

# TEST REPORT

Applicant Name : Xiamen Dlight Star Technology Co.,Ltd  
Address : NO.358 Jiqun Road Tong'an Industry District, Xiamen, Fujian,  
361100, China  
Report Number : XMTN1220322-10015E-RF  
FCC ID: 2A5R3-DD0411

## Test Standard (s)

FCC Part 15C

## Sample Description

Product Type: charging base  
Model No.: DD0411  
Multiple Model(s) No.: N/A  
Trade Mark: N/A  
Date Received: 2022-03-22  
Date of Test: 2022-04-01 to 2022-04-02  
Report Date: 2022-04-18

Test Result:	Pass*
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\* In the configuration tested, the EUT complied with the standards above.

**Prepared and Checked By:**



Ting Lü  
EMC Engineer

**Approved By:**



Candy Li  
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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**Shenzhen Accurate Technology Co., Ltd.**

1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86 755-26503290 Fax: +86 755-26503396 Web: www.atc-lab.com

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Frequency Range	110-205kHz
Antenna Type	Coil
Input Voltage	DC 5V from adapter
Output Power	5 Watts
Sample serial number	XMTN1220322-10015E-RF-S1
Sample/EUT Status	Good condition

### Objective

This test report is in accordance with Part 2, Subpart J, and Part 15, Subparts A and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with FCC rules, section 15.203, 15.205, 15.207 and 15.209.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### Measurement Uncertainty

Parameter		Uncertainty
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz – 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
Temperature		1°C
Humidity		6%
Supply voltages		0.4%

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

**Test Facility**

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

## SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a test mode

### EUT Exercise Software

No software used in test.

### Local Support Equipment

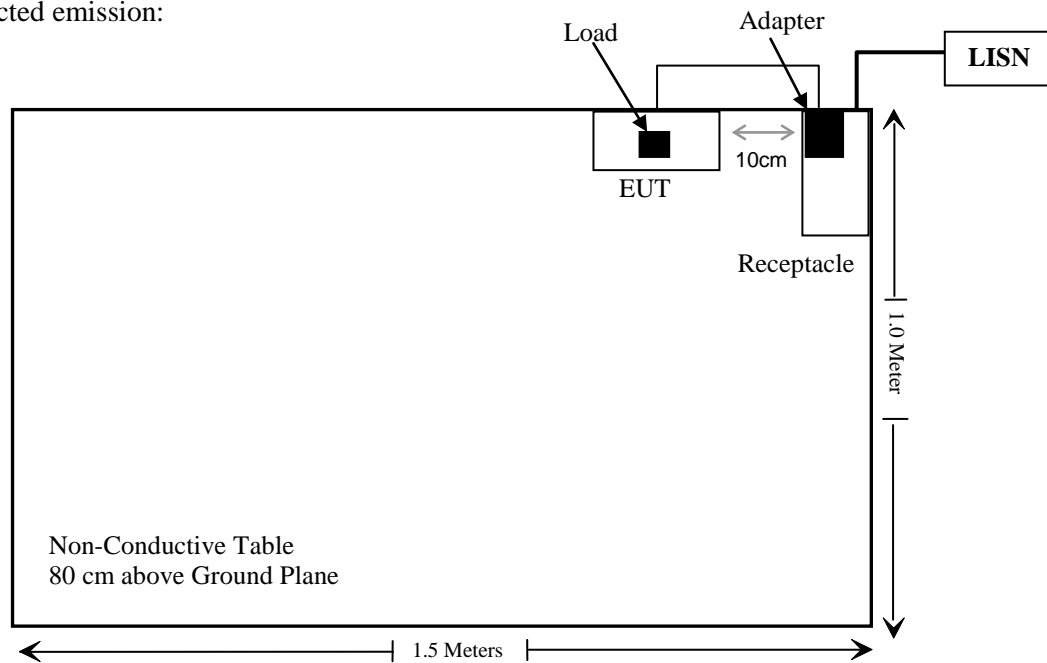
Manufacturer	Description	Model	Serial Number
DLIGHT STAR	Load	DZ0111	Unknown
TECNO	adapter	U330TSA	AH20210205

### External I/O Cable

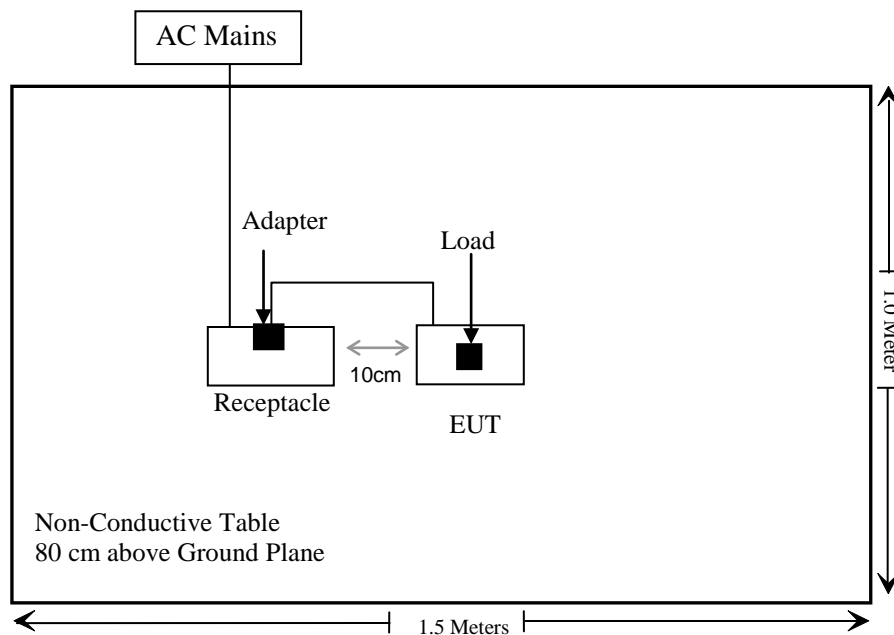
Cable Description	Length (m)	From Port	To
Unshielded Detachable USB Cable	1.2	Adapter	EUT
Unshielded Un-Detachable AC Cable	1.2	LISN	Receptacle

## Block Diagram of Test Setup

For conducted emission:



For Radiated Emission:



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**SUMMARY OF TEST RESULTS**

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FCC Rules	Description of Test	Result
FCC§15.203	Antenna Requirement	Compliant
FCC§15.207	AC Line Conducted Emission	Compliant
§15.209 §15.205	Radiated Emission Test	Compliant

## TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>Conducted Emissions Test</b>					
Rohde& Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12
R & S	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50ΩCoaxial Switch	MP59B	6200506474	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
Conducted Emission Test Software: e3 19821b (V9)					
<b>RF Radiated test</b>					
Rohde& Schwarz	Test Receiver	ESR	101817	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/11/09	2022/11/08
SCHWARZBECK	LOOP ANTENNA	FMZB1516	1516131	2021/12/22	2024/12/21
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
Radiated Emission Test Software: e3 19821b (V9)					

**\* Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).



## **FCC§15.203 – ANTENNA REQUIREMENT**

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### **Applicable Standard**

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.

### **Antenna Connected Construction**

The EUT has one coil antenna arrangement which was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

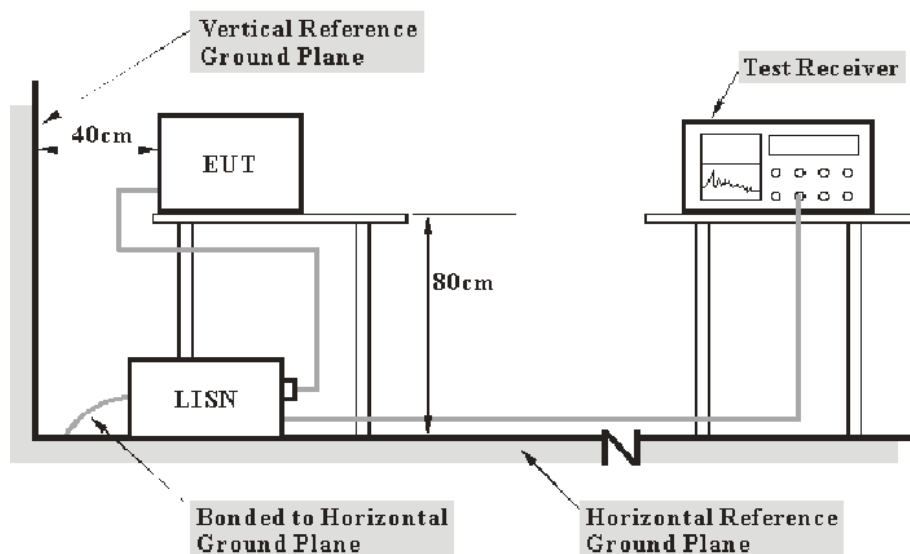
**Result: Compliant.**

## FCC §15.207 – AC LINE CONDUCTED EMISSION

### Applicable Standard

FCC§15.207

### EUT Setup



Note: 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

### Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

## Corrected Factor & Margin Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

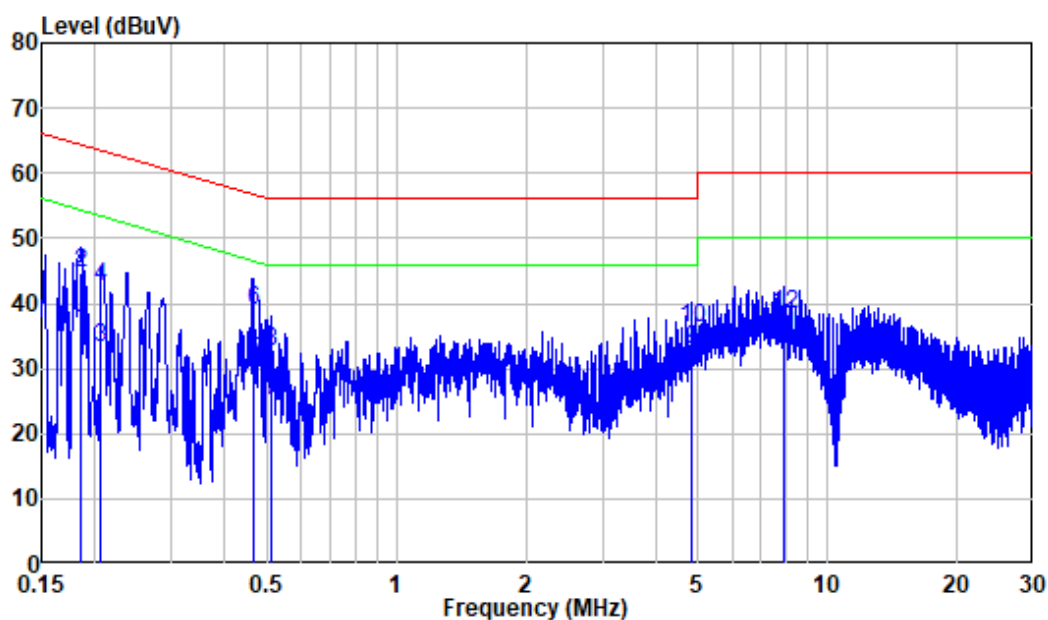
## Test Data

### Environmental Conditions

<b>Temperature:</b>	24 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	101.0 kPa

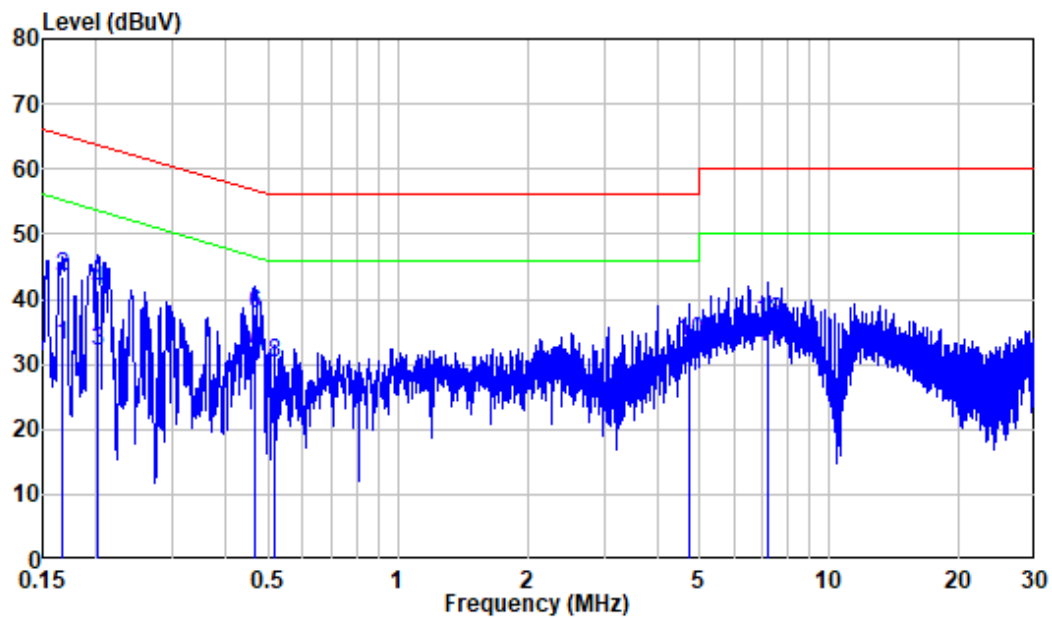
*The testing was performed by Caro Hu on 2022-04-01.*

*Test Mode: Full Load (Worst case)*

**AC 120 V/60 Hz, Line:**

Site : Shielding Room  
 Condition: Line  
 Mode : Full load  
 Model : DD0411  
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.186	9.80	26.04	35.84	54.23	-18.39	Average
2	0.186	9.80	34.81	44.61	64.23	-19.62	QP
3	0.206	9.80	23.43	33.23	53.35	-20.12	Average
4	0.206	9.80	32.71	42.51	63.35	-20.84	QP
5	0.465	9.80	21.19	30.99	46.61	-15.62	Average
6	0.465	9.80	29.20	39.00	56.61	-17.61	QP
7	0.510	9.81	15.27	25.08	46.00	-20.92	Average
8	0.510	9.81	22.72	32.53	56.00	-23.47	QP
9	4.822	9.85	23.19	33.04	46.00	-12.96	Average
10	4.822	9.85	26.43	36.28	56.00	-19.72	QP
11	7.920	9.88	25.20	35.08	50.00	-14.92	Average
12	7.920	9.88	28.51	38.39	60.00	-21.61	QP

**AC 120V/ 60 Hz, Neutral:**

Site : Shielding Room  
 Condition: Neutral  
 Mode : Full load  
 Model : DD0411  
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.167	9.80	23.16	32.96	55.11	-22.15	Average
2	0.167	9.80	33.82	43.62	65.11	-21.49	QP
3	0.202	9.80	22.13	31.93	53.52	-21.59	Average
4	0.202	9.80	31.61	41.41	63.52	-22.11	QP
5	0.464	9.80	21.34	31.14	46.63	-15.49	Average
6	0.464	9.80	28.03	37.83	56.63	-18.80	QP
7	0.518	9.81	12.23	22.04	46.00	-23.96	Average
8	0.518	9.81	20.29	30.10	56.00	-25.90	QP
9	4.715	9.88	20.96	30.84	46.00	-15.16	Average
10	4.715	9.88	23.56	33.44	56.00	-22.56	QP
11	7.190	9.97	22.74	32.71	50.00	-17.29	Average
12	7.190	9.97	26.55	36.52	60.00	-23.48	QP

## FCC §15.205 & §15.209 - RADIATED EMISSIONS TEST

### Applicable Standard

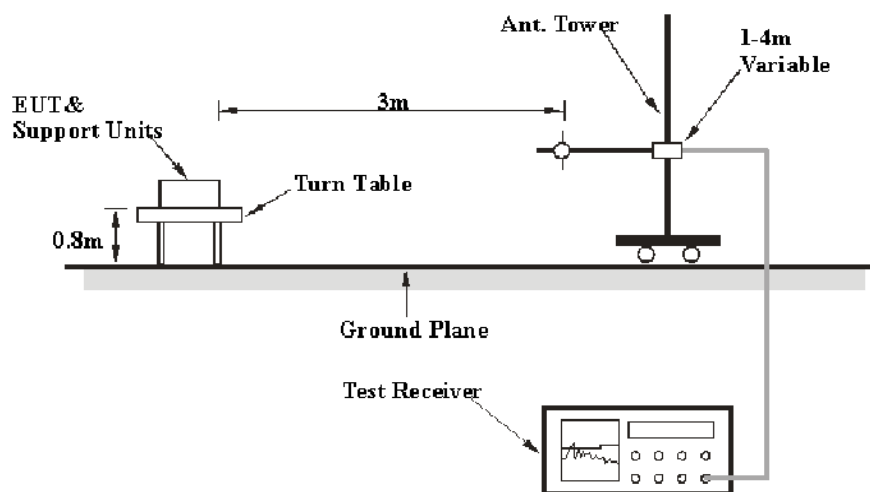
As per FCC Part 15.209

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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

\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

### EUT Setup



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

## EMI Test Receiver Setup

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Measurement
9 kHz – 150 kHz	300 Hz	1 kHz	PK
150 kHz – 30 MHz	10 kHz	30 kHz	PK
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform an QP/Average measurement

## Corrected Amplitude & Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

$$\begin{aligned} \text{Over Limit/Margin} &= \text{Level} / \text{Corrected Amplitude} - \text{Limit} \\ \text{Level} / \text{Corrected Amplitude} &= \text{Read Level} + \text{Factor} \end{aligned}$$

## Test Data

### Environmental Conditions

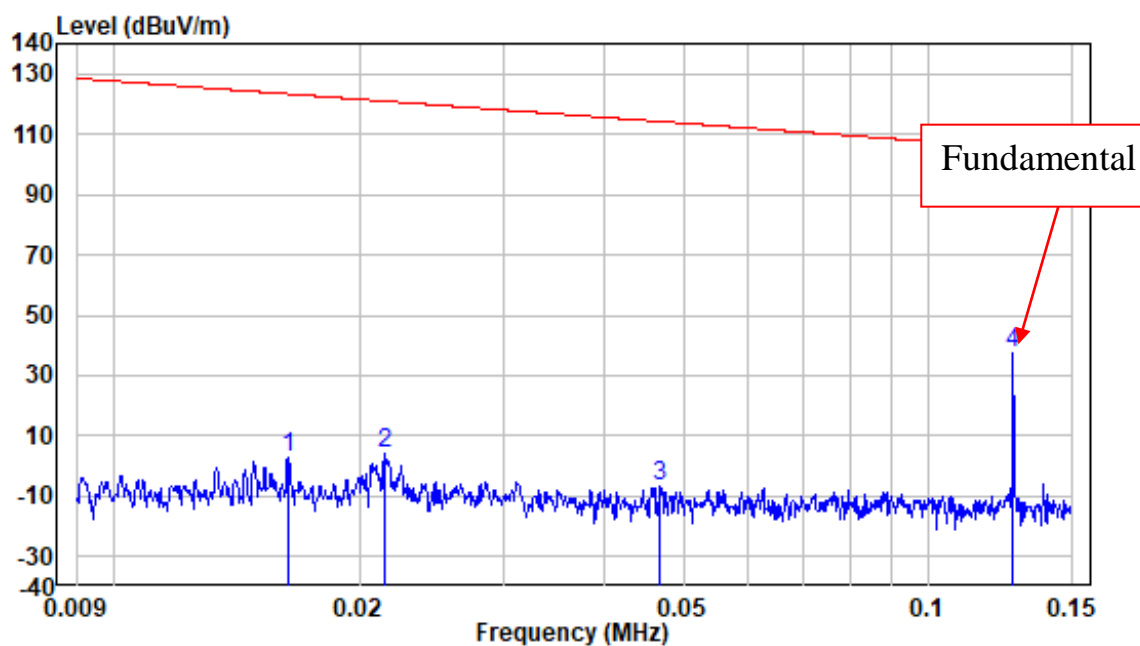
<b>Temperature:</b>	18°C
<b>Relative Humidity:</b>	60 %
<b>ATM Pressure:</b>	101 kPa

*The testing was performed by Level Li on 2022-04-02 .*

*Test Mode: Full Load (Worst case for 5W)*

*Note: X means Parallel. Y means Perpendicular. Z means Ground-parallel.*

9 kHz~150kHz:



Site : chamber

Condition: 3m

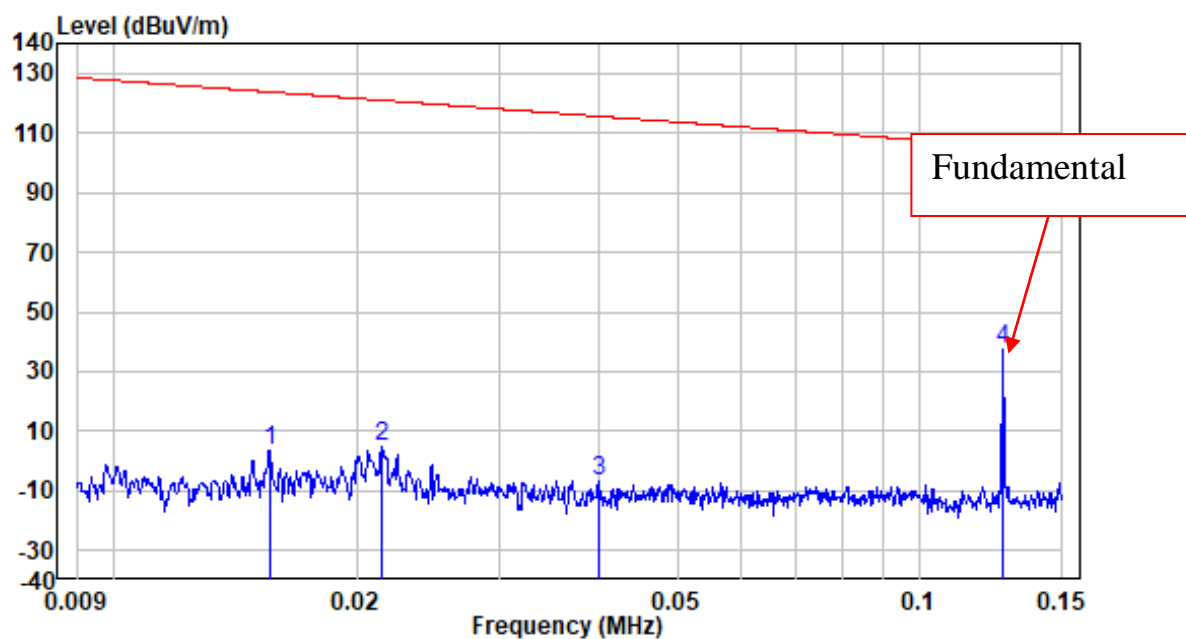
Job No. : XMTN1220322-10015E-RF

Mode : Full load

Note : perpendicular

	Freq	Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	0.016	-11.57	14.35	2.78	123.34-120.56	Peak
2	0.022	-11.68	15.73	4.05	120.94-116.89	Peak
3	0.047	-11.54	4.66	-6.88	114.20-121.08	Peak
4	0.127	-11.85	49.62	37.77	105.55	-67.78 Peak





Site : chamber

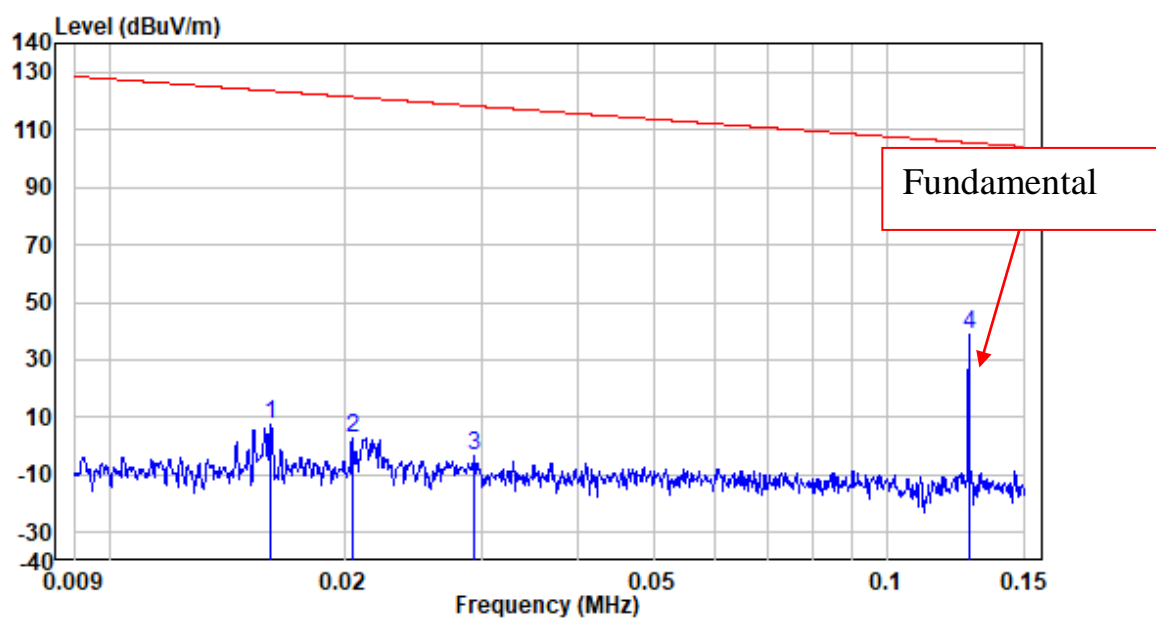
Condition: 3m

Job No. : XMTN1220322-10015E-RF

Mode : Full load

Note : ground-paralled

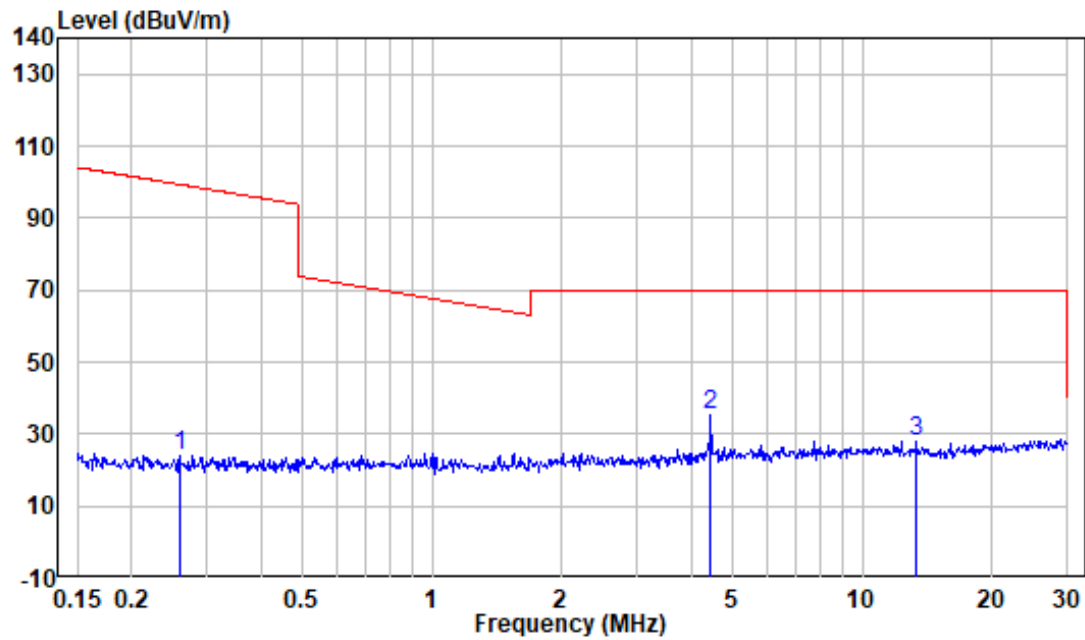
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.016	-11.54	15.03	3.49	123.73-120.24		Peak
2	0.022	-11.68	16.60	4.92	120.94-116.02		Peak
3	0.040	-11.59	4.88	-6.71	115.57-122.28		Peak
4	0.127	-11.85	49.03	37.18	105.55	-68.37	Peak



Site : chamber  
Condition: 3m  
Job No. : XMTN1220322-10015E-RF  
Mode : Full load  
Note : Parallel

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.016	-11.56	19.29	7.73	123.46-115.73		Peak
2	0.021	-11.69	14.61	2.92	121.36-118.44		Peak
3	0.029	-11.64	8.65	-2.99	118.23-121.22		Peak
4	0.127	-11.86	50.97	39.11	105.52	-66.41	Peak

150kHz~30MHz:



Site : chamber

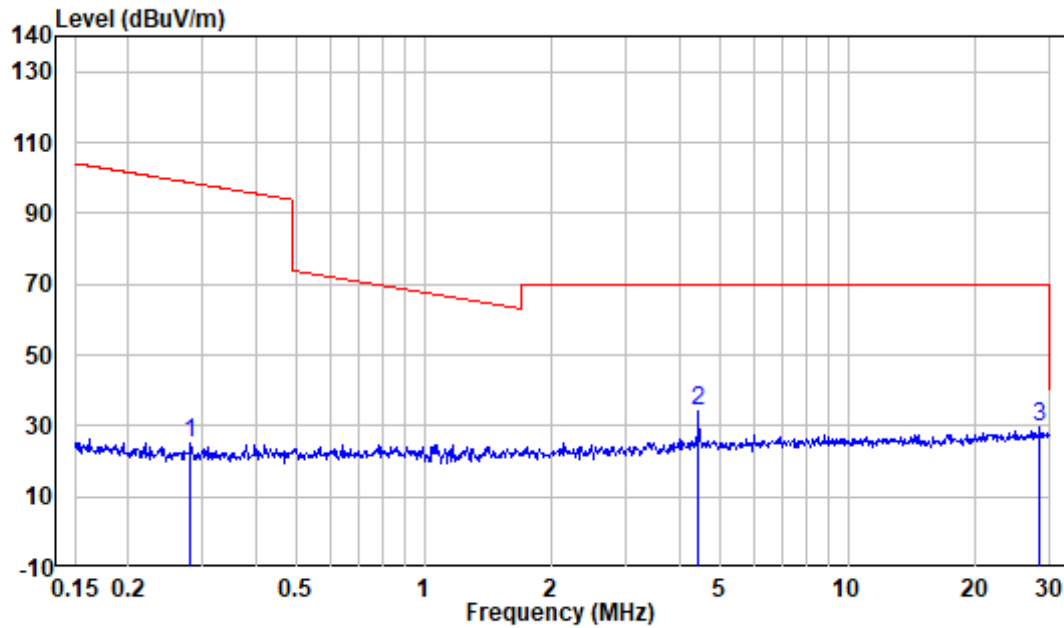
Condition: 3m

Job No. : XMTN1220322-10015E-RF

Mode : Full load

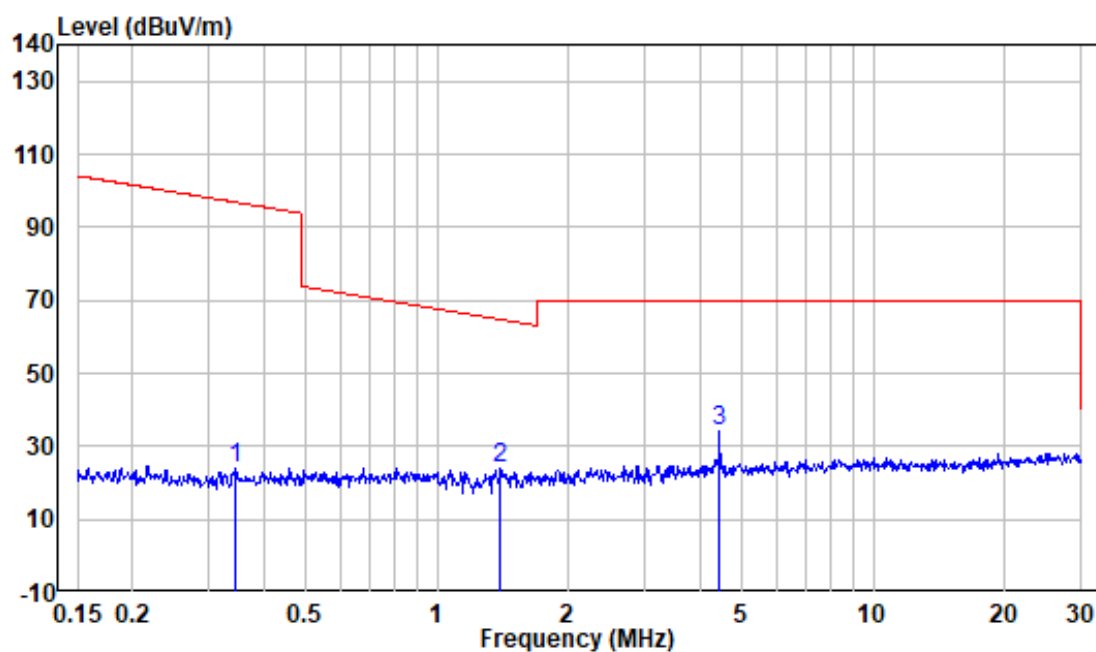
Note : perpendicular

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.259	-11.88	35.92	24.04	99.34	-75.30	Peak
2	4.430	-11.69	46.87	35.18	69.54	-34.36	Peak
3	13.408	-10.91	38.87	27.96	69.54	-41.58	Peak



Site : chamber  
 Condition: 3m  
 Job No. : XMTN1220322-10015E-RF  
 Mode : Full load  
 Note : ground-paralled

	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.282	-11.85	36.90	25.05	98.61	-73.56	Peak
2	4.430	-11.69	45.69	34.00	69.54	-35.54	Peak
3	28.452	-9.89	39.47	29.58	69.54	-39.96	Peak

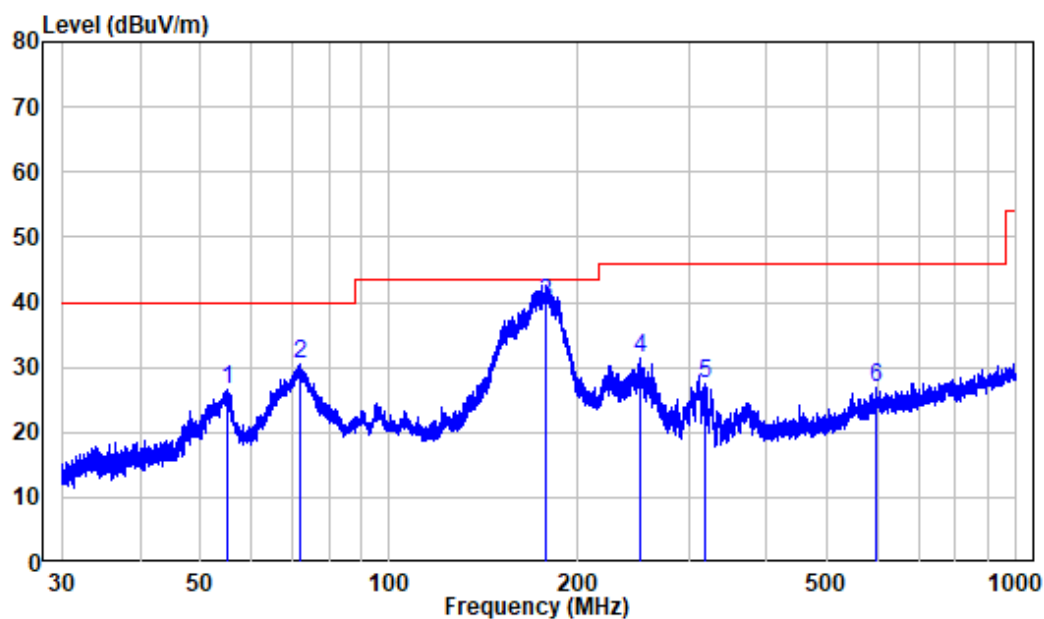


Site : chamber  
Condition: 3m  
Job No. : XMTN1220322-10015E-RF  
Mode : Full load  
Note : Parallel

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.345	-11.77	35.90	24.13	96.86	-72.73	Peak
2	1.396	-11.48	35.36	23.88	64.51	-40.63	Peak
3	4.430	-11.69	45.67	33.98	69.54	-35.56	Peak

30MHz~1GHz:

Horizontal



Site : chamber

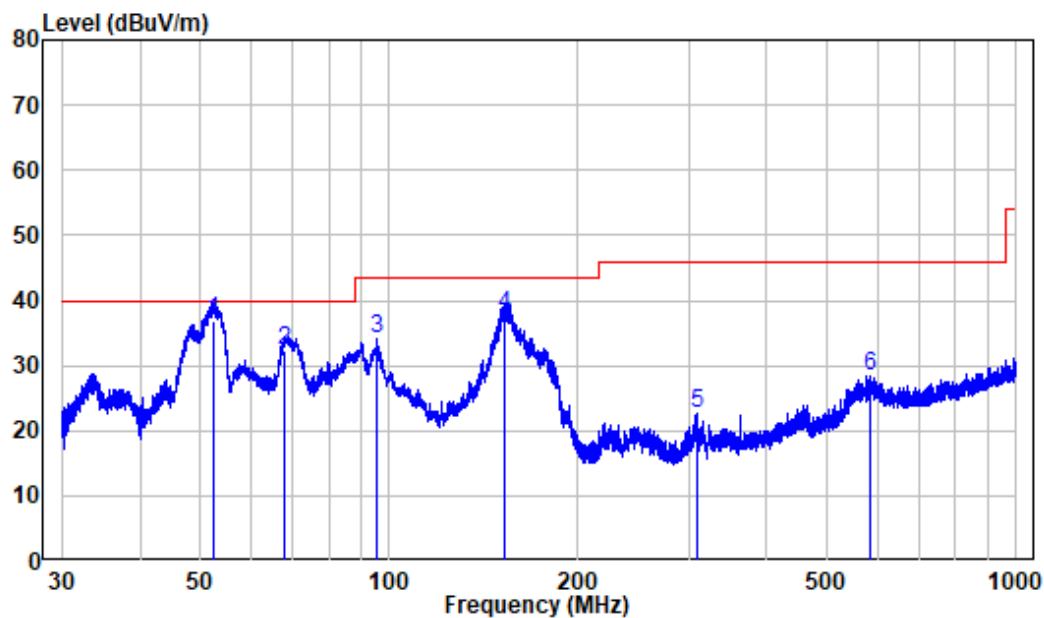
Condition: 3m HORIZONTAL

Job No. : XMTN1220322-10015E-RF

Mode : Full load

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	55.124	-10.27	36.95	26.68	40.00	-13.32	Peak
2	71.801	-15.53	45.89	30.36	40.00	-9.64	Peak
3	177.121	-13.01	52.77	39.76	43.50	-3.74	QP
4	250.411	-10.74	42.28	31.54	46.00	-14.46	Peak
5	318.817	-8.52	36.13	27.61	46.00	-18.39	Peak
6	598.534	-2.51	29.41	26.90	46.00	-19.10	Peak

Vertical



Site : chamber  
Condition: 3m VERTICAL  
Job No. : XMTN1220322-10015E-RF  
Mode : Full load

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	52.460	-10.06	46.85	36.79	40.00	-3.21	QP
2	68.032	-13.84	46.22	32.38	40.00	-7.62	QP
3	95.762	-12.35	46.33	33.98	43.50	-9.52	Peak
4	152.932	-15.09	52.69	37.60	43.50	-5.90	QP
5	309.048	-8.92	31.51	22.59	46.00	-23.41	Peak
6	583.765	-3.09	31.48	28.39	46.00	-17.61	Peak

\*\*\*\*\* END OF REPORT \*\*\*\*\*