

# TEST REPORT

Reference No..... : WTZ22X02016027W-1  
FCC ID ..... : 2A45J-BL-1223  
Applicant ..... : Zhongshan Bailiwei Lighting Co.,Ltd.  
Address..... : No. 8, Lian Ying one Road, Jixi, Xiaolan Town, Zhongshan City  
Product Name ..... : LED Desk Lamp  
Test Model. .... : BL-1223  
Standards ..... : FCC Part 15C  
Date of Receipt sample .... : Feb. 11, 2022  
Date of Test..... : Feb. 11, 2022 to Feb. 19, 2022  
Date of Issue ..... : Feb. 19, 2022  
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

**Prepared By:**

**Waltek Testing Group (Shenzhen) Co., Ltd.**

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,  
Block 70 Bao'an District, Shenzhen, Guangdong, China

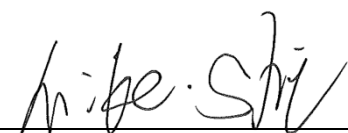
Tel.: +86-755-33663308

Fax.: +86-755-33663309

Tested by:

Reviewed By:

Approved & Authorized By:



Mike Shi / Project Engineer



Jason Su / RF Manager



Silin Chen / Manager

**ABLE OF CONTENTS**

<b>1. GENERAL INFORMATION</b> .....	<b>4</b>
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY.....	5
1.4 TEST FACILITY.....	5
1.5 EUT SETUP AND OPERATION MODE.....	6
1.6 MEASUREMENT UNCERTAINTY.....	7
1.7 TEST EQUIPMENT LIST AND DETAILS.....	8
<b>2. SUMMARY OF TEST RESULTS</b> .....	<b>9</b>
<b>3. RF EXPOSURE</b> .....	<b>10</b>
3.1 STANDARD APPLICABLE.....	10
3.2 TEST RESULT.....	10
<b>4. ANTENNA REQUIREMENT</b> .....	<b>11</b>
4.1 STANDARD APPLICABLE.....	11
4.2 EVALUATION INFORMATION.....	11
<b>5. CONDUCTED EMISSIONS</b> .....	<b>12</b>
5.1 TEST PROCEDURE.....	12
5.2 BASIC TEST SETUP BLOCK DIAGRAM.....	12
5.3 ENVIRONMENTAL CONDITIONS.....	12
5.4 TEST RECEIVER SETUP.....	13
5.5 SUMMARY OF TEST RESULTS/PLOTS.....	13
<b>6. FIELD STRENGTH OF SPURIOUS EMISSIONS</b> .....	<b>16</b>
6.1 STANDARD APPLICABLE.....	16
6.2 TEST PROCEDURE.....	16
6.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	18
6.4 ENVIRONMENTAL CONDITIONS.....	18
6. REFERENCE MEASUREMENT AT OPEN FIELD SITE.....	18
6.5 SUMMARY OF TEST RESULTS/PLOTS.....	18
<b>7. 20DB EMISSION BANDWIDTH</b> .....	<b>22</b>
7.1 STANDARD APPLICABLE.....	22
7.2 TEST PROCEDURE.....	22
7.3 ENVIRONMENTAL CONDITIONS.....	22
7.4 SUMMARY OF TEST RESULTS/PLOTS.....	22
<b>APPENDIX PHOTOGRAPHS</b> .....	<b>23</b>

**Report version**

Version No.	Date of issue	Description
Rev.00	Feb. 19, 2022	Original
/	/	/

## 1. GENERAL INFORMATION

---

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Zhongshan Bailiwei Lighting Co.,Ltd.  
 Address of applicant: No. 8, Lian Ying one Road, Jixi, Xiaolan Town, Zhongshan City

Manufacturer: Zhongshan Bailiwei Lighting Co.,Ltd.  
 Address of manufacturer: No. 8, Lian Ying one Road, Jixi, Xiaolan Town, Zhongshan City

General Description of EUT	
Product Name:	LED Desk Lamp
Trade Name:	/
Model No.:	BL-1223
Adding Model:	DL006
Battery Capacity	/
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model BL-1223, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Frequency Range:	112-205kHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna
Antenna Gain:	0dBi
Rate Power:	Input:DC13.5V Wireless output: 5W
Adapter:	Model:BLW018-1351200 Input:AC100-240v, 50/60Hz, 0.42A max Output:DC13.5V, 1.2A

## 1.2 Test Standards

The following report is prepared on behalf of the Zhongshan Bailiwei Lighting Co.,Ltd. in accordance with Part 15.207, 15.209, RSS-Gen Issue 4 and RSS-216 Issue 2 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.207, 15.209 and RSS-Gen Issue 4 and RSS-216 Issue 2 rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

## 1.4 Test Facility

### **FCC – Registration No.: 125990**

Waltek Testing Group (Shenzhen) Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

### Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	Wireless output	Wireless output: 5W	Input:DC13.5V

### EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC cable	1.8	Unshielded	Without Ferrite

### Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

### Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

**1.6 Measurement Uncertainty**

<b>Measurement uncertainty</b>		
<b>Parameter</b>	<b>Conditions</b>	<b>Uncertainty</b>
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

**1.7 Test Equipment List and Details**

<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Cal Date</b>	<b>Due Date</b>
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2021-03-30	2022-03-29
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2021-04-12	2022-04-11
Amplifier	Agilent	8447F	3113A06717	2021-04-12	2022-04-11
Amplifier	C&D	PAP-1G18	2002	2021-04-12	2022-04-11
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2021-04-12	2022-04-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2021-04-15	2022-04-14



## 2. SUMMARY OF TEST RESULTS

---

<b>Description of Test</b>	<b>Result</b>
§ 15.207(a) Conducted Emission	Compliant
§ 15.209(a) Radiated Emission	Compliant
§ 15.215 20dB Emission Bandwidth	Compliant

N/A: not applicable

### **3. RF Exposure**

---

#### **3.1 Standard Applicable**

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

#### **3.2 Test Result**

This product complied with the requirement of the RF exposure, please see the RF Exposure Report.

## **4. Antenna Requirement**

---

### **4.1 Standard Applicable**

According to FCC Part 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.

### **4.2 Evaluation Information**

This product has a Coil antenna, fulfill the requirement of this section.

## 5. Conducted Emissions

---

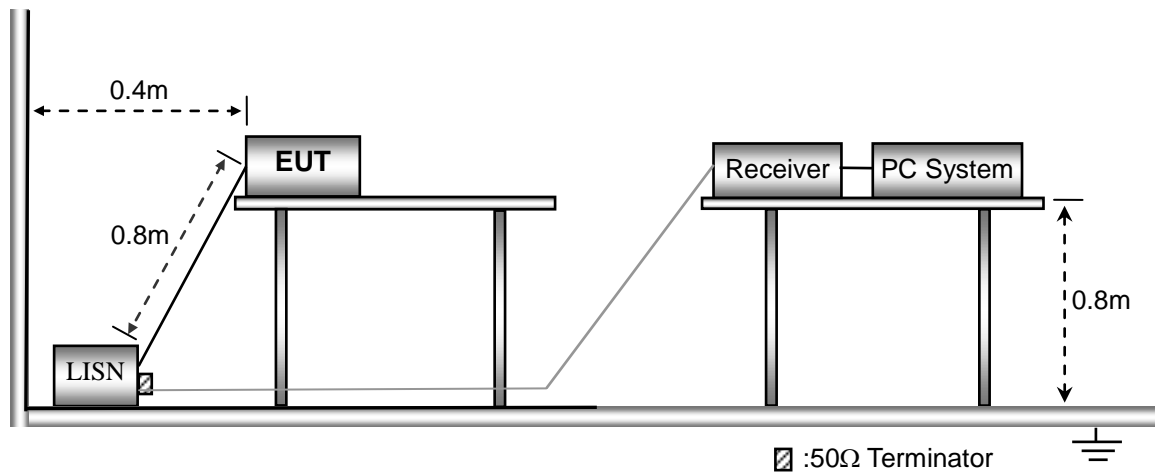
### 5.1 Test Procedure

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

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### 5.2 Basic Test Setup Block Diagram



### 5.3 Environmental Conditions

Temperature:	23.5 °C
Relative Humidity:	54%
ATM Pressure:	1012 mbar

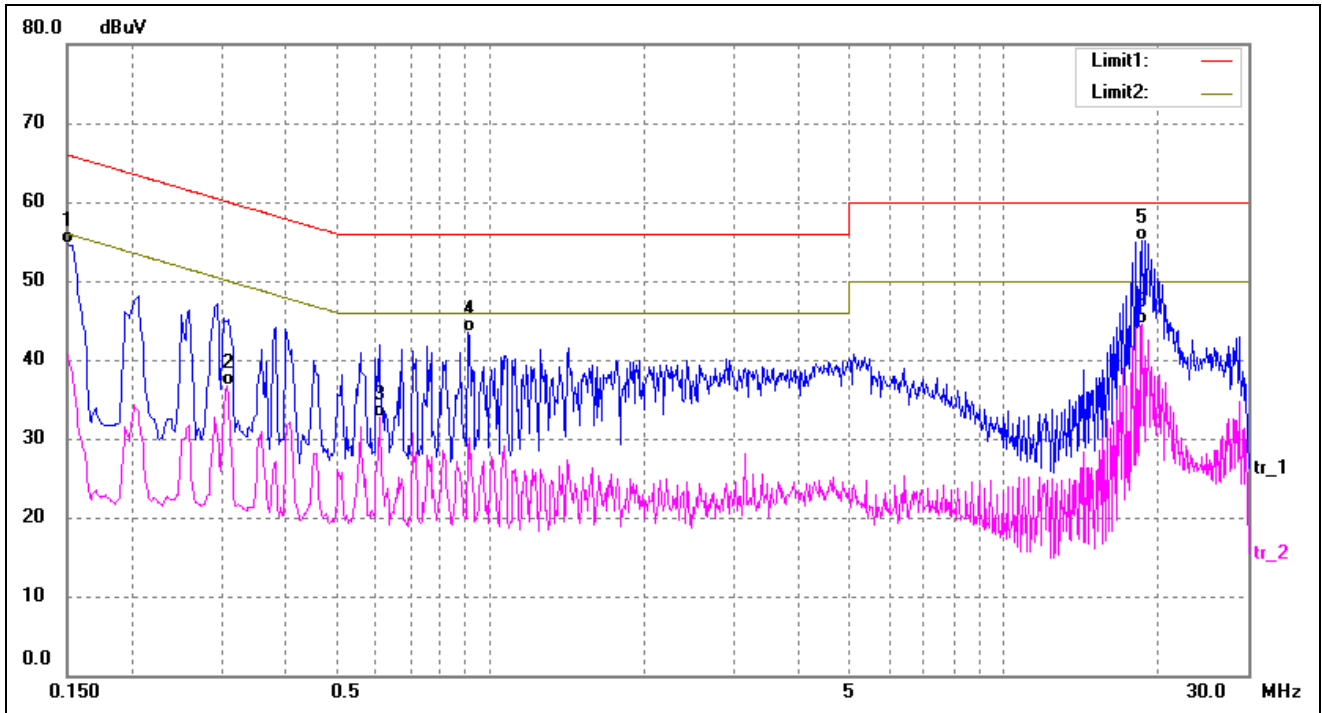
### 5.4 Test Receiver Setup

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

Start Frequency ..... 150 kHz  
Stop Frequency..... 30 MHz  
Sweep Speed ..... Auto  
IF Bandwidth..... 10 kHz  
Quasi-Peak Adapter Bandwidth ..... 9 kHz  
Quasi-Peak Adapter Mode ..... Normal

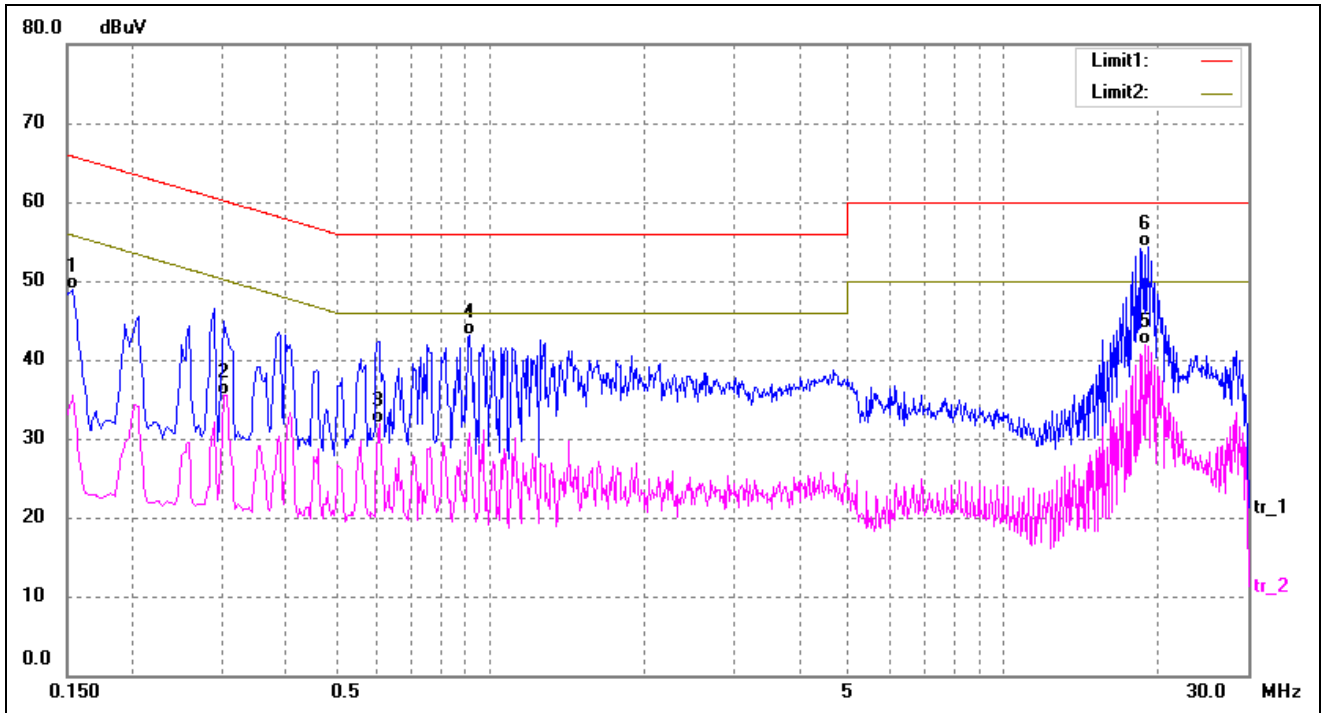
### 5.5 Summary of Test Results/Plots

Test mode:	TM1	Polarity:	Line
------------	-----	-----------	------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	44.26	10.38	54.64	66.00	-11.36	QP
2	0.3060	26.32	10.33	36.65	50.08	-13.43	AVG
3	0.6100	22.40	10.33	32.73	46.00	-13.27	AVG
4	0.9060	32.92	10.50	43.42	56.00	-12.58	QP
5*	18.6900	44.91	10.22	55.13	60.00	-4.87	QP
6	18.6900	34.34	10.22	44.56	50.00	-5.44	AVG

Test mode:	TM1	Polarity:	Neutral
------------	-----	-----------	---------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1540	38.51	10.37	48.88	65.78	-16.90	QP
2	0.3020	25.15	10.34	35.49	50.19	-14.70	AVG
3	0.6100	21.64	10.33	31.97	46.00	-14.03	AVG
4	0.9180	32.64	10.51	43.15	56.00	-12.85	QP
5	18.9500	31.61	10.23	41.84	50.00	-8.16	AVG
6*	19.2020	43.99	10.23	54.22	60.00	-5.78	QP

## 6. Field Strength of Spurious Emissions

### 6.1 Standard Applicable

According to §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

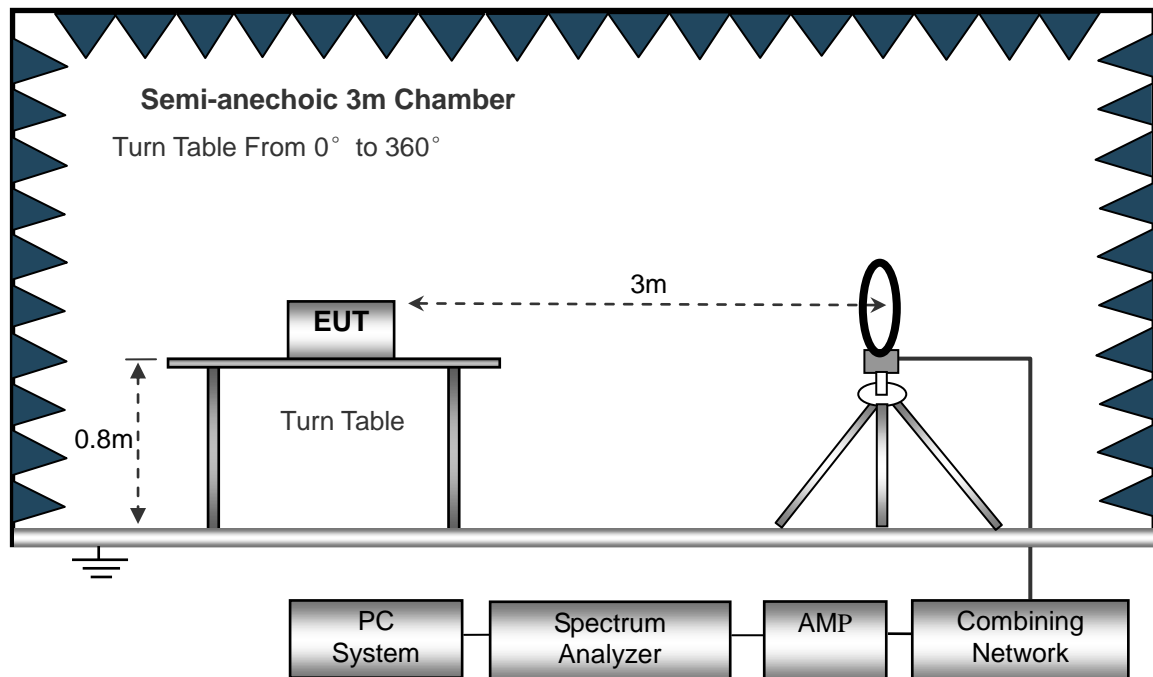
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 6.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.209 Limit.

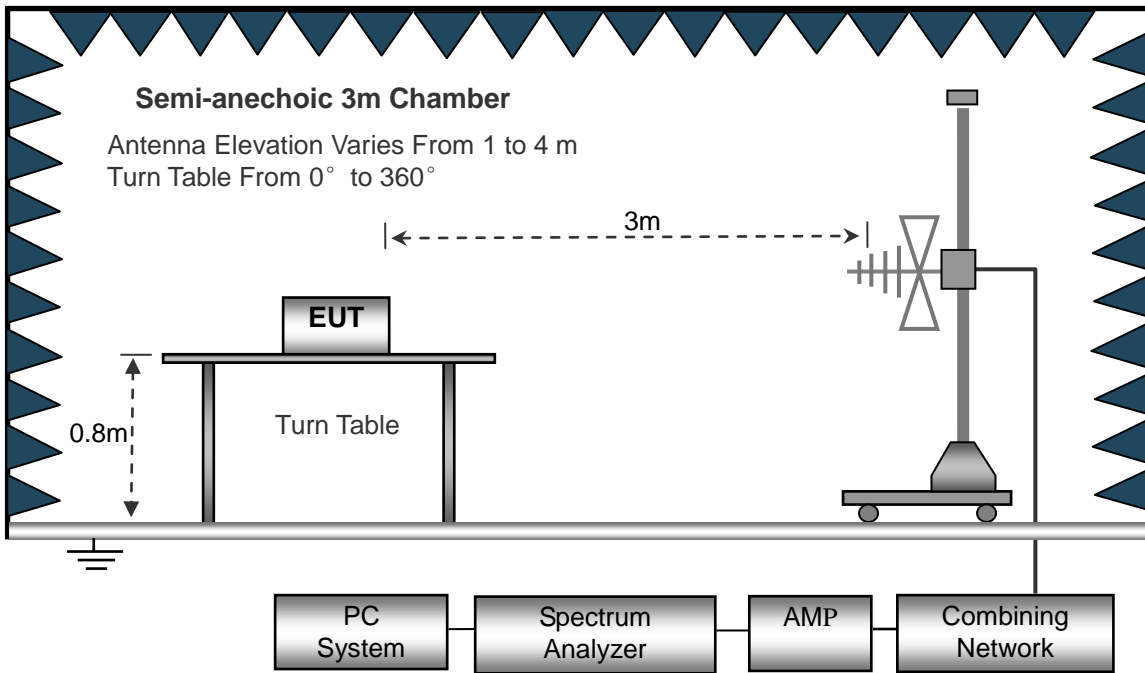
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

The test setup for emission measurement below 30MHz..

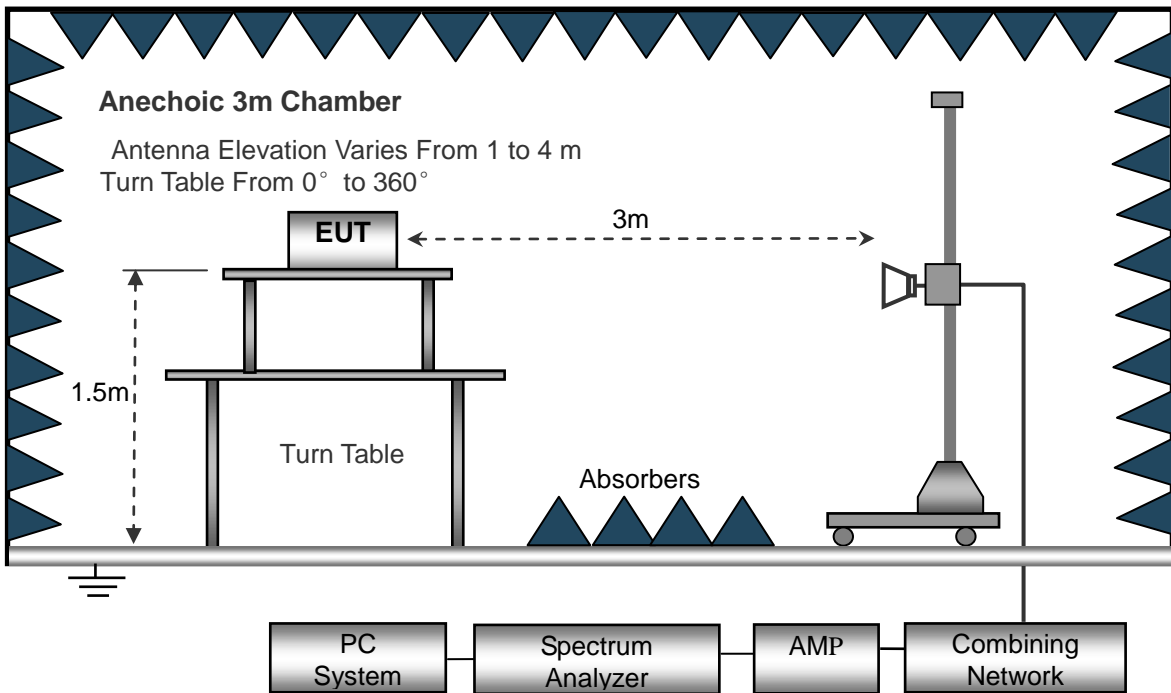




The test setup for emission measurement from 30 MHz to 1 GHz..



The test setup for emission measurement above 1 GHz..



Frequency :9kHz-30MHz  
 RBW=10KHz,  
 VBW =30KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak

Frequency :30MHz-1GHz  
 RBW=120KHz,  
 VBW=300KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak, QP

Frequency :Above 1GHz  
 RBW=1MHz,  
 VBW=3MHz(Peak), 10Hz(AV)  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak, AV

### 6.3 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

### 6.4 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	54%
ATM Pressure:	1012 mbar

### 6. Reference Measurement at open field site

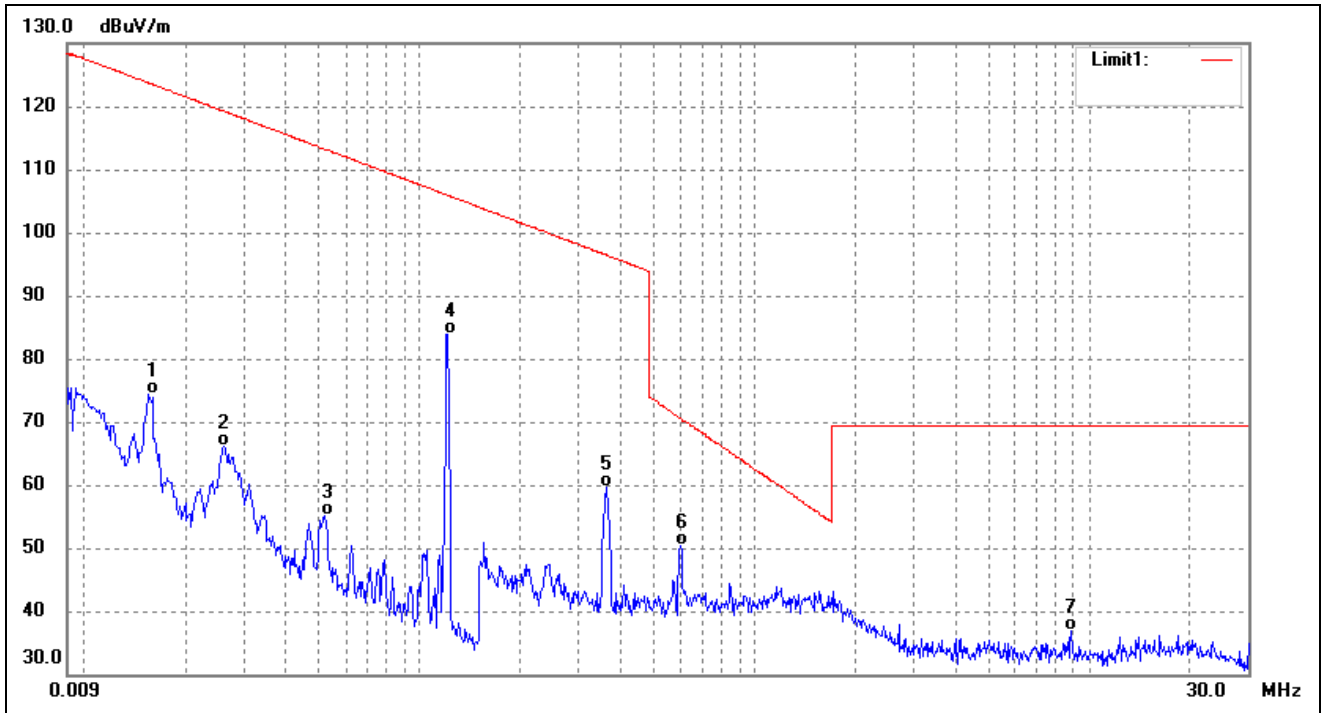
The measurement was performed with set-up consisting of a single turn loop antenna with a diameter of 0.15 m, fed by a signal generator. The loop dimension was chosen to simulate the EUT as far as possible. The signal generator was set to a fixed output level with an unmodulated 10 kHz and 14 kHz sinusoidal signal.

The radiated H fieldstrength at 10 kHz and 14 kHz generated by this set-up was measured with the same test setup as used in the SAC in 3 m distance first, and then repeated at the open field site in 3 m and 10 m distance

### 6.5 Summary of Test Results/Plots

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

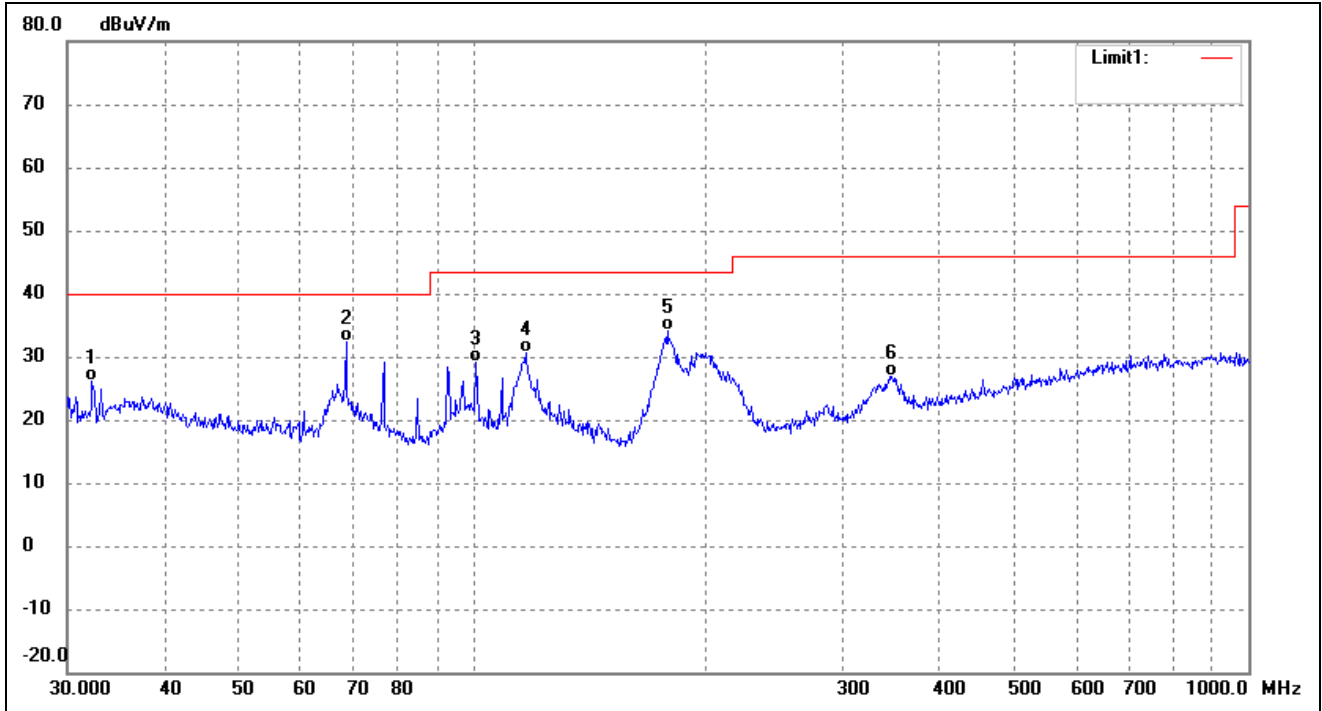
**Radiated Emissions Test Data (Below 30MHz)( Worst case EUT X axis)**



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	0.0156	80.00	-5.58	74.42	123.72	-49.30	-	-	QP
2	0.0260	71.35	-5.23	66.12	119.29	-53.17	-	-	QP
3	0.0522	59.14	-3.90	55.24	113.24	-58.00	-	-	QP
4	0.1208	88.49	-4.50	83.99	105.96	-21.97	-	-	QP
5	0.3615	64.39	-4.78	59.61	96.44	-36.83	-	-	QP
6	0.6011	54.43	-3.95	50.48	70.57	-20.09	-	-	QP
7	8.8223	39.95	-3.14	36.81	69.50	-32.69	-	-	QP

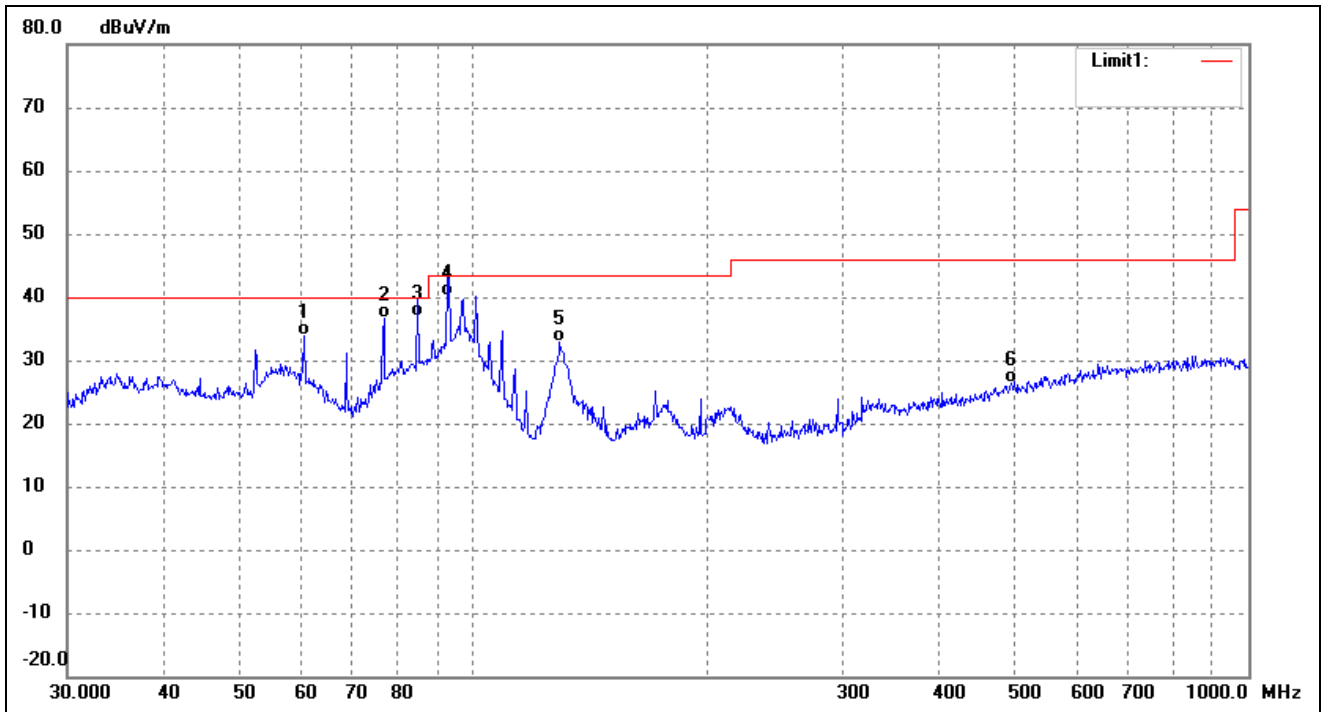
**Plot of Radiated Emissions Test Data ( Above 30MHz)**

Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	32.2925	35.14	-8.89	26.25	40.00	-13.75	-	-	QP
2	68.6310	42.29	-9.94	32.35	40.00	-7.65	-	-	QP
3	100.9340	37.88	-8.74	29.14	43.50	-14.36	-	-	QP
4	116.9495	39.95	-9.38	30.57	43.50	-12.93	-	-	QP
5	178.1327	45.52	-11.36	34.16	43.50	-9.34	-	-	QP
6	346.8092	32.50	-5.50	27.00	46.00	-19.00	-	-	QP

Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	60.7044	42.53	-8.55	33.98	40.00	-6.02	-	-	QP
2	76.7808	47.29	-10.56	36.73	40.00	-3.27	-	-	QP
3	84.7019	47.52	-10.66	36.86	40.00	-3.14	-	-	QP
4	92.7872	50.25	-10.07	40.18	43.50	-3.32	-	-	QP
5	129.4678	44.18	-11.33	32.85	43.50	-10.65	-	-	QP
6	494.1984	27.72	-1.44	26.28	46.00	-19.72	-	-	QP

Remark: ‘-’ Means the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

## 7. 20dB Emission bandwidth.

### 7.1 Standard Applicable

According to 15.215,20dB emission bandwidth.

### 7.2 Test Procedure

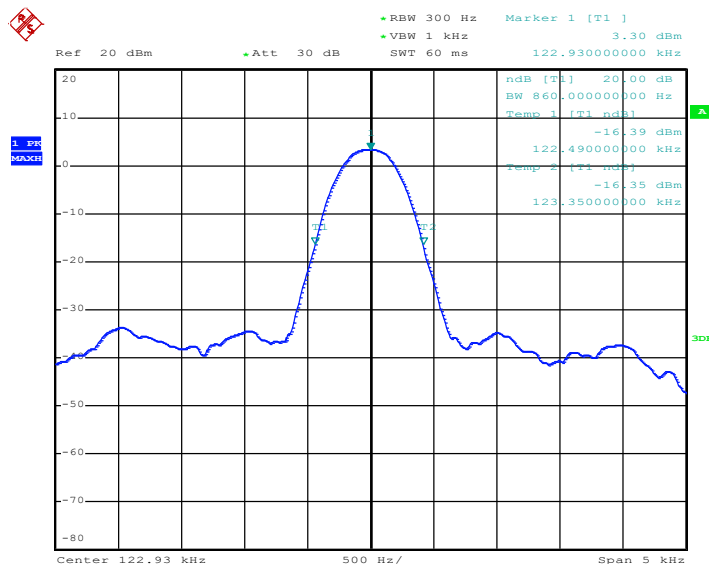
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

### 7.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

### 7.4 Summary of Test Results/Plots

Test Channel(kHz)	20dB Emission Bandwidth(kHz)
122.93	0.86



Date: 18.FEB.2022 08:51:46

## **APPENDIX PHOTOGRAPHS**

---

**Please refer to “ANNEX”**

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