



TEST REPORT

Reference No. : WTU20F07049498E
 Applicant : PhotonTek Horticultral Lighting
 Address : Ewropa Business centre, Level 3-701, Dun Karm Street Birkirkara,
 BKR 9034, Malta
 Manufacturer : The same as above
 Address : The same as above
 Product Name : PhotonTek X600W Pro LED
 Model No. : X600W PRO
 Standards : ICES-001 Issue 4(June, 2006)
 Date of Receipt sample : 2020-05-29
 Date of Test : 2020-05-29 to 2020-06-04
 Date of Issue : 2020-07-31
 Test Report Form No..... : WEO-ICES001A-01A
 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.

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1 Test Summary

EMISSION			
Test Item	Test Standard	Test Method	Test Result
Conducted Emission	ICES-001 Issue 4(June ,2006)	ANSI C63.4	Pass
Radiated Emission	ICES-001 Issue 4(June ,2006)	ANSI C63.4	Pass

Remark:

Pass

Test item meets the requirement

Fail

Test item does not meet the requirement

N/A

Test case does not apply to the test object



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3 General Information

3.1 General Description of E.U.T.

Product Name : PhotonTek X600W Pro LED

Model No. : X600W PRO

Remark..... : ---

3.2 Details of E.U.T.

Technical Data : AC 120-277V, 50/60Hz, 600W

3.3 Description of Support Units

The EUT has been tested as an independent unit. X600W PRO is the tested sample and all tests were performed on the condition AC 120V/60Hz input. The worst case mode were recorded in this report.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

ICES-001 Issue 4(June ,2006) Industrial, Scientific and Medical (ISM) Radio Frequency Generators



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3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Services (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science and Economic Development Canada (ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number: 21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.6 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: ---

3.7 Abnormalities from Standard Conditions

None.

3.8 Other

This report is based on report No. WTU20S05032052E for adding new applicant and new model. The new model X600W PRO and original report model LFHL600T0WRD02 are identical product except for their model name. The changes do not affect the EMC test items. Therefore the EUT is deemed to fulfill all the requirements and no further test has been performed.



4 Equipment Used during Test

Mains Terminal Disturbance Voltage (Conducted Emission)					
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	EMI Test Receiver	R&S	ESCI	100947	Valid
2.	LISN	R&S	ENV216	101215	Valid
3.	Cable	Top	TYPE 16(3.5M)	-	Valid
3m Semi-anechoic Chamber for Radiation					
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	EMI Test Receiver	R&S	ESCI	101296	Valid
2.	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Valid
3.	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Valid
4.	Cable	HUBER+SUHNER	CBL2	525178	Valid

4.1 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Mains Terminal Disturbance Voltage	150kHz~30MHz	±3.64dB	(1)
Radiated Emission	30MHz~300MHz	±5.03dB	(1)
Radiated Emission	1GHz~6GHz	±5.47dB	(1)

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

4.2 Special Accessories and Auxiliary Equipment

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

4.3 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 if any measured disturbance level exceeds the disturbance limit.

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 $(U_{LAB} - U_{cispr})$, exceeds the disturbance limit.

Waltek Services (Foshan) Co., Ltd.

<http://www.waltek.com.cn>



5 Emission Test Results

5.1 Conducted Emission

Test Requirement : ICES-001
Test Method : ANSI C63.4
Test Result : Pass
Test Limit..... : ICES-001, Section 5
Frequency Range : 150kHz to 30MHz

5.1.1 E.U.T. Operation

Operating Environment:

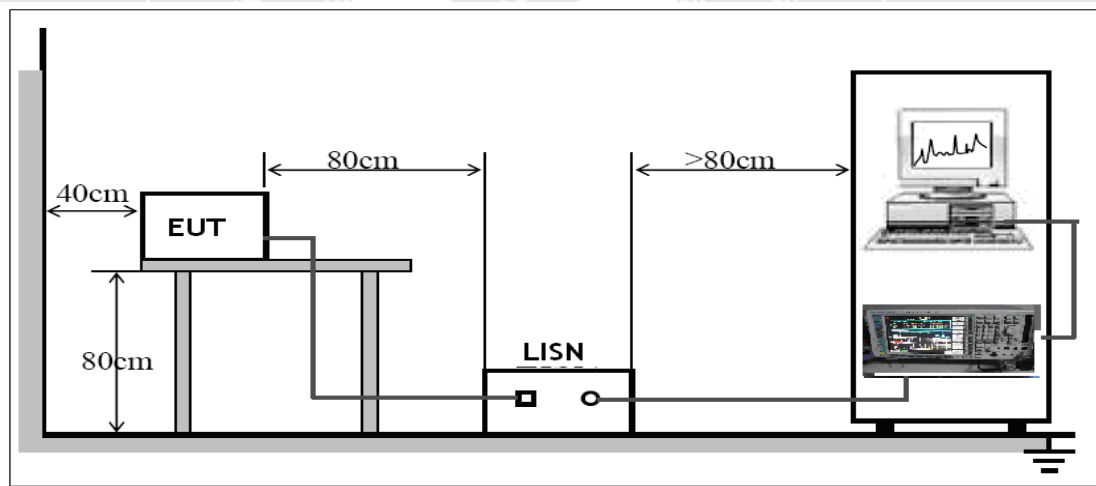
Temperature..... : 23.1°C
Humidity : 52.8%RH
Atmospheric Pressure : 101 kPa

EUT Operation:

Input Voltage..... : AC 120V/60Hz
Operating Mode : Working mode

5.1.2 Block Diagram of Test Setup

The Conducted Emission tests were performed in accordance with the ICES-001.



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 Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Measurement} = \text{Reading Level} + \text{Correct Factor}$$

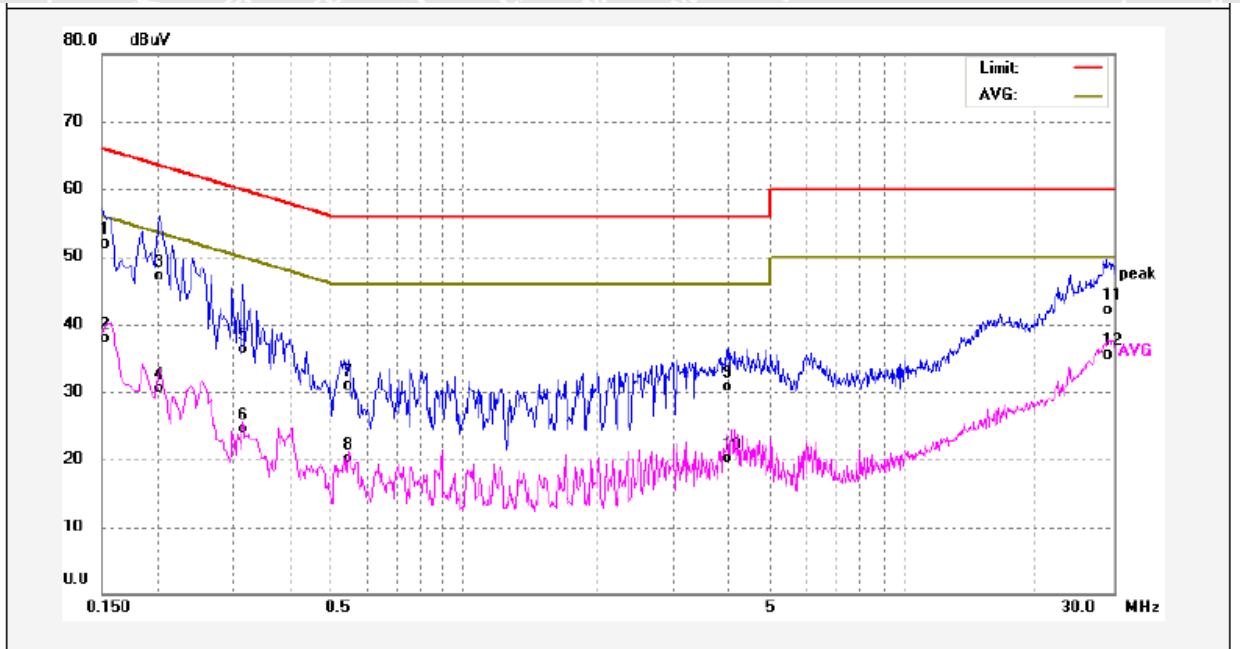
$$\text{Correct Factor} = \text{LISN VDF} + \text{Cable Loss}$$

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:

$$\text{Margin} = \text{Limit} - \text{Measurement}$$

5.1.5 Conducted Emission Test Data

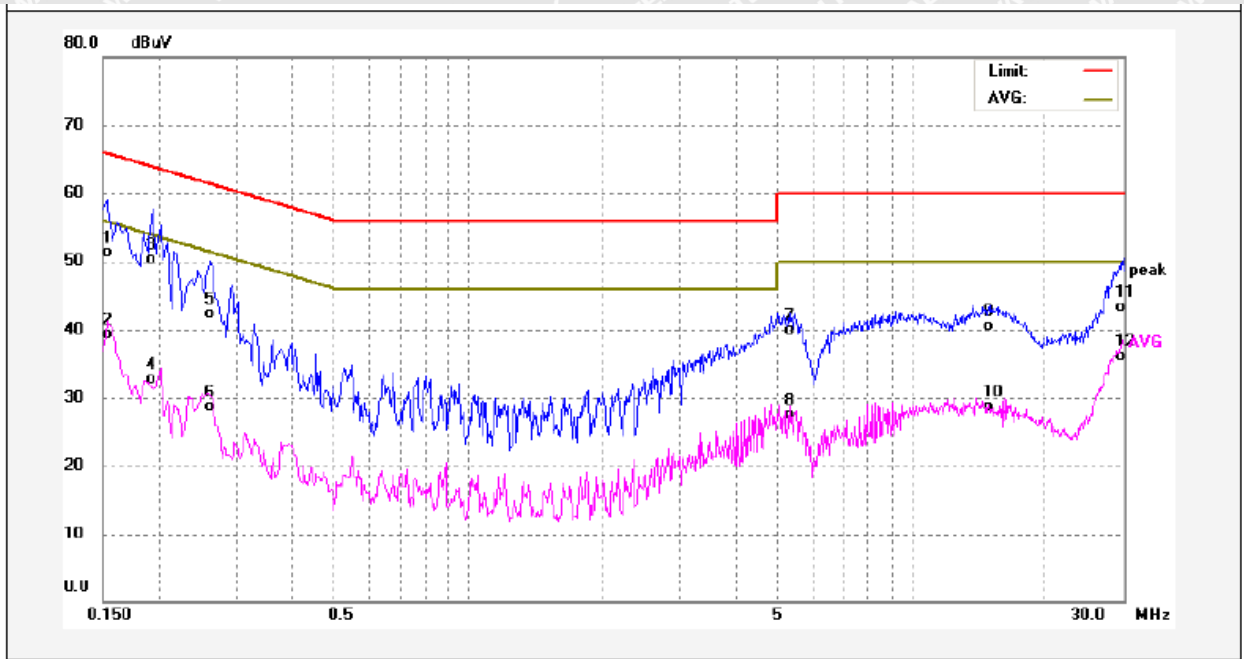
Live Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	42.16	9.75	51.91	65.99	-14.08	QP	
2	0.1500	28.17	9.75	37.92	55.99	-18.07	AVG	
3	0.2020	37.33	9.77	47.10	63.52	-16.42	QP	
4	0.2020	20.72	9.77	30.49	53.52	-23.03	AVG	
5	0.3140	26.52	9.81	36.33	59.86	-23.53	QP	
6	0.3140	14.68	9.81	24.49	49.86	-25.37	AVG	
7	0.5460	21.09	9.82	30.91	56.00	-25.09	QP	
8	0.5460	10.21	9.82	20.03	46.00	-25.97	AVG	
9	4.0060	20.69	9.94	30.63	56.00	-25.37	QP	
10	4.0060	10.12	9.94	20.06	46.00	-25.94	AVG	
11	28.8580	31.74	10.38	42.12	60.00	-17.88	QP	
12	28.8580	25.05	10.38	35.43	50.00	-14.57	AVG	



Neutral Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	41.47	9.76	51.23	65.78	-14.55	QP	
2	0.1539	29.45	9.76	39.21	55.78	-16.57	AVG	
3	0.1940	40.52	9.77	50.29	63.86	-13.57	QP	
4	0.1940	22.93	9.77	32.70	53.86	-21.16	AVG	
5	0.2620	32.52	9.77	42.29	61.36	-19.07	QP	
6	0.2620	18.88	9.77	28.65	51.36	-22.71	AVG	
7	5.2940	29.87	10.08	39.95	60.00	-20.05	QP	
8	5.2940	17.39	10.08	27.47	50.00	-22.53	AVG	
9	15.0300	30.39	10.14	40.53	60.00	-19.47	QP	
10	15.0300	18.61	10.14	28.75	50.00	-21.25	AVG	
11	29.3340	32.97	10.38	43.35	60.00	-16.65	QP	
12	29.3340	25.77	10.38	36.15	50.00	-13.85	AVG	



5.2 Radiation Emission

- Test Requirement : ICES-001
- Test Method : ANSI C63.4
- Test Limit..... : ICES-001, Section 5
- Test Result : Pass
- Frequency Range : 30MHz to 1000MHz

5.2.1 E.U.T. Operation

Operating Environment:

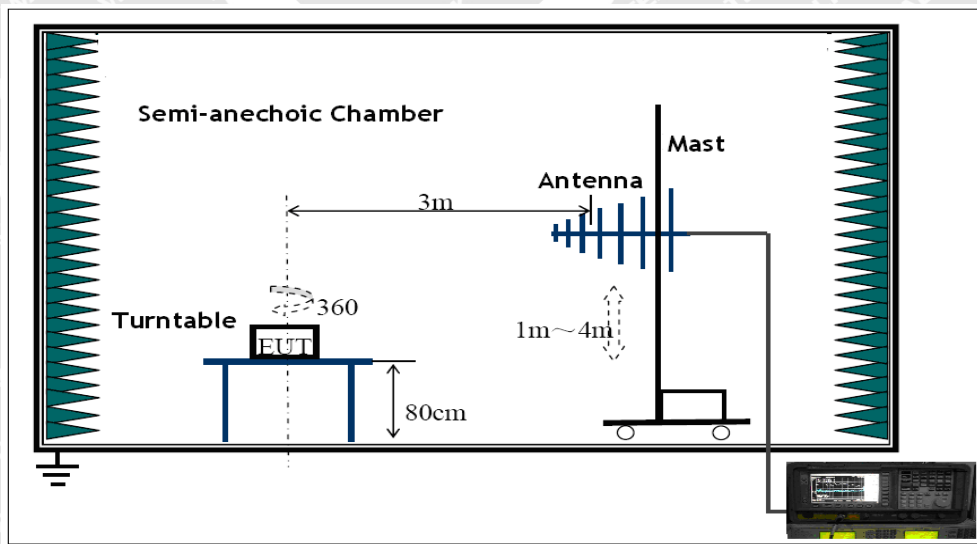
- Temperature..... : 22.4°C
- Humidity : 52.3%RH
- Atmospheric Pressure : 101.2 kPa

EUT Operation:

- Input Voltage..... : AC 120V/60Hz
- Operating Mode : Working mode

5.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ICES-001.



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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Corr. Factor}$$

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

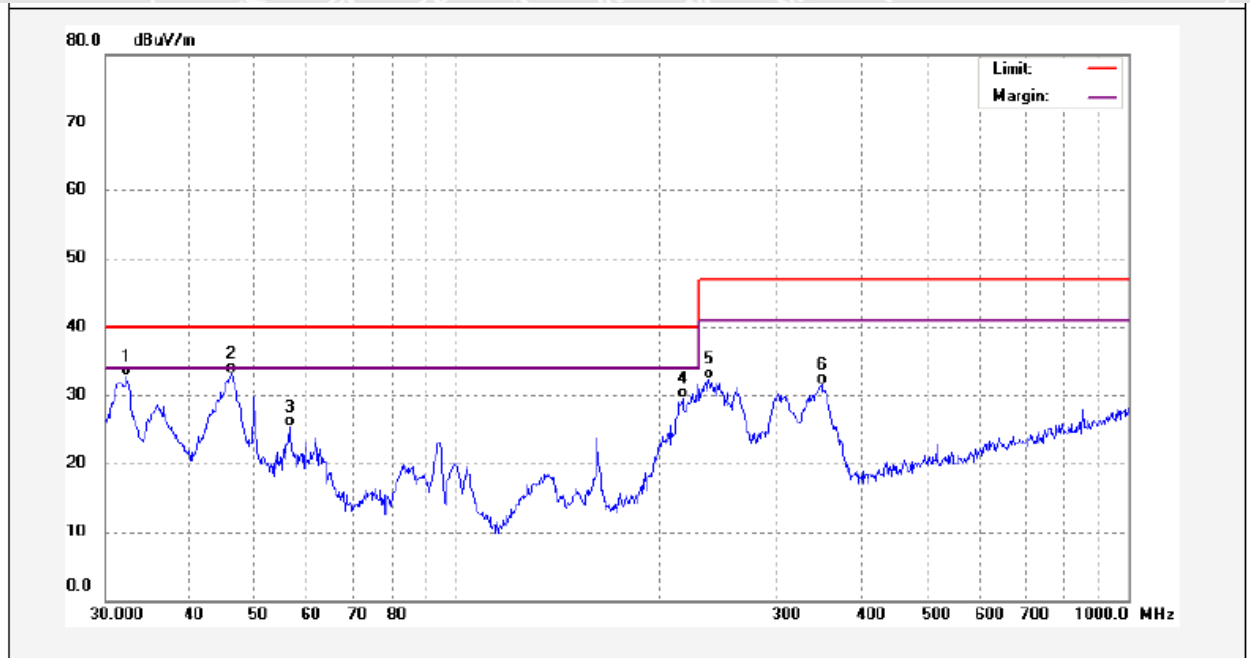
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit.

The equation for margin calculation is as follows:

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

5.2.5 Radiated Emission Test Data

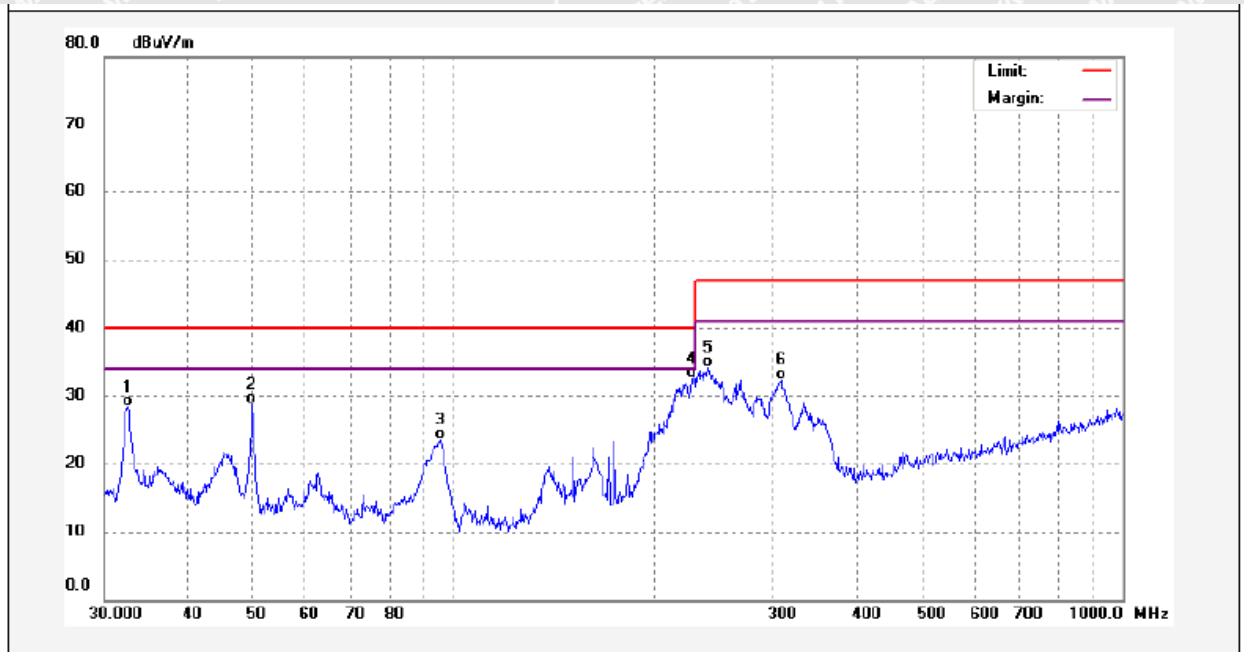
Vertical Polarization



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.2925	50.26	-17.64	32.62	40.00	-7.38	QP	
2	46.1779	49.19	-16.11	33.08	40.00	-6.92	QP	
3	56.3948	41.87	-16.55	25.32	40.00	-14.68	QP	
4	216.7828	46.84	-17.40	29.44	40.00	-10.56	QP	
5	237.4760	48.96	-16.63	32.33	47.00	-14.67	QP	
6	349.2500	45.04	-13.56	31.48	47.00	-15.52	QP	



Horizontal Polarization



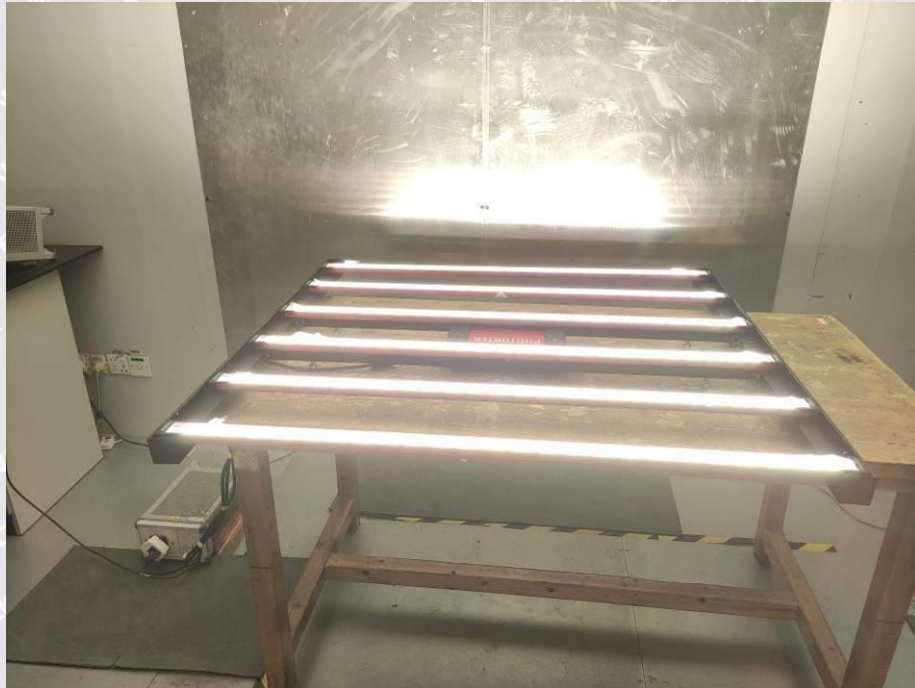
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	32.5198	45.85	-17.59	28.26	40.00	-11.74	QP	
2	49.8814	45.18	-16.38	28.80	40.00	-11.20	QP	
3	95.4270	43.03	-19.53	23.50	40.00	-16.50	QP	
4	226.8936	49.46	-17.03	32.43	40.00	-7.57	QP	
5	239.1473	50.78	-16.58	34.20	47.00	-12.80	QP	
6	307.8313	47.04	-14.72	32.32	47.00	-14.68	QP	



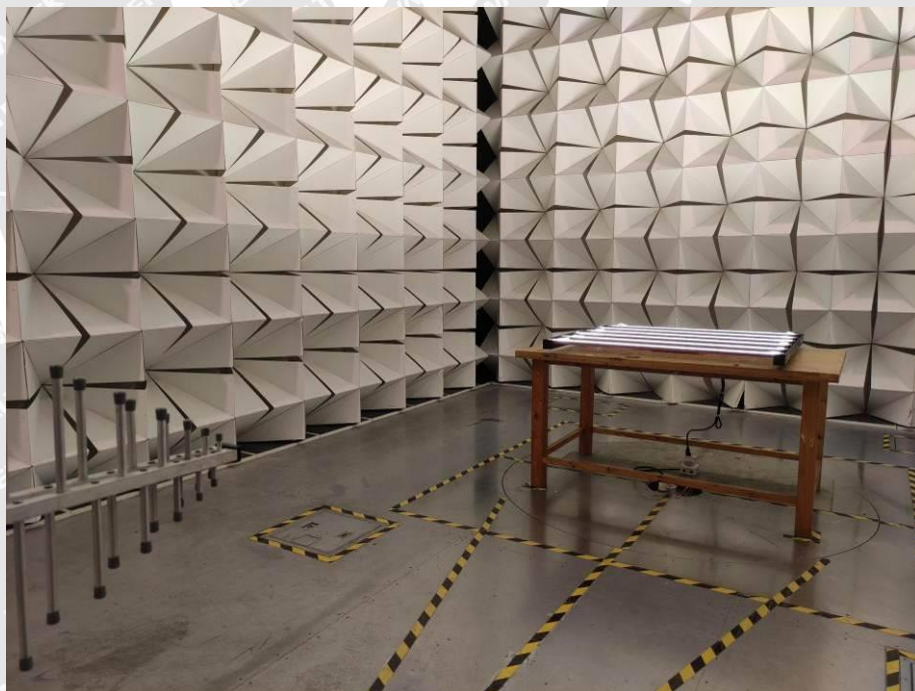


6 Photographs – Test Setup

6.1 Photograph – Conducted Emission Test Setup



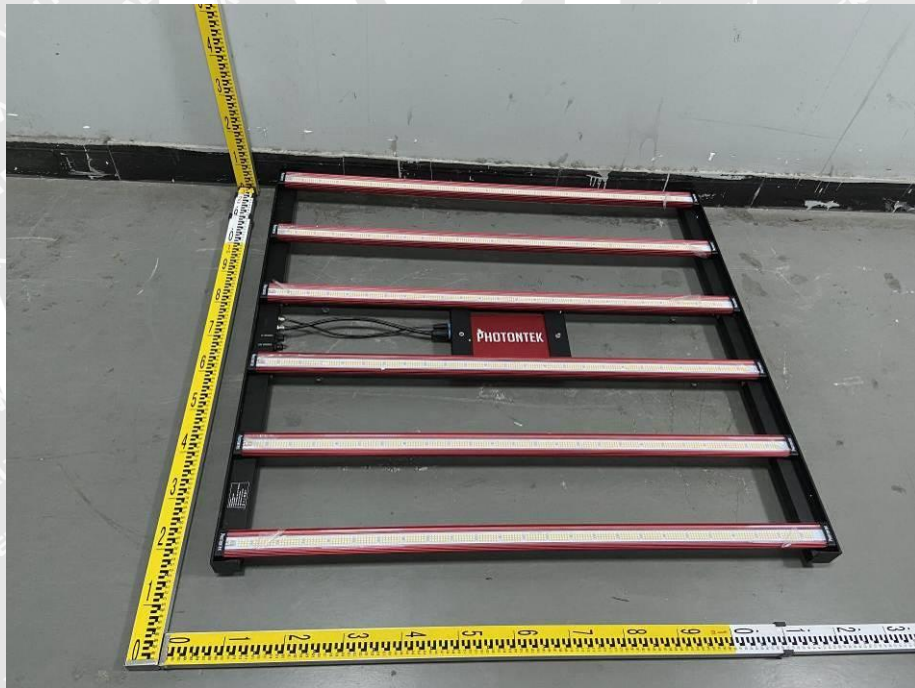
6.2 Photograph – Radiated Emission Test Setup





7 Photographs – Constructional Details

7.1 EUT – External View





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