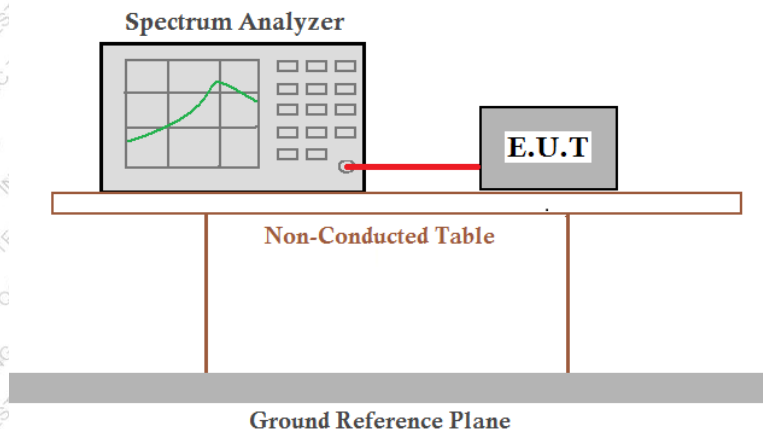
7.1 Applicable Standard

FCC Part15 C Section 15.215

7.2 Limit

N/A

7.3 Test setup



7.4 Test Data

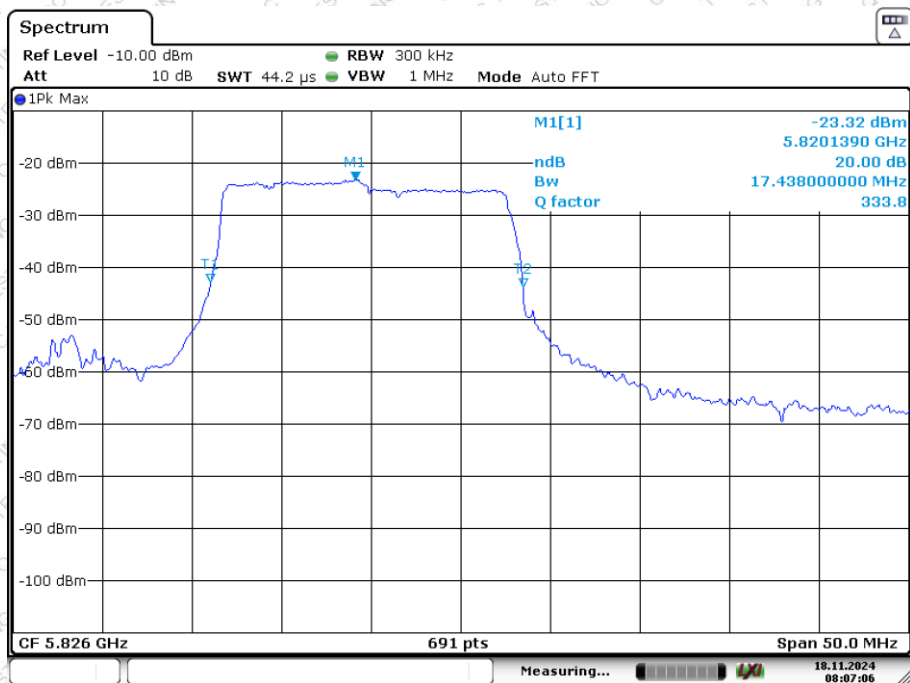
Temperature	24.8 °C	Humidity	45%
ATM Pressure	101.1kPa	Antenna Gain	3dBi
Test by	LBi Li	Test result	PASS

Please refer to following table and plots.



Test Frequency (MHz)	20dB bandwidth (MHz)
5820	17.438

Test plot as follows:



Date: 18.NOV.2024 08:07:06

----- THE END OF TEST REPORT -----