TEST REPORT

Reference No.	:	WTU23N04072302E
Applicant	:	PhotonTek Hoticultural Lighting
Address	:	Ewropa Business centre, Level 3-701,Dun Karm Street Birkirkara, BKR 9034,Malta
Manufacturer	:	Same as applicant
Address	:	Same as applicant
Product Name	:	LED Luminaires
Model No.	:	Refer to section 3.2
Test specification	:	47 CFR PART 15 SUBPART B (Oct.,2021)
Date of Receipt sample	:	2022-11-18
Date of Test	:	2022-11-18 to 2022-11-25
Date of Issue	:	2023-05-10
Test Report Form No.	:	WEO-FCC15A-04C
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 (Ningbo) Co., Ltd.
Address: Zone 3, 1/F., No.6, Building 011; Zone 1, 5/F., No.1, Building 007, No.1177, Lingyun Road, Ningbo Hi-Tech Zone, Yinzhou District, Ningbo, Zhejiang, China
Tel: +86-574-8749 3888 Fax: +86-574-8386 8018 Email: nb@waltek.com.cn

Tested by:

Alice Wang

Approved by:

(05)
Shouyin Wang

1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Conducted Emission	47 CFR PART 15, SUBPART B(Oct.,2021)	Class B	ANSI C63.4:2014	Pass
Radiated Emission	47 CFR PART 15, SUBPART B(Oct.,2021)	Class B	ANSI C63.4:2014	Pass

Remark:

Pass	EUTs meet the requirement
Fail	EUTs do not meet the requirement
N/A	EUTs do not apply to the test object

2 Contents

Page

COVER PAGE 1

1 TEST SUMMARY 2

2 CONTENTS 3

3 GENERAL INFORMATION 4

3.1 General Description of E.U.T. 4
3.2 Details of E.U.T. 4
3.3 Description of Support Units 4
3.4 Standards Applicable for Testing 4
3.5 Subcontracted 5
3.6 Abnormalities from Standard Conditions 5

4 EQUIPMENT USED DURING TEST 6

4.1 Software List 6
4.2 Special Accessories and Auxiliary Equipment 6
4.3 Measurement Uncertainty 6
4.4 Decision Rule 7

5 EMISSION TEST RESULTS 8

5.1 Conducted Emission 8
5.1.1 E.U.T. Operation 8
5.1.2 Block Diagram of Test Setup 8
5.1.3 Measurement Data 8
5.1.4 Corrected Amplitude & Margin Calculation 9
5.1.5 Conducted Emission Test Data 9
5.2 Radiated Emission 11
5.2.1 E.U.T. Operation 11
5.2.2 Block Diagram of Test Setup 11
5.2.3 Measurement Data 11
5.2.4 Corrected Amplitude & Margin Calculation 12
5.2.5 Radiated Emission Test Data 12

6 PHOTOGRAPHS – TEST SETUP 14

6.1 Photograph – Conducted Emission Test Setup 14
6.2 Photograph – Radiated Emission Test Setup 14

7 PHOTOGRAPHS – CONSTRUCTIONAL DETAILS 15

7.1 EUT – Front View 15
7.2 EUT – Back View 15

3 General Information

3.1 General Description of E.U.T.

Product Name ..... : LED Luminaires

Model No. ..... : Refer to section 3.2

Protection Class ..... : Class I

Remark ..... :

1. The EUT (equipment under test) is an ordinary LED Luminaires and similar use. For the further information, refer to the user's manual.
2. This report is based on original test report " WTU22N11231406E" to issue a co-license.
3. In electrical characteristics, all models are similar circuit principle and PCB layout, except for model name. For details information, refer to the section 3.2.
3. For the test results, the EUT had been tested in the all conditions of rated input. But only the worst case was shown in test report.

3.2 Details of E.U.T.

Technical Data ..... :

No.	Model	Rated Input	Rated Power	Note
1.	X 1000W PRO 2.9	120 – 277 Vac, 50 / 60Hz	1000 W	/
2.	X 1000W PRO 2.9 277V	120 – 277 Vac, 50 / 60Hz	1000 W	/

3.3 Description of Support Units

The EUT has been tested as an independent unit. X 1000W PRO 2.9 is the tested sample. All tests were performed in the condition of 120 Vac, 60 Hz input.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

47 CFR PART 15 SUBPART B (Oct.,2021) Radio frequency devices

3.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items: --

Lab information: --

3.6 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

Conducted Emission					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1	EMI Test Receiver	R&S	ESCI	101406	Valid
2	TWO-LINE V-NETWORK	R&S	ENV216	101208	Valid
Radiated Emission					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1	EMI Test Receiver	R&S	ESR	101777	Valid
2	TRILOG Biconic logarithmic periodic broadband antenna	SCHWARZBECK	VULB9163	01025	Valid

4.1 Software List

Description	Manufacturer	Model	Version
EMI Test Software (Conducted Emission)	FARATRONIC	EZ-EMC	RA-03A1-1
EMI Test Software (Radiated Emission)	FARATRONIC	EZ-EMC	EMEC-3A1

4.2 Special Accessories and Auxiliary Equipment

Item	Equipment	Technical Data	Manufacturer	Model No.	Serial No.
1.	/	/	/	/	/

4.3 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emission	0.15 MHz ~ 30 MHz	± 2.66 dB	(1)
Radiated Emission	30 MHz ~ 1 GHz	± 5.03 dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Decision Rule

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{LAB} is less than or equal to U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

-Non-compliance is deemed to occur is any measured disturbance level exceeds the disturbance limt.

If U_{LAB} is greater than U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level, increased by(U_{LAB}-U_{cispr}) , exceeds the disturbance limit;

-Non-compliance is deemed to occur if any measured disturbance level, increased by(ULAB-Ucispr) , exceeds the disturbance limit.

5 Emission Test Results

5.1 Conducted Emission

Test Requirement..... : 47 CFR PART 15, SUBPART B

Test Method..... : ANSI C63.4

Test Result..... : Pass

Test Limit..... : 47 CFR PART 15, SUBPART B Section 15.107

Frequency Range..... : 150 kHz to 30 MHz

Class..... : Class B

5.1.1 E.U.T. Operation

Operating Environment:

Temperature..... : 23.2 °C

Humidity..... : 53%RH

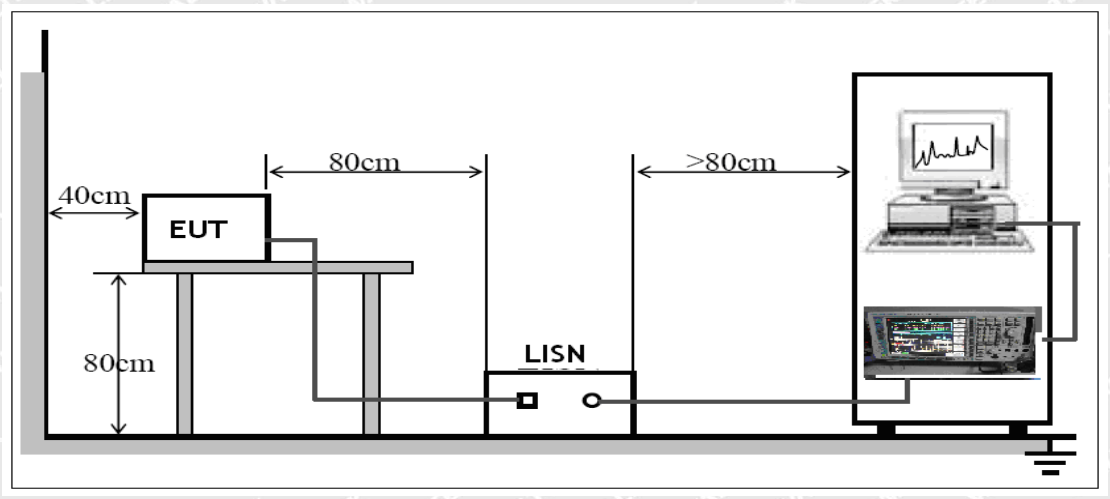
EUT Operation:

Input Voltage..... : 120 Vac, 60 Hz

Operating Mode..... : On mode

5.1.2 Block Diagram of Test Setup

The Conducted Emission tests were performed in accordance with the ANSI C63.4.



5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.1.4 Corrected Amplitude & Margin Calculation

The Corrected factor is calculated by adding LISN VDF(Voltage Division Facotr), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Measurement=Reading Level+Correct Factor

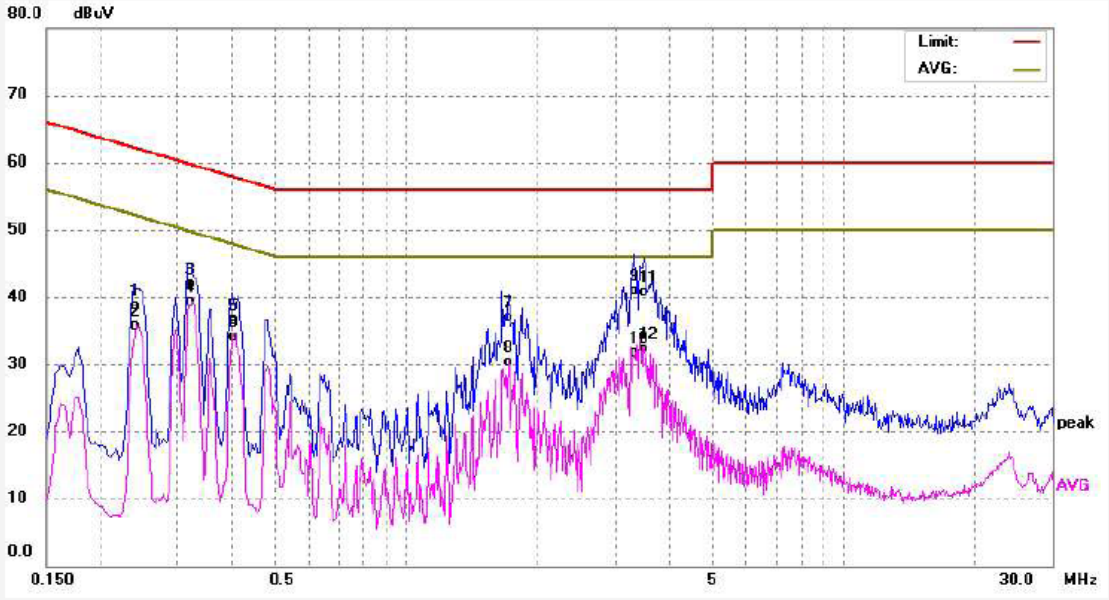
Correct Facotor=LISN VDF+Cable Loss

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

Margin=Limit-Measurement

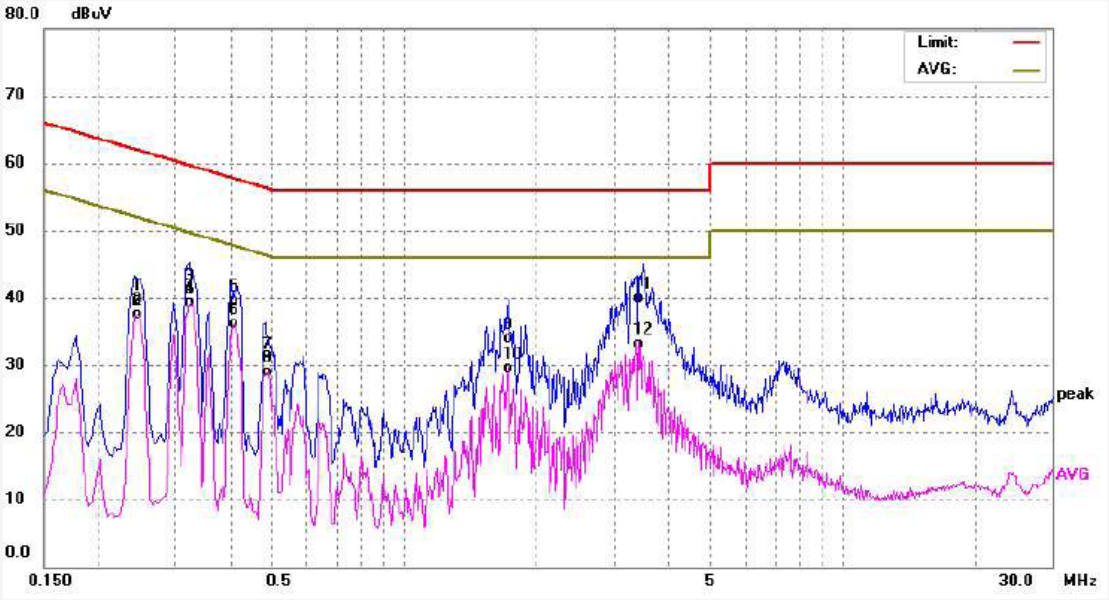
5.1.5 Conducted Emission Test Data

Live Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2420	29.17	9.63	38.80	62.02	-23.22	QP	
2	0.2420	26.05	9.63	35.68	52.02	-16.34	AVG	
3	0.3220	32.23	9.63	41.86	59.65	-17.79	QP	
4	0.3220	29.69	9.63	39.32	49.65	-10.33	AVG	
5	0.4052	26.80	9.63	36.43	57.75	-21.32	QP	
6	0.4052	24.44	9.63	34.07	47.75	-13.68	AVG	
7	1.7140	27.20	9.68	36.88	56.00	-19.12	QP	
8	1.7140	20.64	9.68	30.32	46.00	-15.68	AVG	
9	3.3140	31.17	9.71	40.88	56.00	-15.12	QP	
10	3.3140	22.09	9.71	31.80	46.00	-14.20	AVG	
11	3.4940	31.09	9.71	40.80	56.00	-15.20	QP	
12	3.4940	22.67	9.71	32.38	46.00	-13.62	AVG	

Neutral Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2460	30.05	9.63	39.68	61.89	-22.21	QP	
2	0.2460	27.97	9.63	37.60	51.89	-14.29	AVG	
3	0.3260	31.56	9.63	41.19	59.55	-18.36	QP	
4	0.3260	29.73	9.63	39.36	49.55	-10.19	AVG	
5	0.4100	29.90	9.64	39.54	57.65	-18.11	QP	
6	0.4100	26.46	9.64	36.10	47.65	-11.55	AVG	
7	0.4900	21.36	9.64	31.00	56.17	-25.17	QP	
8	0.4900	19.25	9.64	28.89	46.17	-17.28	AVG	
9	1.7180	24.19	9.68	33.87	56.00	-22.13	QP	
10	1.7180	19.74	9.68	29.42	46.00	-16.58	AVG	
11	3.4340	30.15	9.71	39.86	56.00	-16.14	QP	
12	3.4340	23.47	9.71	33.18	46.00	-12.82	AVG	

5.2 Radiated Emission

Test Requirement..... : 47 CFR PART 15, SUBPART B

Test Method..... : ANSI C63.4

Test Limit..... : 47 CFR PART 15, SUBPART B Section 15.109

Test Result..... : Pass

Frequency Range..... : 30 MHz to 1 GHz

Class..... : Class B

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 22.8 °C

Humidity..... : 52%RH

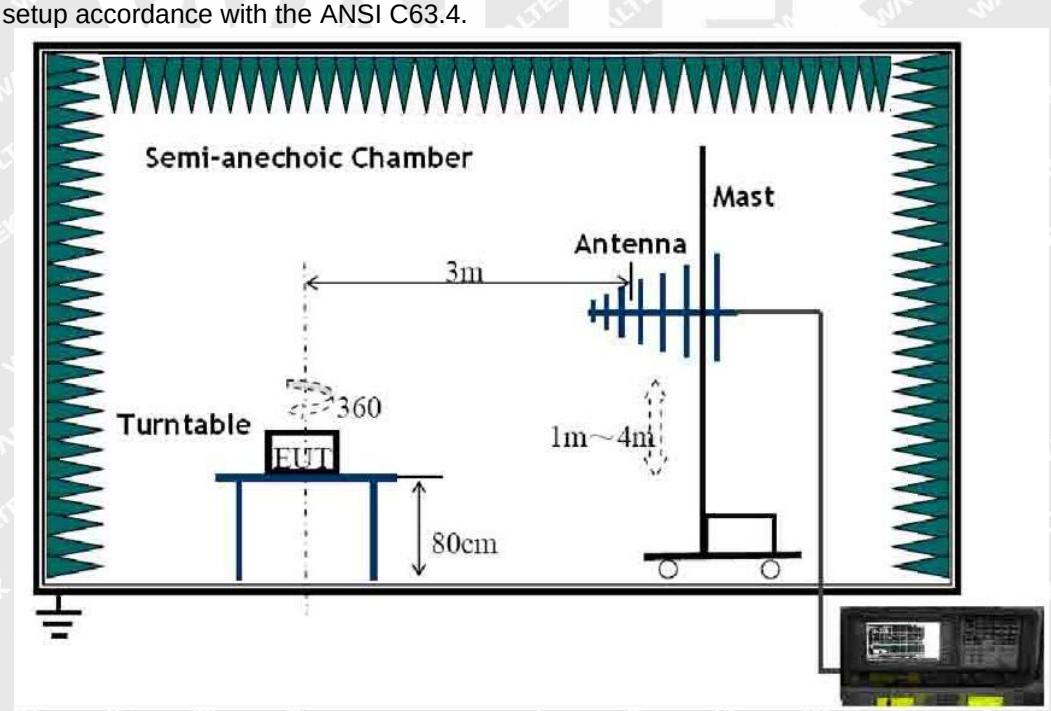
EUT Operation:

Input Voltage ..... : 120 Vac, 60 Hz

Operating Mode..... : On mode

5.2.2 Block Diagram of Test Setup

The Radiated Emission tests were performed in the 3 m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.



5.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for EUT 0° - 360°.Quasi-peak measurements were performed if peak emissions were within 6dB of the limit line.

5.2.4 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Corr. Factor

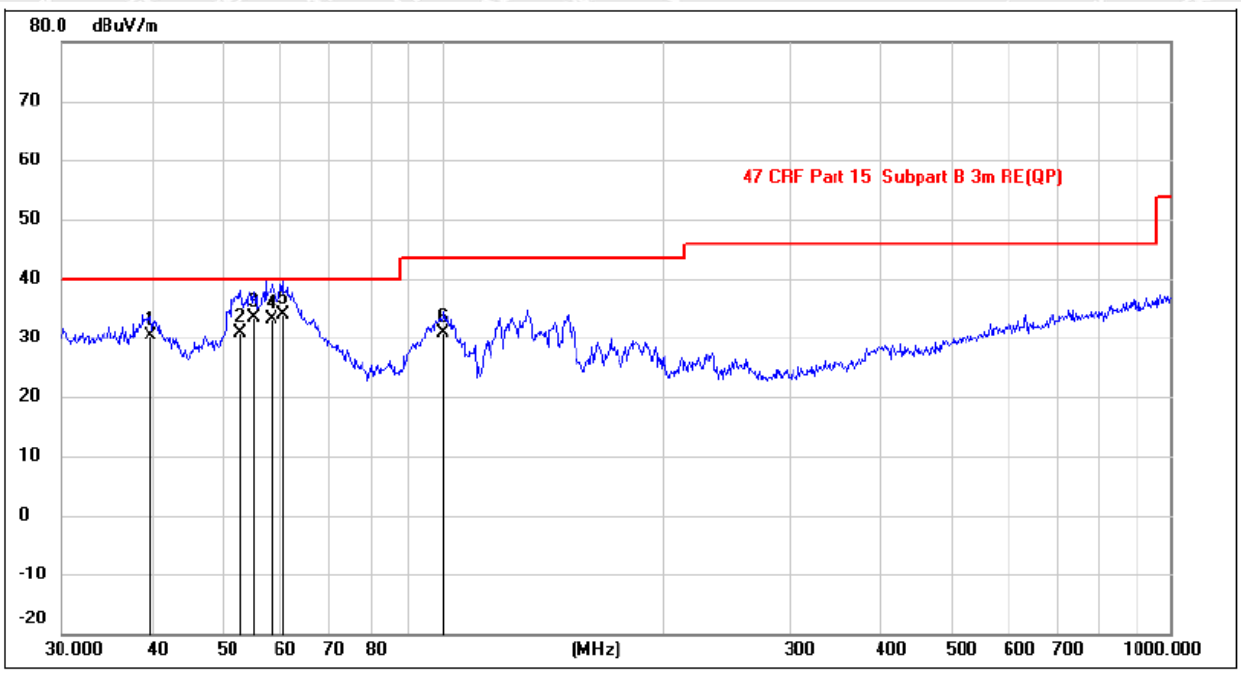
Corr.Factor=Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

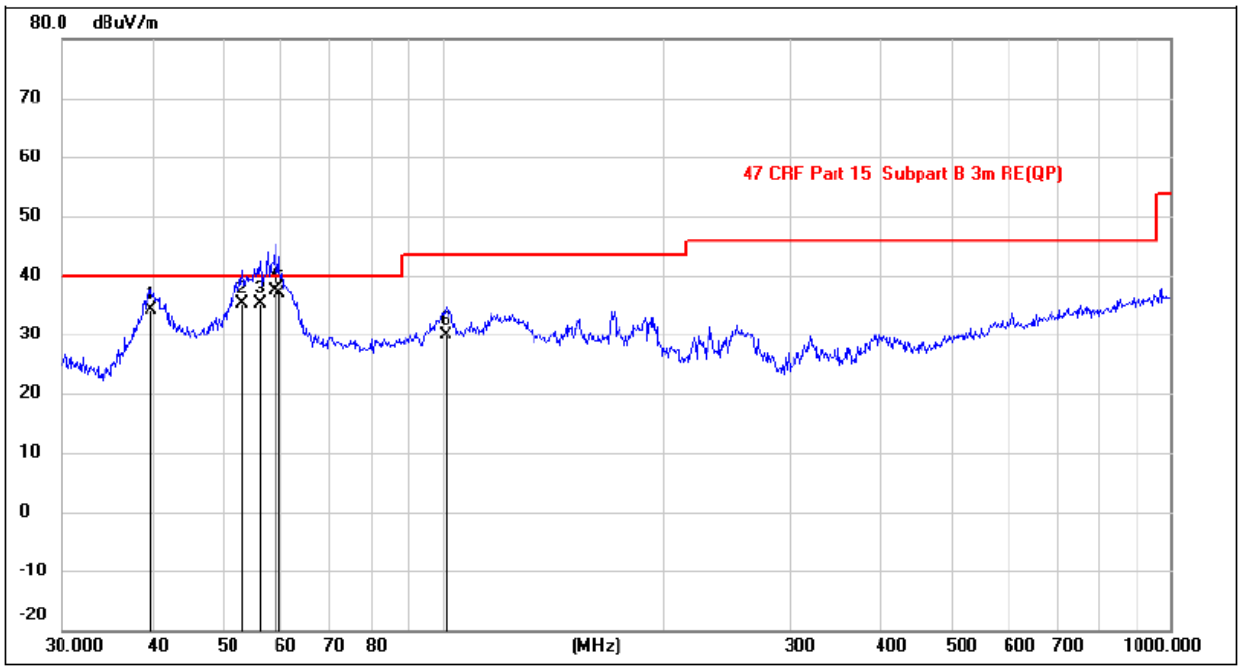
5.2.5 Radiated Emission Test Data

Vertical Polarization



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	39.8542	16.94	13.41	30.35	40.00	-9.65	QP
2	52.9453	16.73	14.24	30.97	40.00	-9.03	QP
3	55.2207	19.41	14.06	33.47	40.00	-6.53	QP
4	58.4074	19.69	13.47	33.16	40.00	-6.84	QP
5	60.4919	20.91	13.01	33.92	40.00	-6.08	QP
6	100.5806	18.24	12.68	30.92	43.50	-12.58	QP

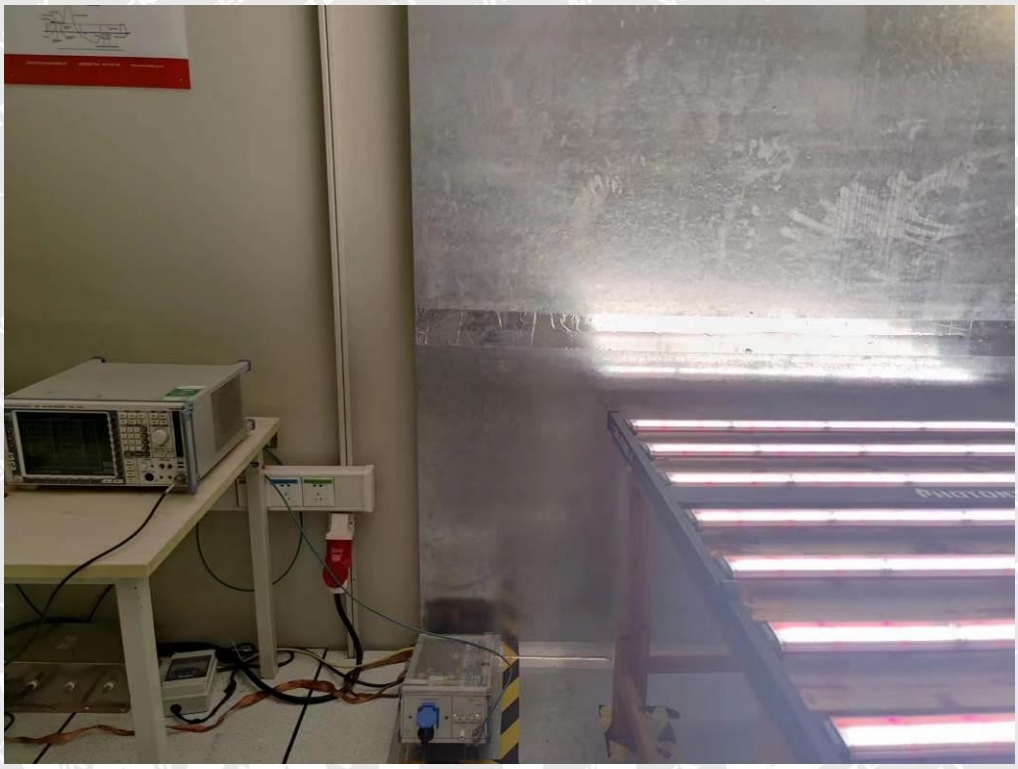
Horizontal Polarization



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	39.7146	20.70	13.37	34.07	40.00	-5.93	QP
2	53.1313	20.95	14.22	35.17	40.00	-4.83	QP
3	56.1974	21.27	13.88	35.15	40.00	-4.85	QP
4	58.8185	24.03	13.39	37.42	40.00	-2.58	QP
5	59.6492	23.65	13.24	36.89	40.00	-3.11	QP
6	101.2883	17.28	12.66	29.94	43.50	-13.56	QP

6 Photographs – Test Setup

6.1 Photograph – Conducted Emission Test Setup



6.2 Photograph – Radiated Emission Test Setup

7 Photographs – Constructional Details

7.1 EUT – Front View

7.2 EUT – Back View

====== End of Report ======