TEST REPORT

Report No.:	BCTC2402949615E
Applicant:	Jiangxi Lepeng Electric Appliance Co., LTD.
Product Name:	T5 Under Cabinet batten
Test Model:	MK-020011016528
Tested Date:	2024-02-28 to 2024-03-01
Issued Date:	2024-04-03

Shenzhen BCTC Testing Co., Ltd.

Product Name:	T5 Under Cabinet batten
Trademark:	N/A
Model/Type Reference:	MK-020011016528 MK-020011016527, MK-020011016526, MK-020011016525, MK-020011016524, MK-020011016523
Prepared For:	Jiangxi Lepeng Electric Appliance Co., LTD.
Address:	Changjiang Electronic Information Industry Park Changjiang District 333000 Jingdezhen City, Jiangxi Province
Manufacturer:	Jiangxi Lepeng Electric Appliance Co., LTD.
Address:	Changjiang Electronic Information Industry Park Changjiang District 333000 Jingdezhen City, Jiangxi Province
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2024-02-28
Sample Tested Date:	2024-02-28 to 2024-03-01
Issue Date:	2024-04-03
Report No.:	BCTC2402949615E
Test Standards:	EN IEC 55015:2019+A11:2020, EN IEC 61547: 2023 EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021
Test Results	PASS

Tested by:

Lucas Chan /Project Handler

Approved by:

Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2402949615E	2024-04-03	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test result**
EN IEC 55015	Disturbance voltages (CE)	Pass
EN IEC 55015	Radiated disturbance in frequency range 9KHz to 30MHz (ME)	Pass
EN IEC 55015	Radiated disturbance in frequency range 30MHz to 1000MHz (RE)	Pass
EN IEC 61000-3-2	Harmonic current emission(H)	Pass
EN 61000-3-3	Voltage fluctuations & flicker(F)	Pass

IMMUNITY (EN 61547)		
Standard	**Test Item**	**Test result**
EN 61547	Electrostatic discharge((ESD)	Pass
EN 61547	Radio frequency electromagnetic fields(RS)	Pass
EN 61547	Fast transients(EFT)	Pass
EN 61547	Surges	Pass
EN 61547	Injected currents(CS)	Pass
EN 61547	Power frequency magnetic fields(PFMF)	N/A[1]
EN 61547	Voltage dips and interruptions(DIPS)	Pass

Remark:
1. The Product doesn't contain any device susceptible to magnetic fields.

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (9K-150KHz)	3.50
Conducted Emission (150K-30MHz)	3.10
Radiated disturbance (30MHz-200MHz)	4.60
Radiated disturbance (200MHz-1000MHz)	5.20
ME(9KHz-30MHz)	2.50

4. Product Information And Test Setup

4.1 Product Information

Ratings:	Input: 220-240VAC, 50/60Hz, 22W
Model difference:	All models are identical except for the model named.
The highest frequency of the internal sources of the EUT is (less than 108)MHz:	☒ less than 108 MHz, the measurement shall only be made up to 1 GHz. ☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. ☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. ☐ above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	--	--	Applicant	**---**	Yes/No	With a ferrite ring in mid Detachable
2	--	--	BCTC	--	Yes/No	--

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP Photographs for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Disturbance voltages(CE)(9kHz-30MHz)	Lighting	AC 230V/50Hz
Radiated disturbance in frequency range 9kHz to 30MHz (ME)	Lighting	AC 230V/50Hz
Radiated disturbance in frequency range 30MHz to 1000MHz (RE)	Lighting	AC 230V/50Hz
Harmonic current emission(H) Class C	Lighting	AC 230V/50Hz
Voltage fluctuations & flicker(F)	Lighting	AC 230V/50Hz
Electrostatic discharge (ESD) B ☒Air Discharge: ±8kV ☒Contact Discharge: ±4kV ☒HCP & VCP: ±4kV	Lighting	AC 230V/50Hz
Radio frequency electromagnetic fields(RS) A 80MHz-1000MHz, 3V/m,80% Front, Rear, Left, Right H/V	Lighting	AC 230V/50Hz
Electrical fast transients/burst (EFT) B ☒1kV AC(Input) ☐0.5kV DC(Input) ☐0.5kV signal,Telec,control	Lighting	AC 230V/50Hz
Surges ☒0.5, 1kV Line-Line, B ☐0.5, 1, 2kV Line-PE, N-PE B Line-Line:90°+0.5&+1kV,270°-0.5&-11kV Line-PE, N-PE:90°+0.5,+1,+2kV,270°-0.5,-1,-2kV	Lighting	AC 230V/50Hz
Injected Currents (CS) A 0.15MHz to 80MHz 3V ☒ AC(Input) ☐ DC(Input) ☐ signal,control	Lighting	AC 230V/50Hz
Voltage dips and interruptions (DIPS) 0% 0.5P B 70% 200ms C	Lighting	AC 230V/50Hz

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Disturbance voltagesTest					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

ME Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
3-Loop Antenna	Zhinan/China	ZN30401	13017	May 31, 2023	May 30, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD9561-F	01323	Sept. 22, 2023	Sept. 21, 2024

Radiated Emissions Test (966 Chamber#01)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18G-45dB	SK2021040901	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 29, 2023	May 28, 2024
Horn Antenna	schwarzbeck	BBHA9120D	1541	May 31, 2023	May 30, 2024
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

Harmonic / Flicker Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Harmonic & Flicker Tester	LAPLACE	AC2000A	439263	May 15, 2023	May 14, 2024
AC Power Supply	KIKUSUI	PCR4000M	UK001879	May 15, 2023	May 14, 2024
Software	HTEC	H/F	V1.5	\	\

Electrostatic Discharge Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
ESD Tester	KIKUSUI	KES4201A	UH002321	May 15, 2023	May 14, 2024

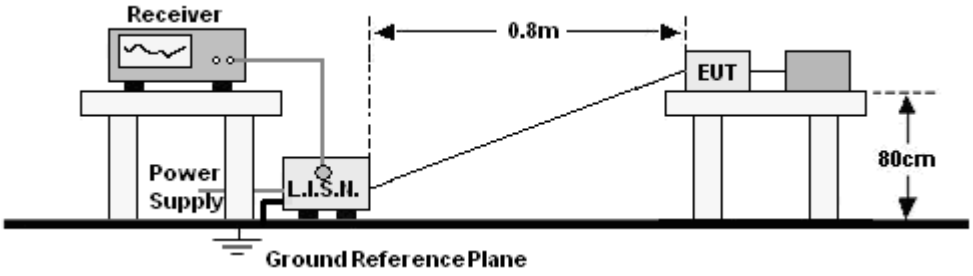
Continuous RF Electromagnetic Field Disturbances Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	A00065	May 15, 2023	May 14, 2024
Power sensor	Keysight	E9300A	US39211659	May 15, 2023	May 14, 2024
Power sensor	Keysight	E9300A	US39211305	May 15, 2023	May 14, 2024
Amplifier	SKET	HAP_801000-250W	21201805013	May 15, 2023	May 14, 2024
Amplifier	SKET	HAP_0103-75W	21201805014	May 15, 2023	May 14, 2024
Amplifier	SKET	HAP_0306-50W	21201805015	May 15, 2023	May 14, 2024
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	00077	\	\
Field Probe	Narda	EP-601	611WX80256	May 15, 2023	May 14, 2024
Signal Generator	Agilent	N5181A	MY50143748	May 15, 2023	May 14, 2024
Software	SKET	EMC-S	1.2.0.18	\	\

EFT And Surge And Voltage Dips And Interruptions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Compact Generator	TRANSIENT	TRA2000	646	May 15, 2023	May 14, 2024
Coupling Clamp	PARTNER	CN-EFT1000	CN-EFT1000-1624	May 15, 2023	May 14, 2024

Continuous Induced RF Disturbances Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
C/S Test System	SCHLODER	CDG-6000-75	126B1405/2016	May 15, 2023	May 14, 2024
Attenuator	SCHLODER	6DB DC-1G	HA1630	May 15, 2023	May 14, 2024
CDN	SCHLODER	CDN M2+M3	A2210389/2016	May 15, 2023	May 14, 2024
Injection Clamp	SCHLOBER	EMCL-20	132A1272/2016	May 15, 2023	May 14, 2024
Software	HUBERT	HUBERTEN 61000-4-6	1.4.1.0	\	\

6. Disturbance Voltages

6.1 Block Diagram Of Test Setup



6.2 Limit

Disturbance voltage limits at mains terminals

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,009 to 0,05	110	--
0,05 to 0,15	90 to 80*	--
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

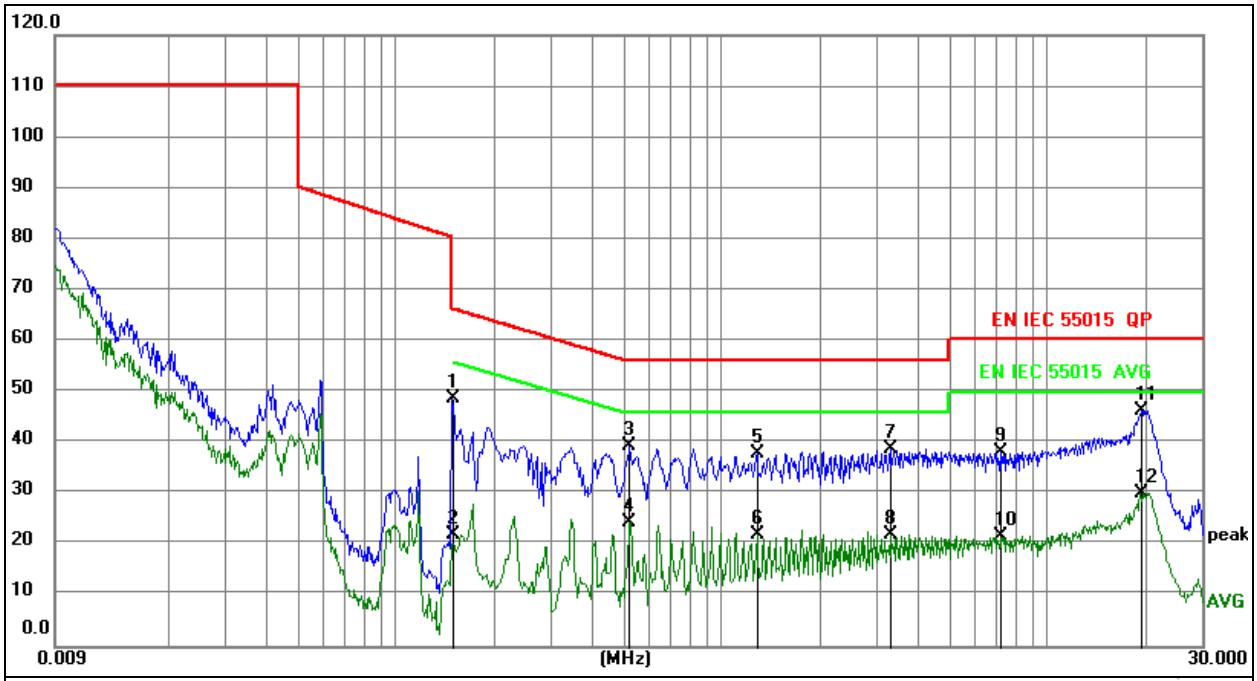
Note:
1. The lower limit shall apply at the transition frequencies.
2. *Decreasing linearly with logarithm of frequency.
3. For electrodeless lamps and luminaries, the limit in the frequency range of 2.51MHz to 3MHz is 73 dB(μV) quasi-peak and 63 dB(μV) average.

6.3 Test procedure

For mains ports:
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

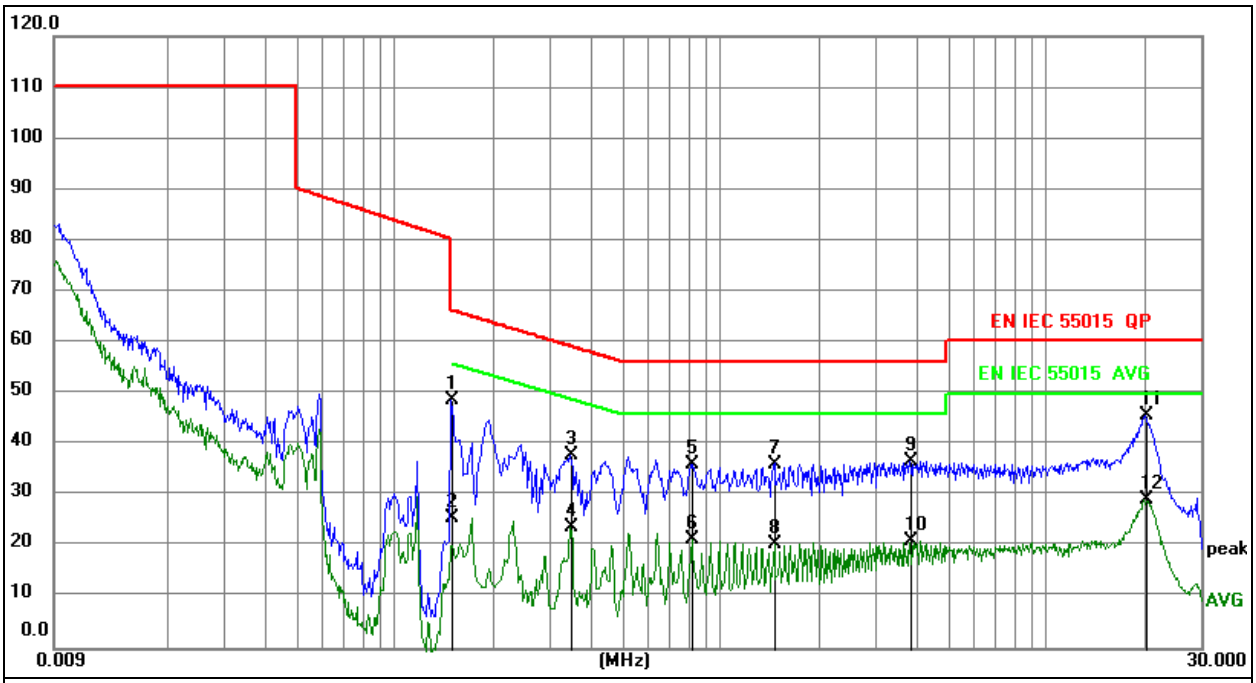
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1490	29.06	19.73	48.79	80.06	-31.27	QP
2		0.1490	2.45	19.73	22.18	56.06	-33.88	AVG
3		0.5237	19.51	19.84	39.35	56.00	-16.65	QP
4		0.5237	4.50	19.84	24.34	46.00	-21.66	AVG
5		1.2890	17.87	19.95	37.82	56.00	-18.18	QP
6		1.2890	1.97	19.95	21.92	46.00	-24.08	AVG
7		3.3029	18.36	20.41	38.77	56.00	-17.23	QP
8		3.3029	1.76	20.41	22.17	46.00	-23.83	AVG
9		7.1961	18.21	19.95	38.16	60.00	-21.84	QP
10		7.1961	1.71	19.95	21.66	50.00	-28.34	AVG
11	*	19.5168	26.46	19.98	46.44	60.00	-13.56	QP
12		19.5168	10.29	19.98	30.27	50.00	-19.73	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting

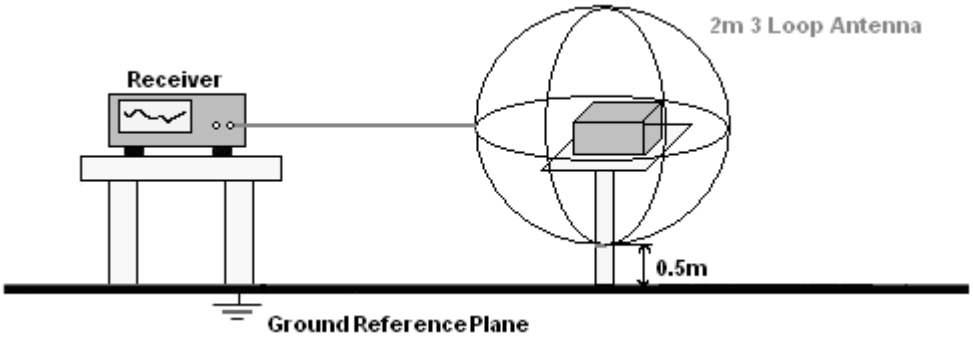


Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1501	29.14	19.73	48.87	65.99	-17.12	QP
2		0.1501	6.00	19.73	25.73	55.99	-30.26	AVG
3		0.3481	18.21	19.83	38.04	59.01	-20.97	QP
4		0.3481	3.92	19.83	23.75	49.01	-25.26	AVG
5		0.8206	16.39	19.88	36.27	56.00	-19.73	QP
6		0.8206	1.71	19.88	21.59	46.00	-24.41	AVG
7		1.4731	16.35	19.95	36.30	56.00	-19.70	QP
8		1.4731	0.59	19.95	20.54	46.00	-25.46	AVG
9		3.8356	16.07	20.60	36.67	56.00	-19.33	QP
10		3.8356	0.69	20.60	21.29	46.00	-24.71	AVG
11	*	20.2021	25.81	19.99	45.80	60.00	-14.20	QP
12		20.2021	9.35	19.99	29.34	50.00	-20.66	AVG

7. Radiated Disturbance (9KHz-30MHz)

7.1 Block Diagram Of Test Setup



7.2 Limits

Frequency	Limits for Loop Diameter (dBμA)
	2m
9KHz ~ 70KHz	88
70KHz ~ 150KHz	88 ~ 58*
150KHz ~ 3.0MHz	58 ~ 22*
3.0MHz ~ 30MHz	22

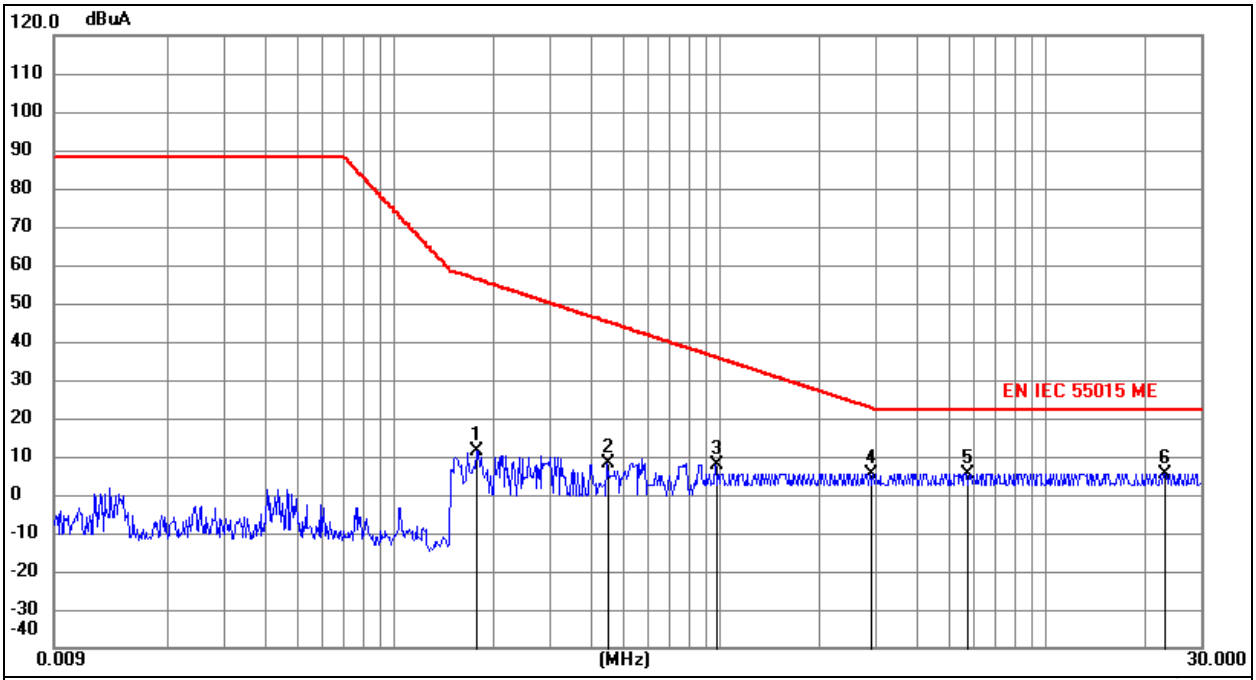
Note:
1. At the transition frequency the lower limit applies.
2. * Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaries, the limit in the frequency range of 2.2MHz to 3.0MHz is 58dB(μA) for 2m.

7.3 Test Procedure

a. The Product was placed on a wooden table in the center of a loop antenna.
b. The induced current in the loop antenna was measured by means of a current probe and the test receiver. Three field components were checked by means of a coaxial switch.
c. The frequency range from 9 KHz to 30MHz is investigated. The receiver was measured with the quasi-peak detector. The RBW of the receiver was set at 200Hz in 9 kHz ~150 kHz and 9 kHz in 150 kHz ~ 30MHz.

7.4 Test Results

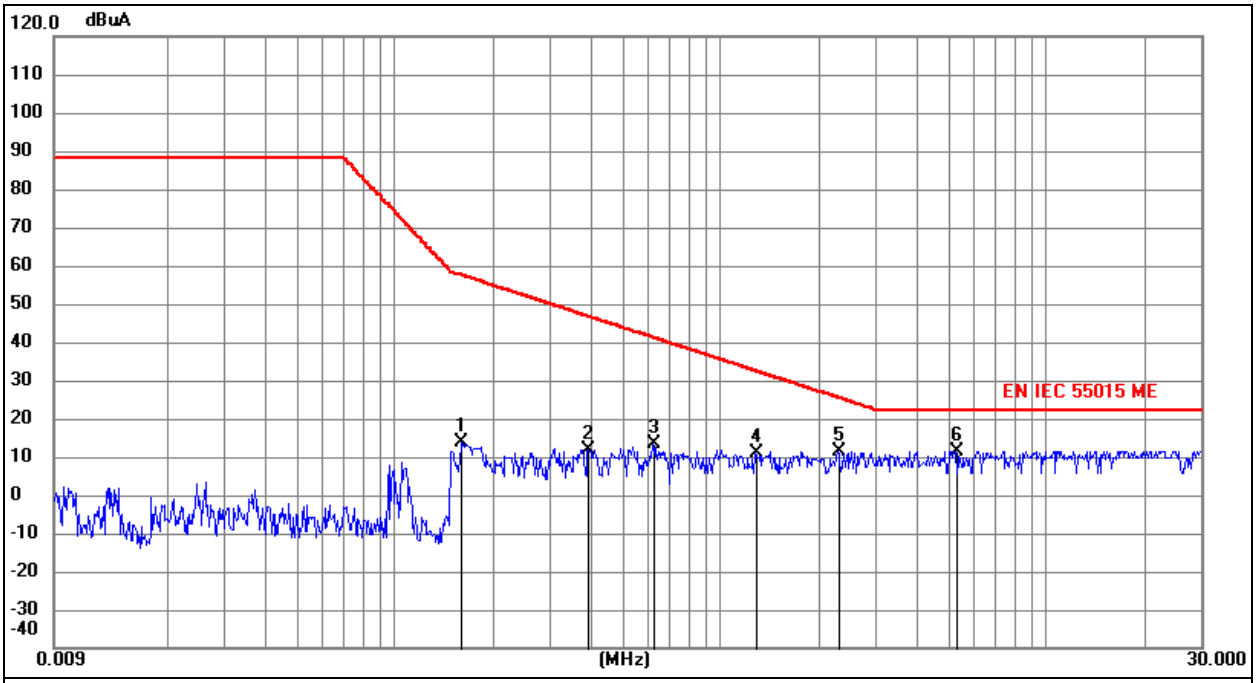
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	X
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting



Remark:
1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1779	1.05	10.37	11.42	55.95	-44.53	QP
2		0.4516	-2.23	10.55	8.32	44.76	-36.44	QP
3		0.9778	-2.70	10.48	7.78	35.47	-27.69	QP
4		2.8950	-5.20	10.76	5.56	22.43	-16.87	QP
5		5.7256	-5.35	10.91	5.56	22.00	-16.44	QP
6	*	23.1091	-6.80	12.36	5.56	22.00	-16.44	QP

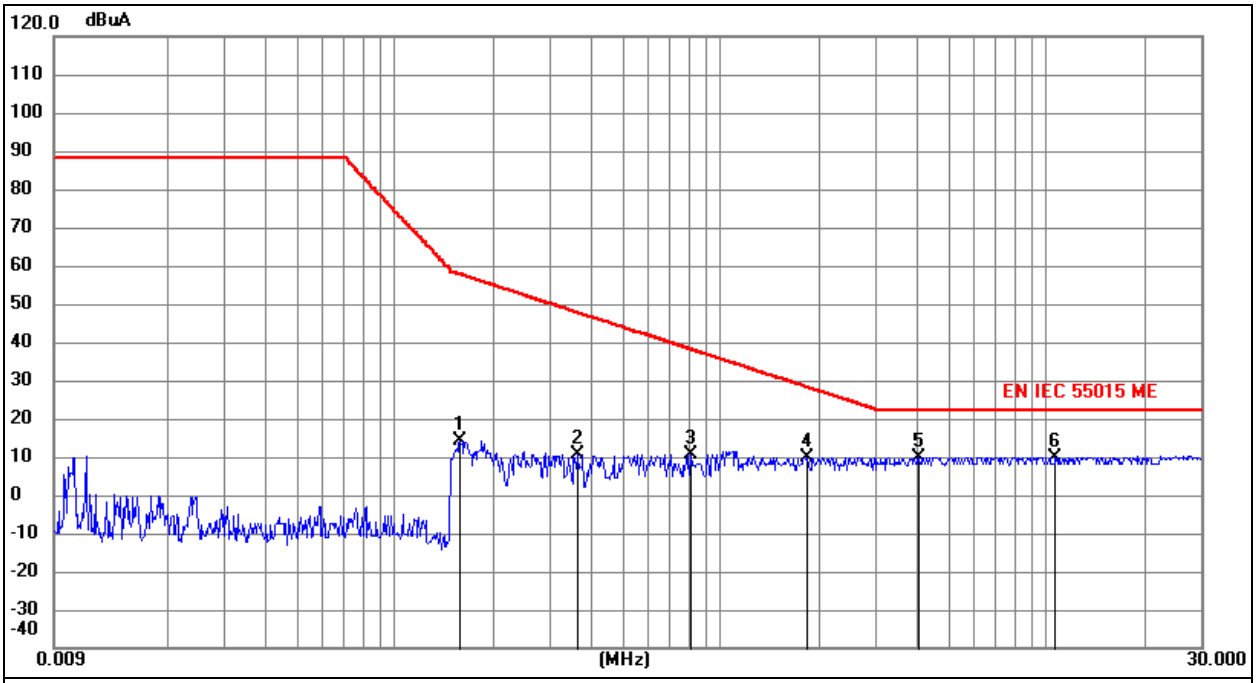
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Y
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting



Remark:
1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1602	3.50	10.37	13.87	57.21	-43.34	QP
2		0.3941	1.34	10.59	11.93	46.39	-34.46	QP
3		0.6225	3.02	10.44	13.46	40.90	-27.44	QP
4		1.2839	0.53	10.58	11.11	32.20	-21.09	QP
5		2.3010	0.65	10.83	11.48	25.19	-13.71	QP
6	*	5.3115	0.68	10.84	11.52	22.00	-10.48	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Z
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting

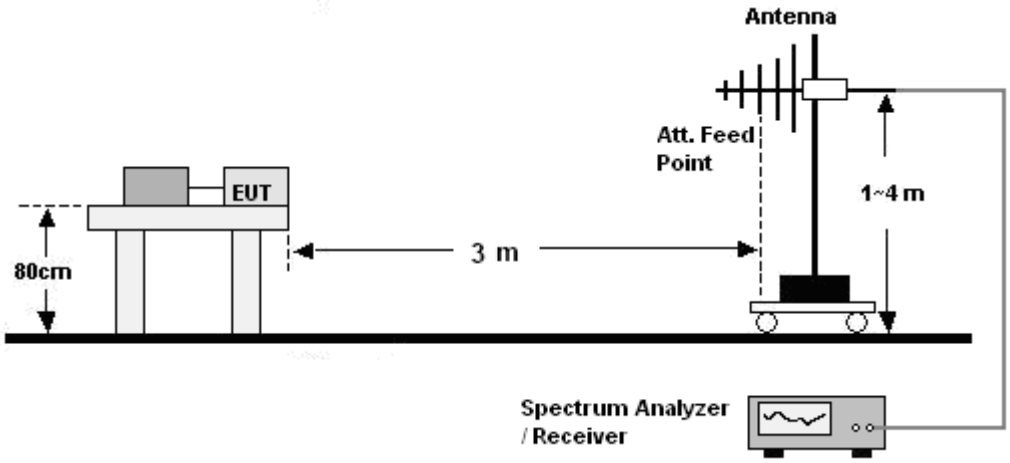


Remark:
1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuA	dBuA	dB	Detector
1		0.1589	3.71	10.37	14.08	57.31	-43.23	QP
2		0.3634	0.07	10.56	10.63	47.37	-36.74	QP
3		0.8114	0.13	10.63	10.76	37.71	-26.95	QP
4		1.8568	-1.01	10.81	9.80	27.77	-17.97	QP
5		4.0784	-0.76	10.63	9.87	22.00	-12.13	QP
6	*	10.7080	-0.93	10.92	9.99	22.00	-12.01	QP

8. Radiated Disturbance (30MHz -1000MHz)

8.1 Block Diagram Of Test Setup



8.2 Limits

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

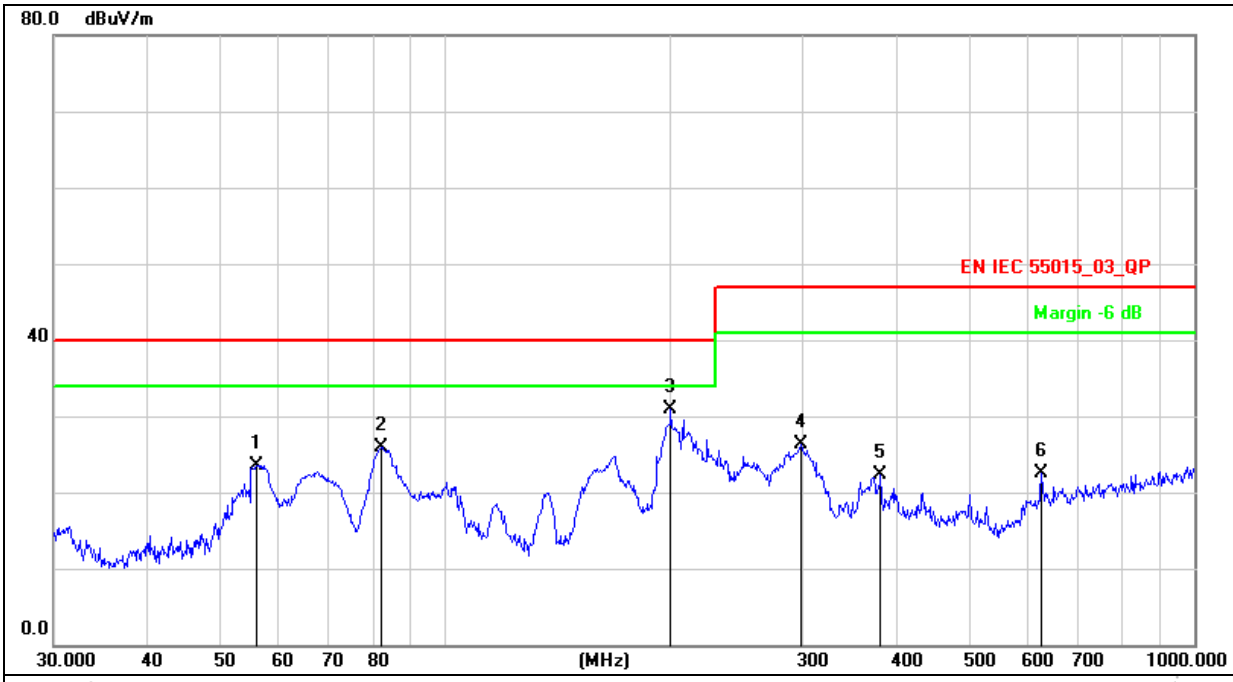
Note: The lower limit shall apply at the transition frequencies.

8.3 Test Procedure

a. The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

8.4 Test Results

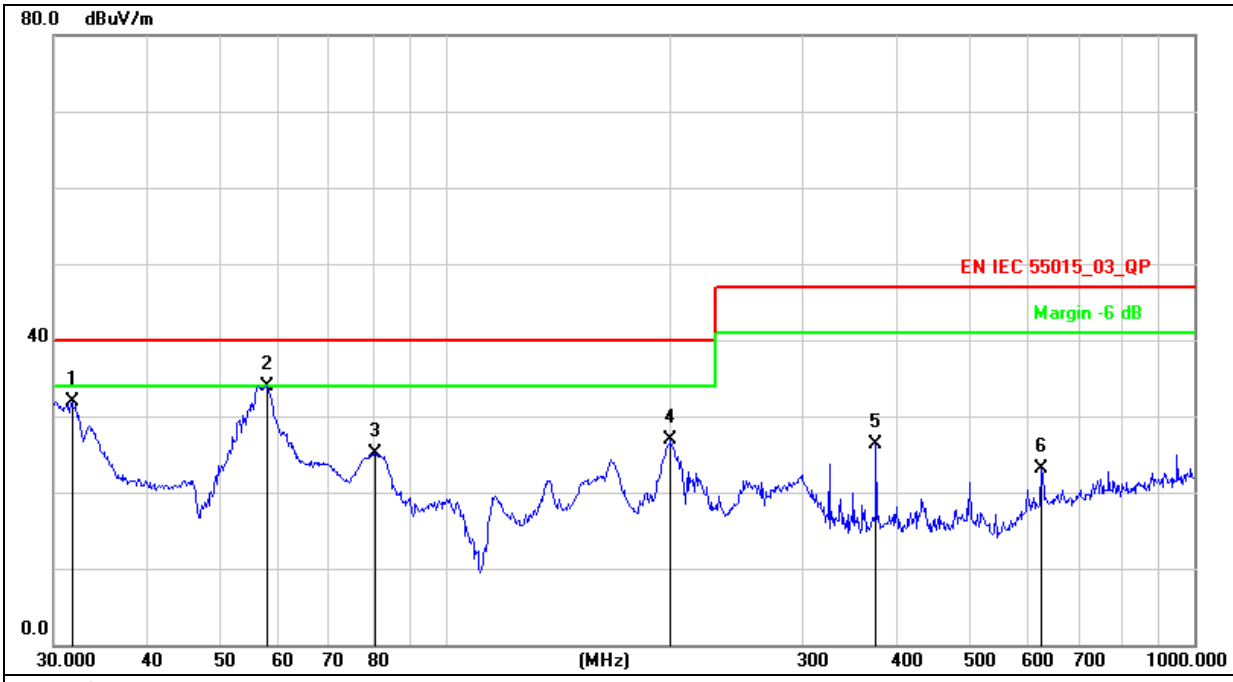
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting



Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		56.0007	38.29	-14.71	23.58	40.00	-16.42	QP
2		82.0706	45.14	-19.26	25.88	40.00	-14.12	QP
3	*	199.9856	46.59	-15.72	30.87	40.00	-9.13	QP
4		298.2681	39.67	-13.28	26.39	47.00	-20.61	QP
5		381.2487	33.33	-11.08	22.25	47.00	-24.75	QP
6		625.0780	29.04	-6.59	22.45	47.00	-24.55	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	AC 230V/50Hz	Test Mode:	Lighting

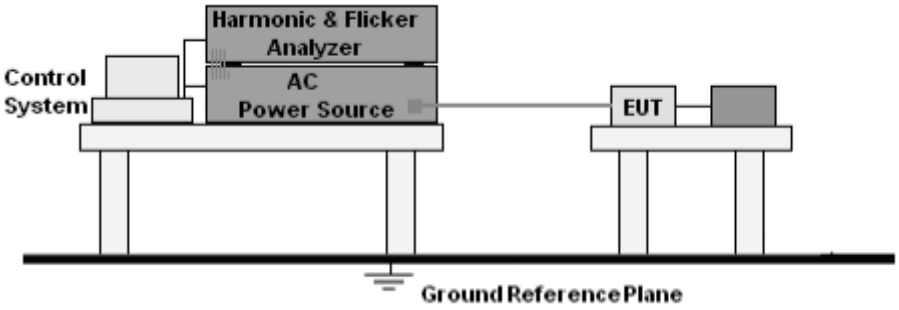


Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		31.7313	48.14	-16.32	31.82	40.00	-8.18	QP
2	*	57.7961	48.83	-14.95	33.88	40.00	-6.12	QP
3		80.6441	44.78	-19.60	25.18	40.00	-14.82	QP
4		199.9856	42.63	-15.72	26.91	40.00	-13.09	QP
5		375.9384	37.40	-11.15	26.25	47.00	-20.75	QP
6		625.0779	29.72	-6.59	23.13	47.00	-23.87	QP

9. Harmonic Current Emission(H)

9.1 Block Diagram of Test Setup



9.2 Limit

EN IEC 61000-3-2:2019+A1:2021

9.3 Test Procedure

a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
b. The correspondent test program of test instrument to measure the current harmonics emanated from Product was chosen. The measure time shall be not less than the time necessary for the Product to be exercised.

9.4 Test Results

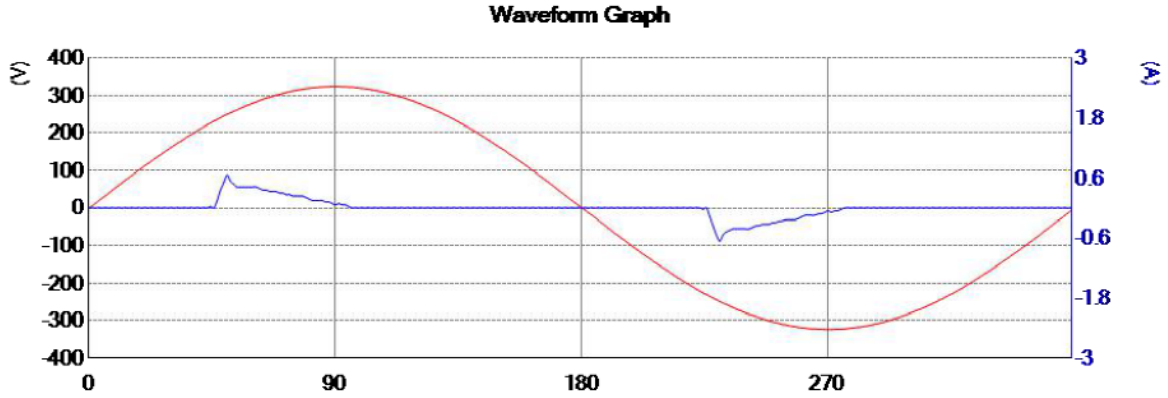
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

Test duration (sec):150

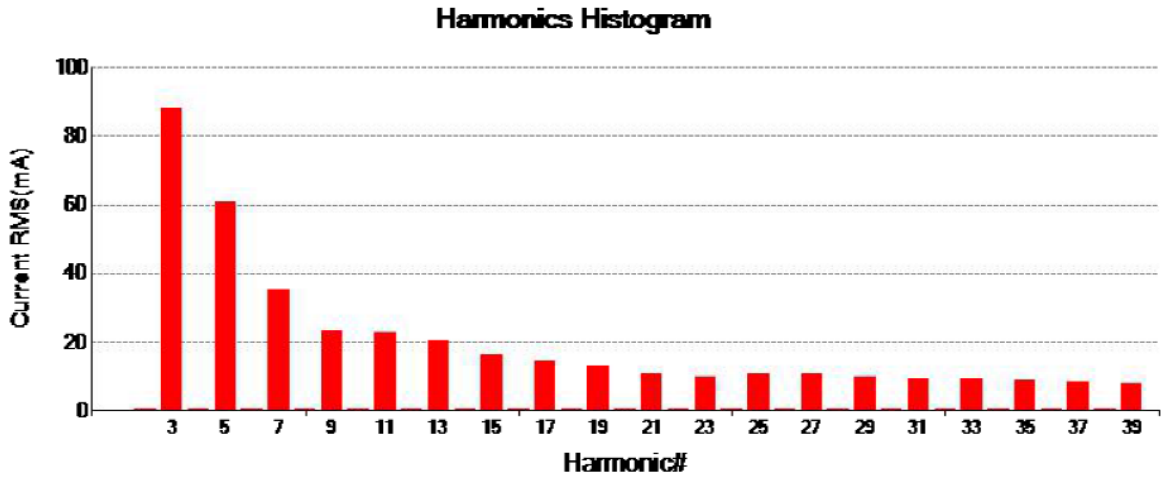
Describe:

Test Result: pass **Source qualification(Power Off Load):** pass

Current & voltage waveforms



Harmonics and Class C limit line (/5W<P<=25W/<=25W Waveform/<=25W THD)



Test duration (sec):150

Describe:

Test Result: pass Source qualification(Power Off Load): pass

THC(mA): 125.400 I - THD(%): 114.5 POHC(mA):N/A POHC Limit(mA):N/A

Parameter values during test:

V_RMS (Volts): 230.2 Frequency(Hz): 50.0
I_RMS(mA): 167.5 Crest Factor: 3.025
Power (Watts): 22.0 Power Factor: 0.570

Conduction Angle:

Phase	Start	Last Pk	Stop
Limit	60.0	65.0	90.0
Filtered	43.8	50.4	97.9
Worst	46.4	50.4	96.4
Average	43.8	50.4	97.9
Assessment	Pass	Pass	Pass

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	109.500						
3	88.000	94.170	88.100	93.554	88.200	62.440	Pass
5	60.900	66.795	61.000	91.324	61.000	60.883	Pass

Note: All harmonics are below the minimum limits and are ignored.

Test duration (sec):150

Describe:

Source qualification(Power Off Load): pass

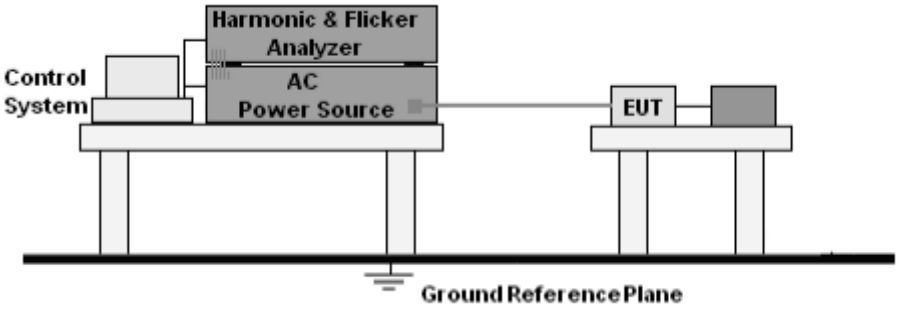
Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.50	230.22	1.50	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.8	92.4	2.4	87 - 93	Pass
Crest Factor	1.414	1.411	1.413	0.003	1.40 - 1.42	Pass
Fundamental Voltage	230.21	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.070	0.033	0.200	Pass
3	0.190	0.089	0.900	Pass
4	0.020	0.014	0.200	Pass
5	0.050	0.036	0.400	Pass
6	0.000	0.003	0.200	Pass
7	0.070	0.034	0.300	Pass
8	0.010	0.008	0.200	Pass
9	0.030	0.022	0.200	Pass
10	0.010	0.004	0.100	Pass
11	0.020	0.013	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.030	0.016	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.080	0.041	0.100	Pass
16	0.000	0.000	0.100	Pass
17	0.030	0.016	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.040	0.022	0.100	Pass
20	0.000	0.003	0.100	Pass
21	0.030	0.018	0.100	Pass
22	0.010	0.003	0.100	Pass
23	0.010	0.014	0.100	Pass
24	0.010	0.003	0.100	Pass
25	0.040	0.022	0.100	Pass
26	0.000	0.003	0.100	Pass
27	0.030	0.022	0.100	Pass
28	0.000	0.001	0.100	Pass
29	0.030	0.014	0.100	Pass
30	0.000	0.003	0.100	Pass
31	0.010	0.011	0.100	Pass
32	0.000	0.003	0.100	Pass
33	0.030	0.018	0.100	Pass
34	0.000	0.005	0.100	Pass
35	0.020	0.011	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.070	0.030	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.040	0.028	0.100	Pass
40	0.000	0.000	0.100	Pass

10. Voltage Fluctuations & Flicker(F)

10.1 Block Diagram of Test Setup



10.2 Limit

EN 61000-3-3:2013+A2:2021 Clause 5.

10.3 Test Procedure

a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
b. During the flick test, the measure time shall include that part of whole operation cycle in which the Product produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

10.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

Test duration (sec):600
Describe:

Load Power : 0.022 kW **Power Factor:0.564**
Load Current : 0.171 Arms **Crest Factor:3.205**
Nominal Voltage : 230.18 Vrms

Test Result: pass **Status: Test Completed**

Result:

T-max (ms):	**0.00**	**Test limit (ms):**	**500.00**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.00**	**Test limit:**	**1.00**	**Pass**

11. Immunity Test Of General The Performance Criteria

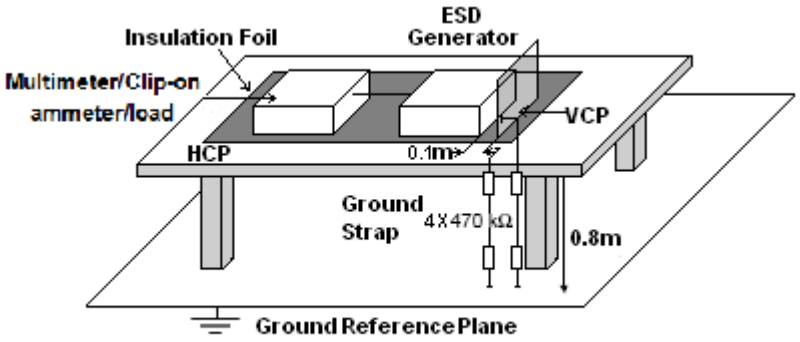
Product Standard	EN IEC 61547: 2023 clause 4.2
CRITERION A	During the test, no change of the lumimous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
CRITERION B	During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
CRITERION C	During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test the lighting equipment is switched off. After half an hour it is switched on again. The lighting equipment shall start and operate as intended.

12. Electrostatic Discharge (ESD)

12.1 Test Specification

Basic standard	:	IEC 61000-4-2
Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

12.2 Block Diagram of Test Setup



12.3 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
c. The time interval between two successive single discharges was at least 1 second.
d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
g. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

12.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

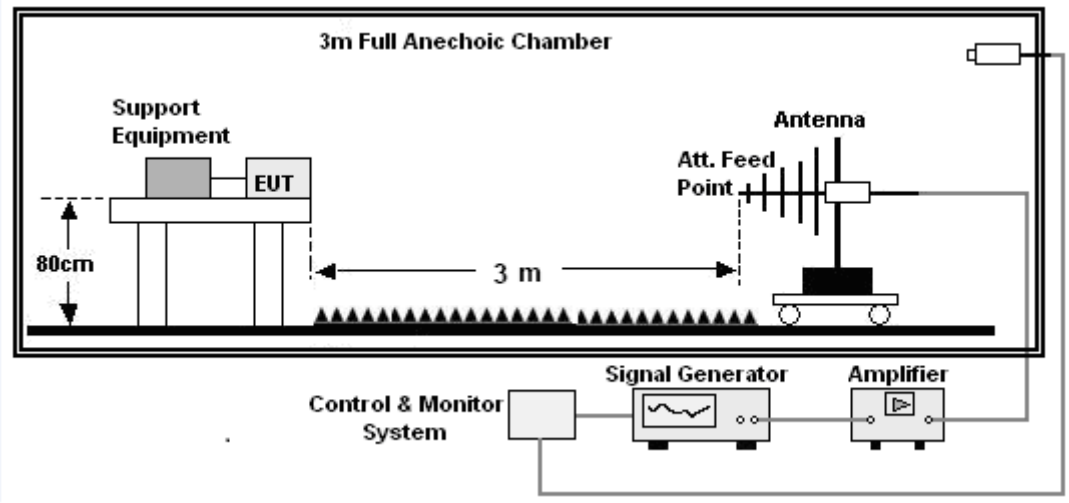
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A

13. Radio Frequency Electromagnetic Fields(RS)

13.1 Test Specification

Basic standard	:	IEC 61000-4-3
Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

13.2 Block Diagram of Test Setup



13.3 Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
b. The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1%.
c. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

13.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000MHz	Front, Right, Back, Left	3	A	A

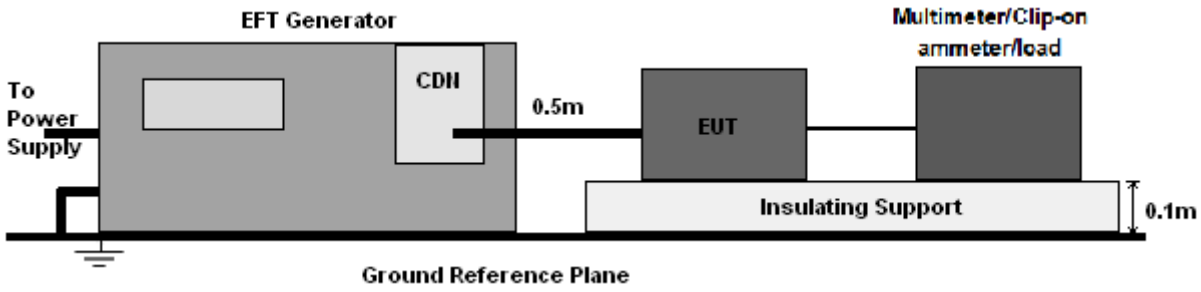
14. Fast Transients(EFT)

14.1 Test Specification

Basic standard	:	IEC 61000-4-4
Test Port	:	input ac. power port
Impulse Frequency	:	5 kHz
Impulse Wave-shape	:	5/50 ns
Burst Duration	:	15 ms
Burst Period	:	300 ms
Test Duration	:	2 minutes per polarity

14.2 Block Diagram of EUT Test Setup

For input a.c.power port:



14.3 Test Procedure

a. The Product and support units were located on a non-conductive table above ground reference plane.
b. A 0.5m-long power cord was attached to Product during the test.

14.4 Test Results

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

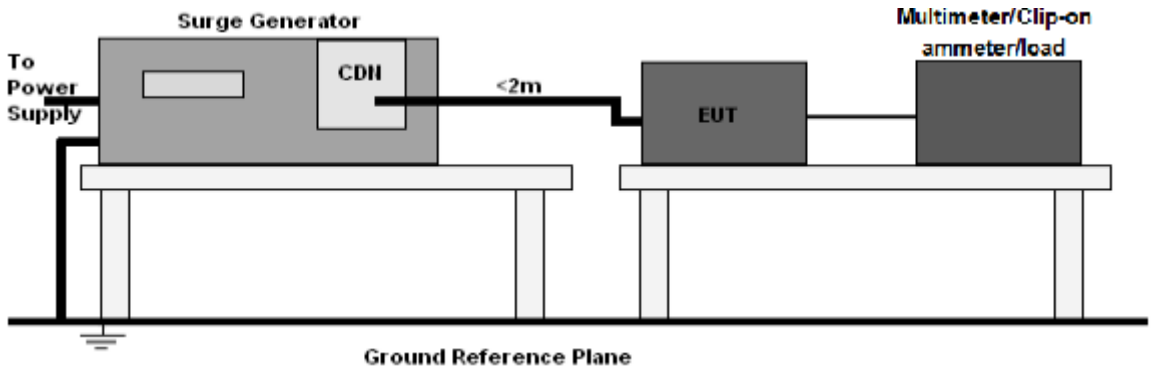
Coupling	Voltage (kV)	Polarity	Required Level	Performance Criterion
AC Mains L-N-P	1.0	±	B	A

15. Surges Immunity Test

15.1 Test Specification

Basic standard	:	IEC 61000-4-5
Test Port	:	input a c. power port
Wave-Shape	:	Open Circuit Voltage - 1.2 / 50 us Short Circuit Current - 8 / 20 us
Pulse Repetition Rate	:	1 pulse / min.
Test Events	:	Five positive polarity pulses at the 90° phase angel Five negative polarity pulses at the 270° phase angle

15.2 Block Diagram of EUT Test Setup



15.3 Test Procedure

a. The surge is to be applied to the Product power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave.
b. The power cord between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter). Interconnection line between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter).

15.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

Coupling Line	Voltage (kV)	Phase Angle	Required Level	Performance Criterion
L - N	+ 1	90°	B	A
	- 1	270°		
L - PE	+ 2	90°	B	A
	- 2	270°		
N - PE	+ 2	90°	B	A
	- 2	270°		

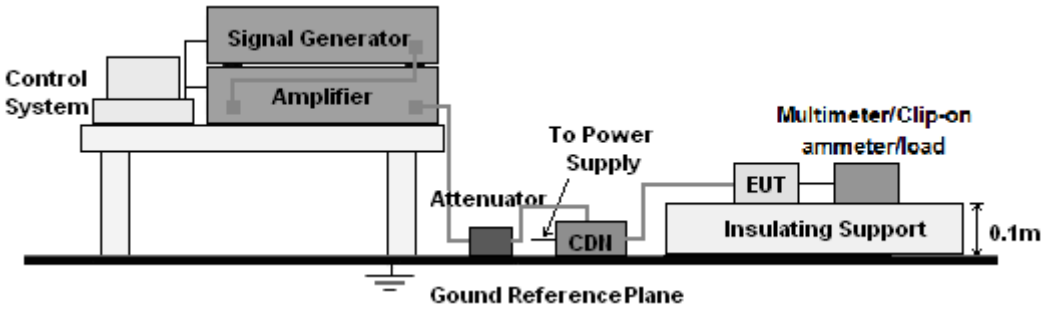
16. Injected Currents(CS)

16.1 Test Specification

Basic standard	:	IEC 61000-4-6
Test Port	:	input a c. power port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second

16.2 Block Diagram of EUT Test Setup

For input a.c. power port:



16.3 Test Procedure

For input a.c. power port:
a. The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
b. The frequency range is swept from 150 kHz to 80, with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1% of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond.

16.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

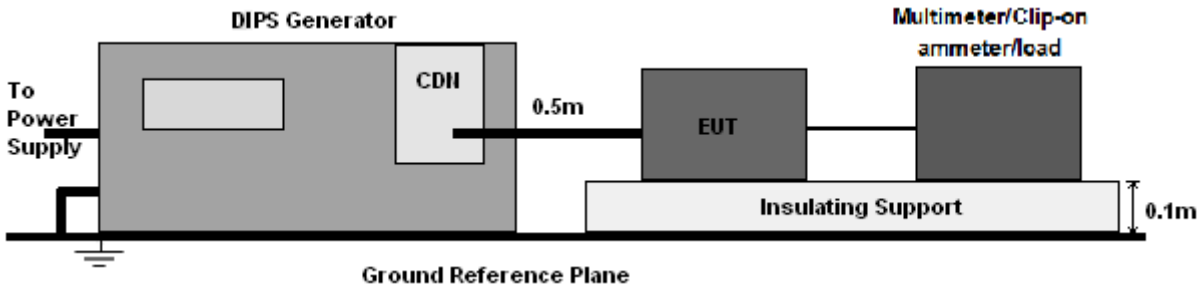
Inject Line	Frequency (MHz)	Voltage Level (V r.m.s.)	Required Level	Performance Criterion
ac. port	0.15 - 80	3	A	A

17. Voltage Dips And Interruptions (DIPS)

17.1 Test Specification

Basic standard	:	IEC 61000-4-11
Test Port	:	input a c. power port
Phase Angle	:	0°, 180°
Test cycle	:	3 times

17.2 Block Diagram of EUT Test Setup



17.3 Test Procedure

a. The Product and support units were located on a non-conductive table above ground floor.
b. Set the parameter of tests and then perform the test software of test simulator.
c. Conditions changes to occur at 0 degree crossover point of the voltage waveform.

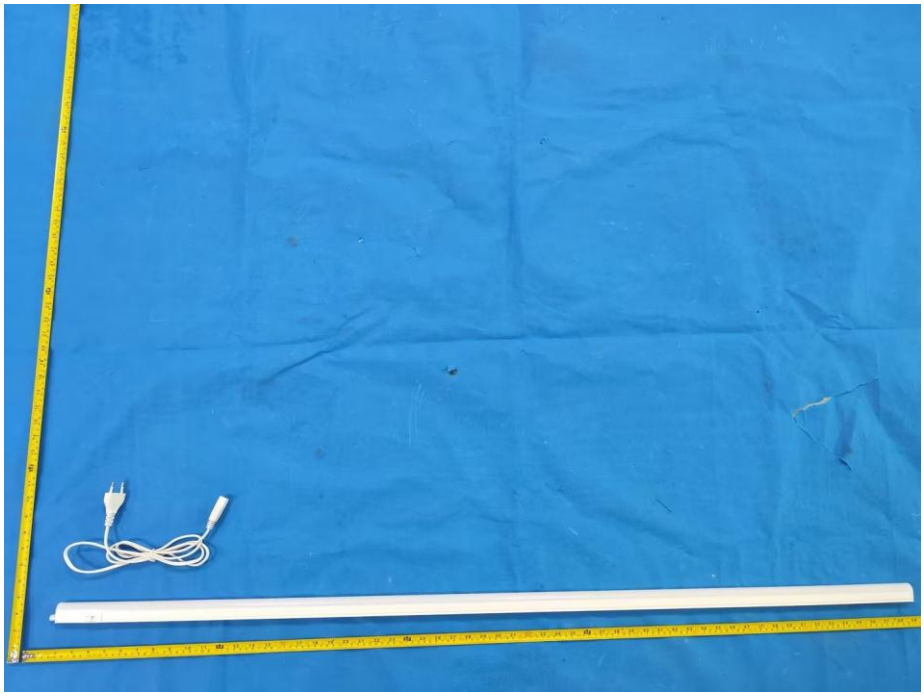
17.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Lighting
Test Voltage :	AC 230V/50Hz		

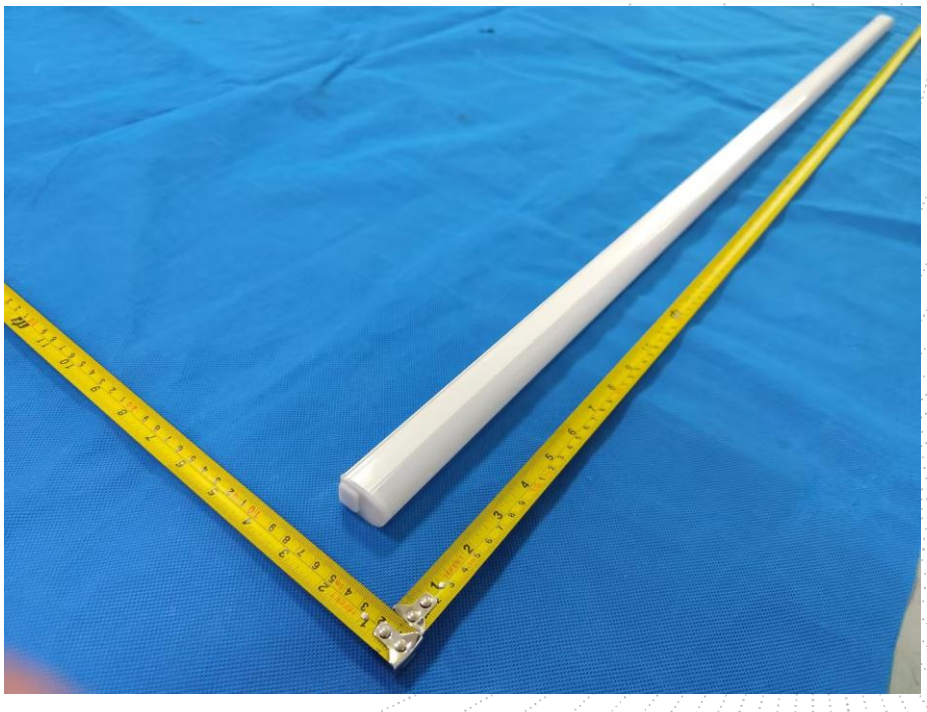
Voltage Dips:				
Test Level % U_T	**Voltage dips in % U_T**	**Duration (cycles)**	**Required Level**	**Performance Criterion**
70	30	10	C	A
Voltage Interruptions:				
Test Level % U_T	**Voltage dips in % U_T**	**Duration (cycles)**	**Required Level**	**Performance Criterion**
0	100	0.5	B	A
Remark: T (s) = 1 / f (Hz)				

18. EUT Photographs

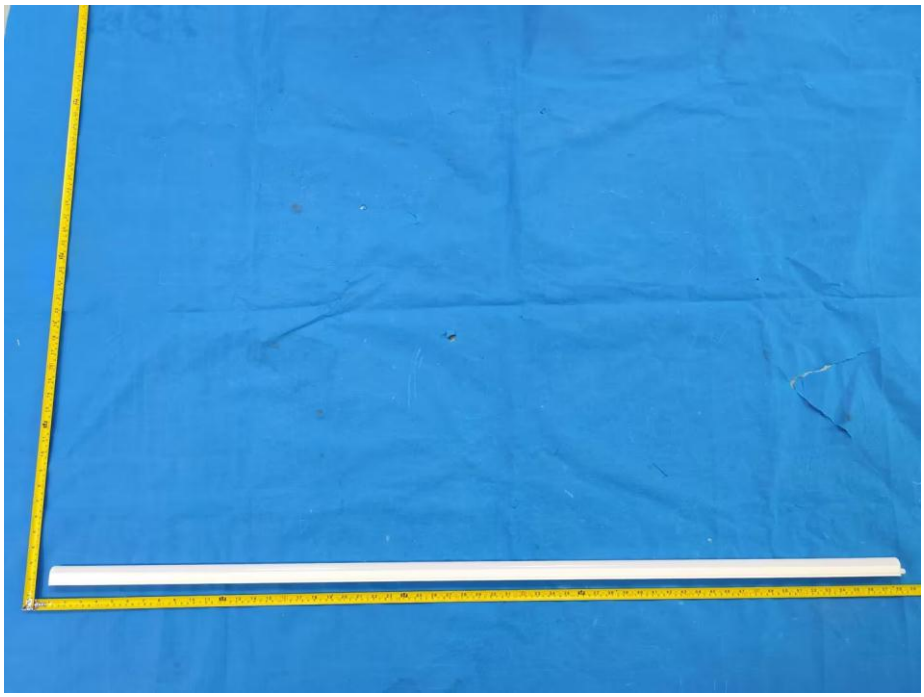
EUT Photo 1



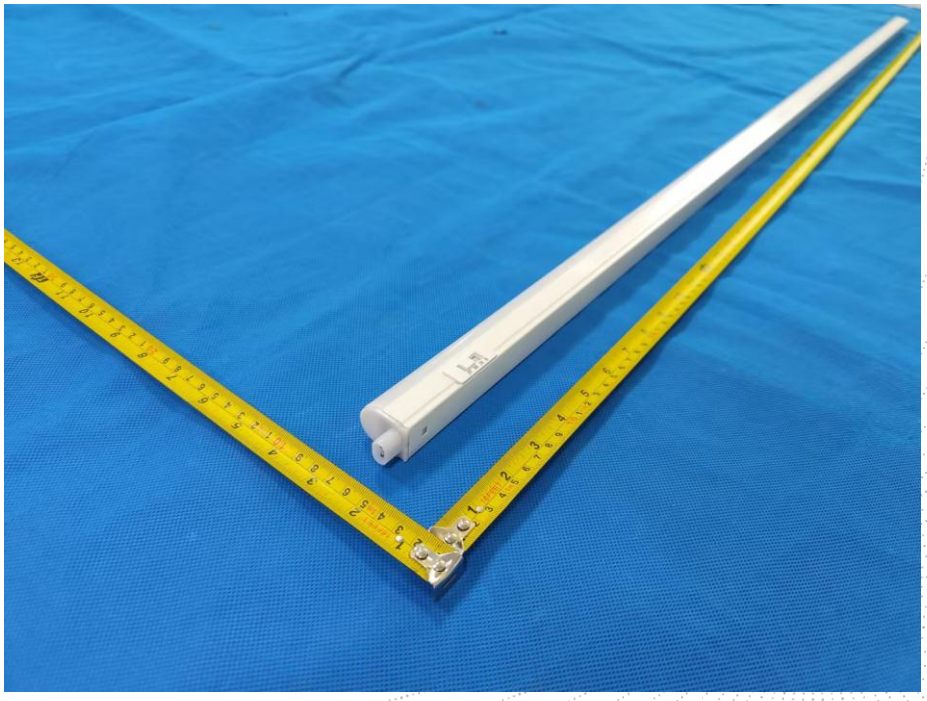
EUT Photo 2



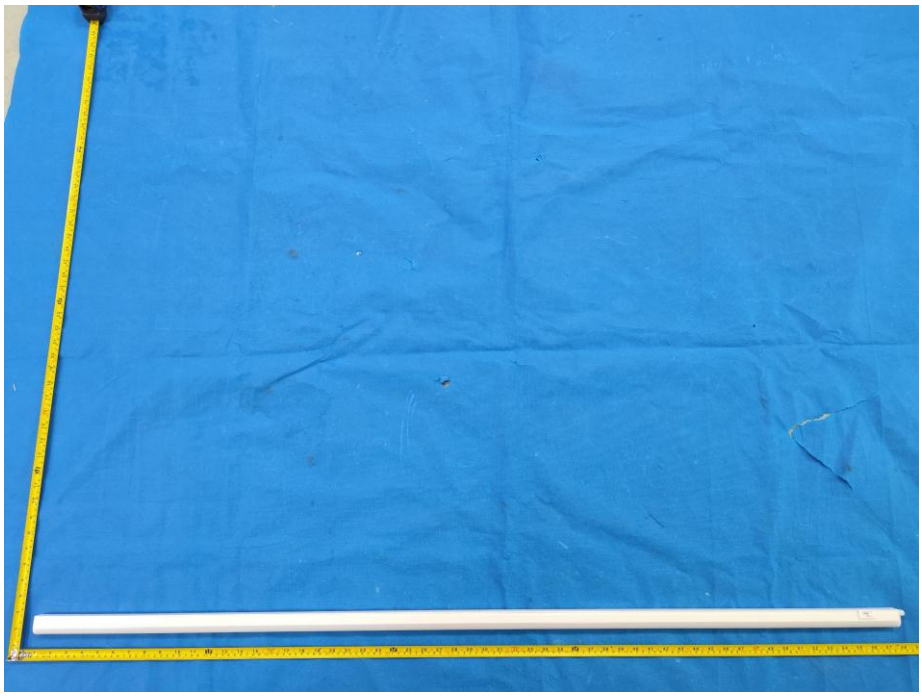
EUT Photo 3



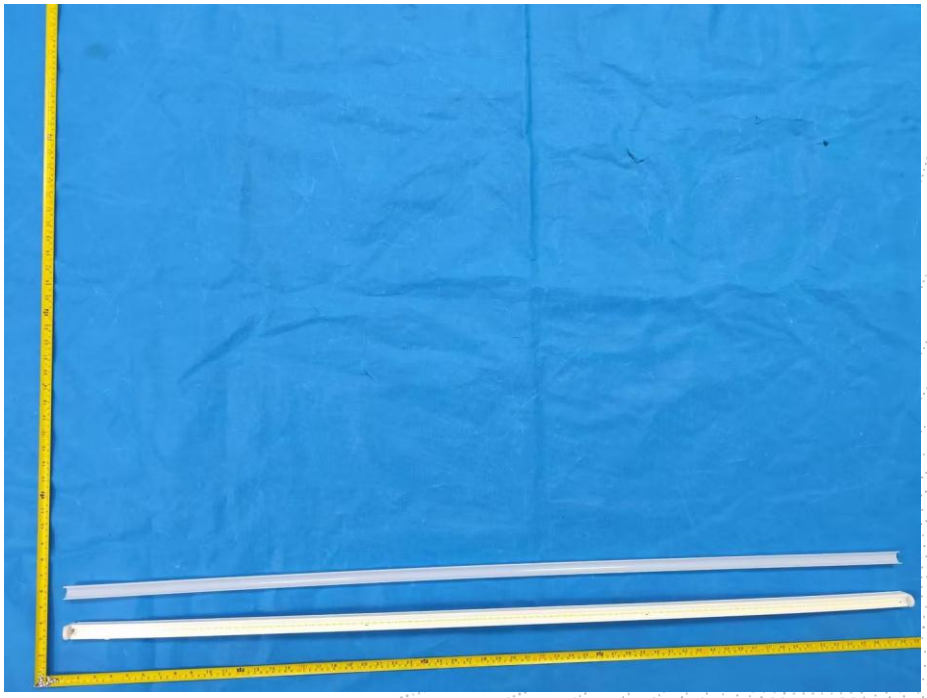
EUT Photo 4



EUT Photo 5



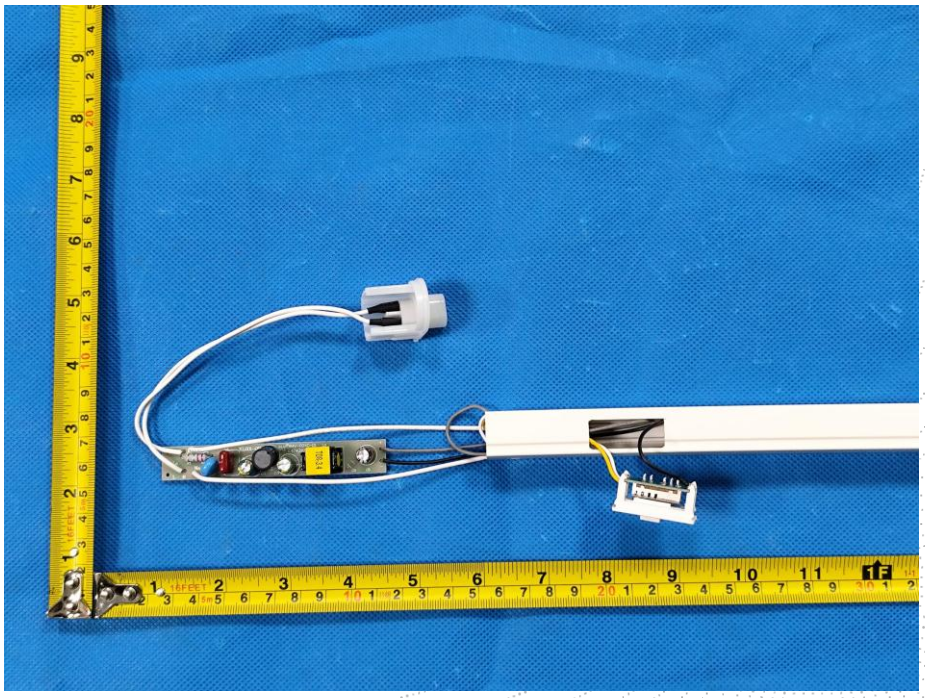
EUT Photo 6



EUT Photo 7



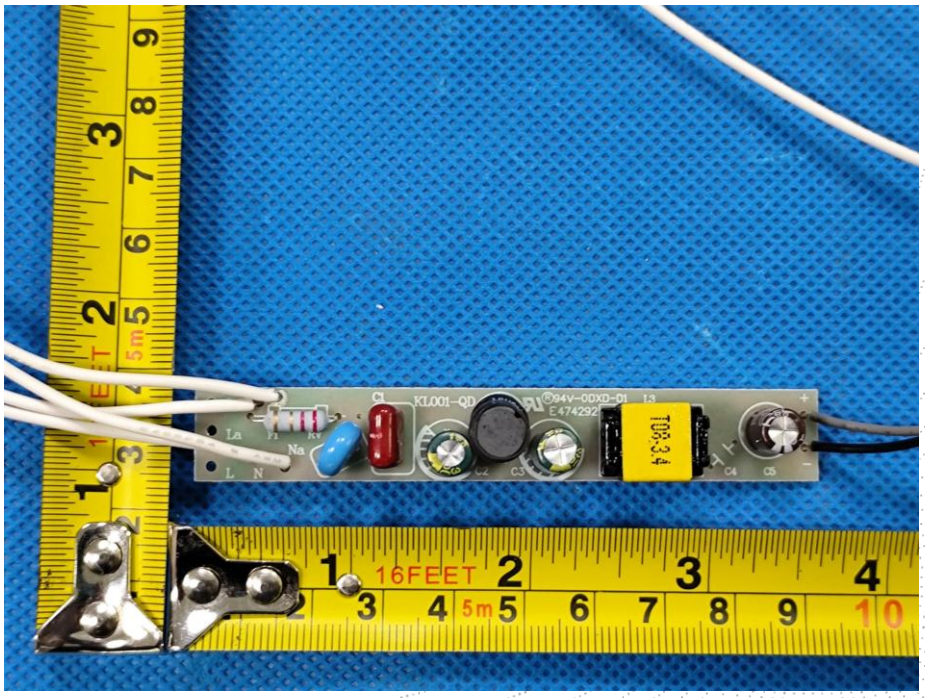
EUT Photo 8



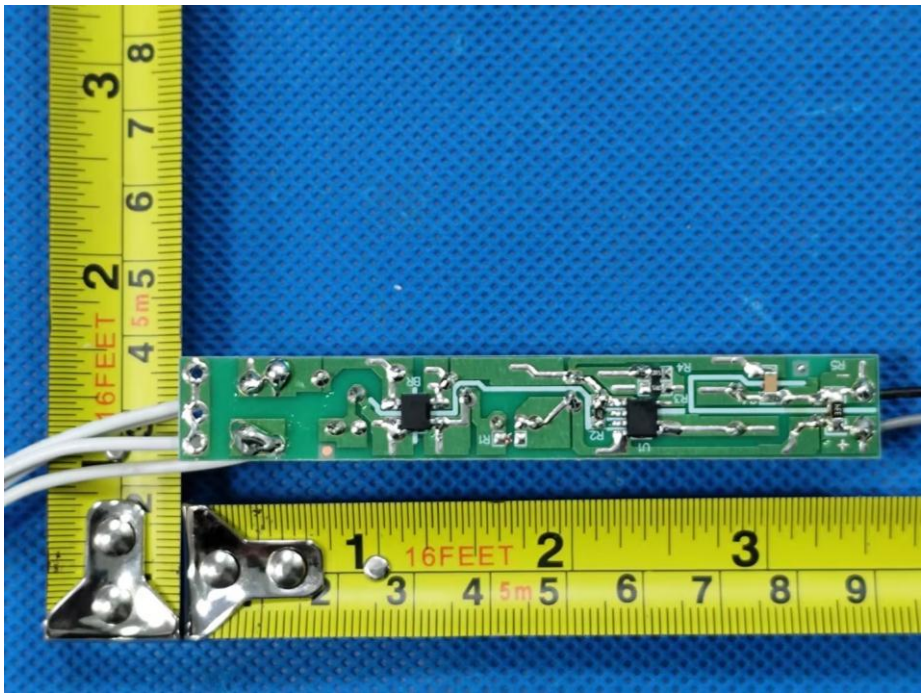
EUT Photo 9



EUT Photo 10



EUT Photo 11

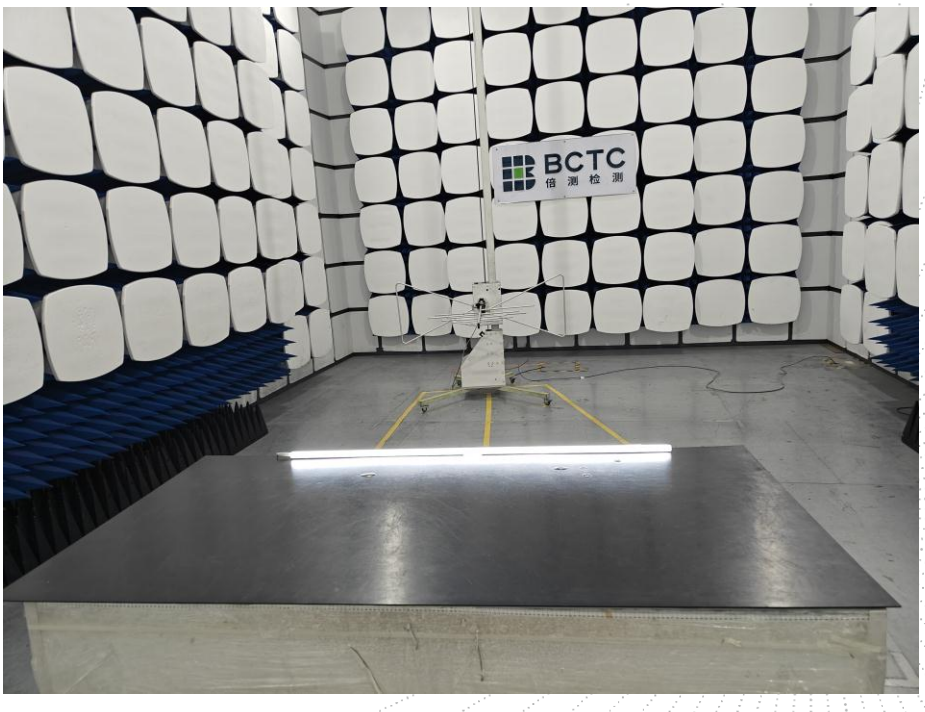


19. EUT Test Setup Photographs

CE



RE



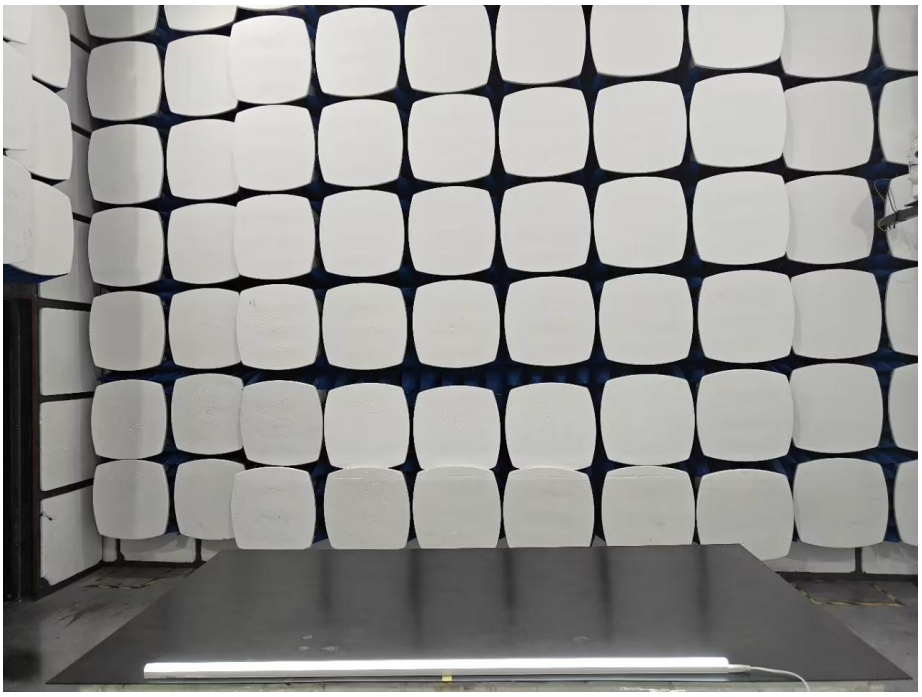
H/F



ESD



RS



EFT/Surges/DIPS



ME



CS



STATEMENT

1. The equipment lists are traceable to the national reference standards.

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC17025.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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