



TEST REPORT

Applicant: BRAYTRON S.R.L.

Address of Applicant: B.DUL IULIU MANIU, NR.616, CORP B, ETAJ 1 SECTOR 6,
061129, BUCHAREST, ROMANIA

Equipment Under Test (EUT)

Product Name: OUTDOOR LIGHTING FIXTURE

Brand Name:

Model No.: Please Refer To Page 5-6.

Applicable standards: EN IEC 55015:2019+A11:2020

EN 61547:2009

EN IEC 61000-3-2:2019

EN 61000-3-3:2013+A1:2019

Date of sample receipt: October 8, 2021

Date of Test: October 8, 2021 To October 14, 2021

Date of report issued: October 15, 2021

Test Result : PASS *

*In the configuration tested, the EUT complied with the standards specified above

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature

Kevin Wang
Laboratory Manager





2 Version

Version No.	Date	Description
00	October 15, 2021	Original

Prepared By:

Gang Wang

Date:

October 15, 2021

Project Engineer

Reviewed By:

Kevin Wang

Date:

October 15, 2021

Reviewer





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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emissions (30MHz-1000MHz)	EN IEC 55015	EN IEC 55015	Table 10	Pass
Radiated Emissions (9kHz-30MHz)	EN IEC 55015	EN IEC 55015	Table 8	Pass
Conducted Emissions	EN IEC 55015	EN IEC 55015	Table 1	Pass
Harmonic Current Emission	EN IEC 61000-3-2	EN IEC 61000-3-2	Class C	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3	EN 61000-3-3	Clause 5 of EN61000-3-3	Pass
Electrostatic discharges	EN 61547	EN 61000-4-2	Contact 4 kV Air 8 kV	Pass
Radiated Immunity	EN 61547	EN 61000-4-3	3V/m 80%, 1kHz, AM	Pass
Electrical Fast Transients	EN 61547	EN 61000-4-4	AC 1.0kV	Pass
Surges	EN 61547	EN 61000-4-5	0.5kV Line to Line 1kV Line to Ground	Pass
Conducted Immunity	EN 61547	EN 61000-4-6	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage dips and Interruptions	EN 61547	EN 61000-4-11	0 % UT for 0.5per 70 % UT for 10per UT is Supply Voltage	Pass

Remark:

UT* is the nominal supply voltage.

N/A: Not applicable.



Model No.:

BG32-001XX	BG32-002XX	BG32-003XX	BG32-004XX
BG32-005XX	BG32-006XX	BG32-007XX	BG32-008XX
BG32-009XX	BG32-010XX	BG32-011XX	BG32-012XX
BG32-013XX	BG32-014XX	BG32-015XX	BG32-016XX
BG32-017XX	BG32-018XX	BG32-019XX	BG32-020XX
BG32-021XX	BG32-022XX	BG32-023XX	BG32-024XX
BG32-025XX	BG32-026XX	BG32-028XX	BG32-029XX
BG32-030XX	BG32-031XX	BG32-032XX	BG32-033XX
BG32-034XX	BG32-035XX	BG32-036XX	BG32-037XX
BG32-038XX	BG32-039XX	BG32-040XX	BG32-041XX
BG32-042XX	BG32-043XX	BG32-044XX	BG32-045XX
BG32-046XX	BG32-047XX	BG32-048XX	BG32-049XX
BG32-050XX	BG32-051XX	BG32-052XX	BG32-053XX
BG32-054XX	BG32-056XX	BG32-057XX	BG32-058XX
BG32-059XX	BG32-060XX	BG32-061XX	BG32-062XX
BG32-063XX	BG32-064XX	BG32-065XX	BG32-066XX
BG32-067XX	BG32-068XX	BG32-069XX	BG32-070XX
BG32-071XX	BG32-072XX	BG32-073XX	BG32-074XX
BG32-075XX	BG32-076XX	BG32-078XX	BG32-079XX
BG32-080XX	BG32-081XX	BG32-082XX	BG32-083XX
BG32-084XX	BG32-085XX	BG32-086XX	BG32-087XX
BG32-088XX	BG32-089XX	BG32-090XX	BG32-091XX
BG32-092XX	BG32-093XX	BG32-094XX	BG32-095XX
BG32-096XX	BG32-097XX	BG32-098XX	BG32-099XX
BG33-001XX	BG33-002XX	BG33-003XX	BG33-004XX
BG33-005XX	BG33-006XX	BG33-007XX	BG33-008XX
BG33-009XX	BG33-010XX	BG33-011XX	BG33-012XX
BG33-013XX	BG33-014XX	BG33-015XX	BG33-016XX
BG33-017XX	BG33-018XX	BG33-019XX	BG33-020XX
BG33-021XX	BG33-022XX	BG33-023XX	BG33-024XX
BG33-025XX	BG33-026XX	BG33-028XX	BG33-029XX
BG33-030XX	BG33-031XX	BG33-032XX	BG33-033XX
BG33-034XX	BG33-035XX	BG33-036XX	BG33-037XX
BG33-038XX	BG33-039XX	BG33-040XX	BG33-041XX
BG33-042XX	BG33-043XX	BG33-044XX	BG33-045XX
BG33-046XX	BG33-047XX	BG33-048XX	BG33-049XX
BG33-050XX	BG33-051XX	BG33-052XX	BG33-053XX
BG33-054XX	BG33-056XX	BG33-057XX	BG33-058XX
BG33-059XX	BG33-060XX	BG33-061XX	BG33-062XX
BG33-063XX	BG33-064XX	BG33-065XX	BG33-066XX
BG33-067XX	BG33-068XX	BG33-069XX	BG33-070XX
BG33-071XX	BG33-072XX	BG33-073XX	BG33-074XX

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BG33-075XX	BG33-076XX	BG33-078XX	BG33-079XX
BG33-080XX	BG33-081XX	BG33-082XX	BG33-083XX
BG33-084XX	BG33-085XX	BG33-086XX	BG33-087XX
BG33-088XX	BG33-089XX	BG33-090XX	BG33-091XX
BG33-092XX	BG33-093XX	BG33-094XX	BG33-095XX
BG33-096XX	BG33-097XX	BG33-098XX	BG33-099XX
BG44-001XX	BG44-002XX	BG44-003XX	BG44-004XX
BG44-005XX	BG44-006XX	BG44-007XX	BG44-008XX
BG44-009XX	BG44-010XX	BG44-011XX	BG44-012XX
BG44-013XX	BG44-014XX	BG44-015XX	BG44-016XX
BG44-017XX	BG44-018XX	BG44-019XX	BG44-020XX
BG44-021XX	BG44-022XX	BG44-023XX	BG44-024XX
BG44-025XX	BG44-026XX	BG44-028XX	BG44-029XX
BG44-030XX	BG44-031XX	BG44-032XX	BG44-033XX
BG44-034XX	BG44-035XX	BG44-036XX	BG44-037XX
BG44-038XX	BG44-039XX	BG44-040XX	BG44-041XX
BG44-042XX	BG44-043XX	BG44-044XX	BG44-045XX
BG44-046XX	BG44-047XX	BG44-048XX	BG44-049XX
BG44-050XX	BG44-051XX	BG44-052XX	BG44-053XX
BG44-054XX	BG44-056XX	BG44-057XX	BG44-058XX
BG44-059XX	BG44-060XX	BG44-061XX	BG44-062XX
BG44-063XX	BG44-064XX	BG44-065XX	BG44-066XX
BG44-067XX	BG44-068XX	BG44-069XX	BG44-070XX
BG44-071XX	BG44-072XX	BG44-073XX	BG44-074XX
BG44-075XX	BG44-076XX	BG44-078XX	BG44-079XX
BG44-080XX	BG44-081XX	BG44-082XX	BG44-083XX
BG44-084XX	BG44-085XX	BG44-086XX	BG44-087XX
BG44-088XX	BG44-089XX	BG44-090XX	BG44-091XX
BG44-092XX	BG44-093XX	BG44-094XX	BG44-095XX
BG44-096XX	BG44-097XX	BG44-098XX	BG44-099XX
BG44-00301	BG44-20100	BG44-20101	BG44-20300
BG44-20301	X=0,1,2,3,4,5,6,7,8,9		

Remark: All models are identical in the same PCB layout, interior structure and electrical circuits. The only differences are the model name and appearance color for commercial purpose.

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5 General Information

5.1 Client Information

Applicant:	BRAYTRON S.R.L.
Address of Applicant:	B.DUL IULIU MANIU, NR.616, CORP B, ETAJ 1 SECTOR 6, 061129, BUCHAREST, ROMANIA
Manufacturer:	DEMGRUP INTERNATIONAL LIGHTING LIMITED
Address of Manufacturer:	UNIT D 16/F, ONE CAPITAL PLACE, 18 LUARD ROAD, WAN CHAI, HONG KONG

5.2 General Description of E.U.T

Product Name:	OUTDOOR LIGHTING FIXTURE
Brand Name:	
Model No.:	Please Refer To Page 5-6.
Test Model No.:	BG44-00301
Power Supply:	AC220-240V, 50/60Hz, Max. 23W

5.3 Test mode

On mode	Keep the EUT lighting
---------	-----------------------

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number
Customer Furnished Equipment	LED light	BA38-0062	N/A

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Monitoring of EUT for All Immunity Test

Visual:	Monitor the lighting of EUT
Audio:	N/A



6 Test Instruments List

Radiated Emission: (30MHz-1000MHz):						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	N/A	N/A
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	ROHDE & SCHWARZ	ESRP	GTS602	Mar. 19 2021	Mar. 18 2022
4	BiConiLog Antenna	SCHWARZBECK	VULB 9168	GTS606	Mar. 19 2021	Mar. 18 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	N/A	LNA 0920N	GTS605	Mar. 19 2021	Mar. 18 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 8 2021	Oct. 7 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 8 2021	Oct. 7 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 8 2021	Oct. 7 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 24 2021	June. 23 2022

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 24 2021	June. 23 2022
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 24 2021	June. 23 2022
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 24 2021	June. 23 2022
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 24 2021	June. 23 2022

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9	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 24 2021	June. 23 2022
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Radiated Emissions (9kHz-30MHz):						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	TIPIPLE-LOOP ANTENNA	EVERFINE	LLA-2	GTS539	June. 24 2021	June. 23 2022

ESD						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	KIKUSUI	KES4021A	GTS242	June. 24 2021	June. 23 2022
2	Thermo meter	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022

Conducted Immunity						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Signal Generator	ROHDE & SCHWARZ	SMB 100A	GTS553	June. 24 2021	June. 23 2022
2	CDN	LionCEL	CDN-M3-16	GTS554	June. 24 2021	June. 23 2022
3	CDN	CYBERTEK	EM 5070	GTS559	June. 24 2021	June. 23 2022
4	Power amplifier	rflight	NTWPA-00010475	GTS555	June. 24 2021	June. 23 2022
5	ATT	SUNWAVE	SJ-50-06DB	GTS556	June. 24 2021	June. 23 2022
6	Clamp	SCHAFFNER	KEMZ 801	GTS558	June. 24 2021	June. 23 2022

Harmonic/ Flicker						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Power Analyzer H/F	EMTEST	DPA500	GTS235	June. 24 2021	June. 23 2022
2	AC POWER SUPPLY	EMTEST	ACS500	GTS236	June. 24 2021	June. 23 2022
3	Thermo meter	KTJ	TA328	GTS256	June. 24 2021	June. 23 2022

EFT, Surge, Voltage dips and Interruption						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMTEST system	EMTEST	UCS500N	GTS239	June. 24 2021	June. 23 2022
2	Clamp	EMTEST	HFK	GTS557	June. 24 2021	June. 23 2022
3	Thermo meter	KTJ	TA328	GTS238	June. 24 2021	June. 23 2022

Radiated Immunity						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	May. 08 2021	May. 07 2022
2	Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	Mar. 31 2021	Mar. 30 2022
3	Stacked Log.-Per.-Broadband Antenna (70MHz-10GHz)	Schwarzbeck	STLP 9129	SEM003-25	N/A	N/A
4	Signal Generator	Rohde & Schwarz	SMB100A	SEM006-11	Mar. 31 2021	Mar. 30 2022

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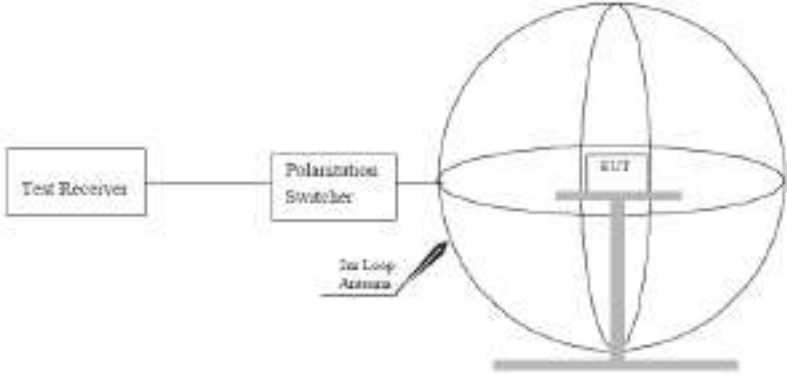
	(9kHz-6GHz)					
5	Broadband Amplifier (80MHz-1GHz)	Rohde & Schwarz	BBA150-BC250	SEM005-12	Sep. 22 2021	Sep. 21 2022
6	Broadband Amplifier(800MHz- 3GHz)	Rohde & Schwarz	BBA150-D110	SEM005-13	Mar. 31 2021	Mar. 30 2022
7	Broadband Amplifier(2.5GHz- 6GHz)	Rohde & Schwarz	BBA150-E60	SEM005-16	April. 10 2021	April. 09 2022
8	Measurement Software	Rohde & Schwarz	EMC32 V9.25.00	N/A	N/A	N/A

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

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7 Emission Test Results

7.1 Radiated Emissions (9kHz-30MHz)

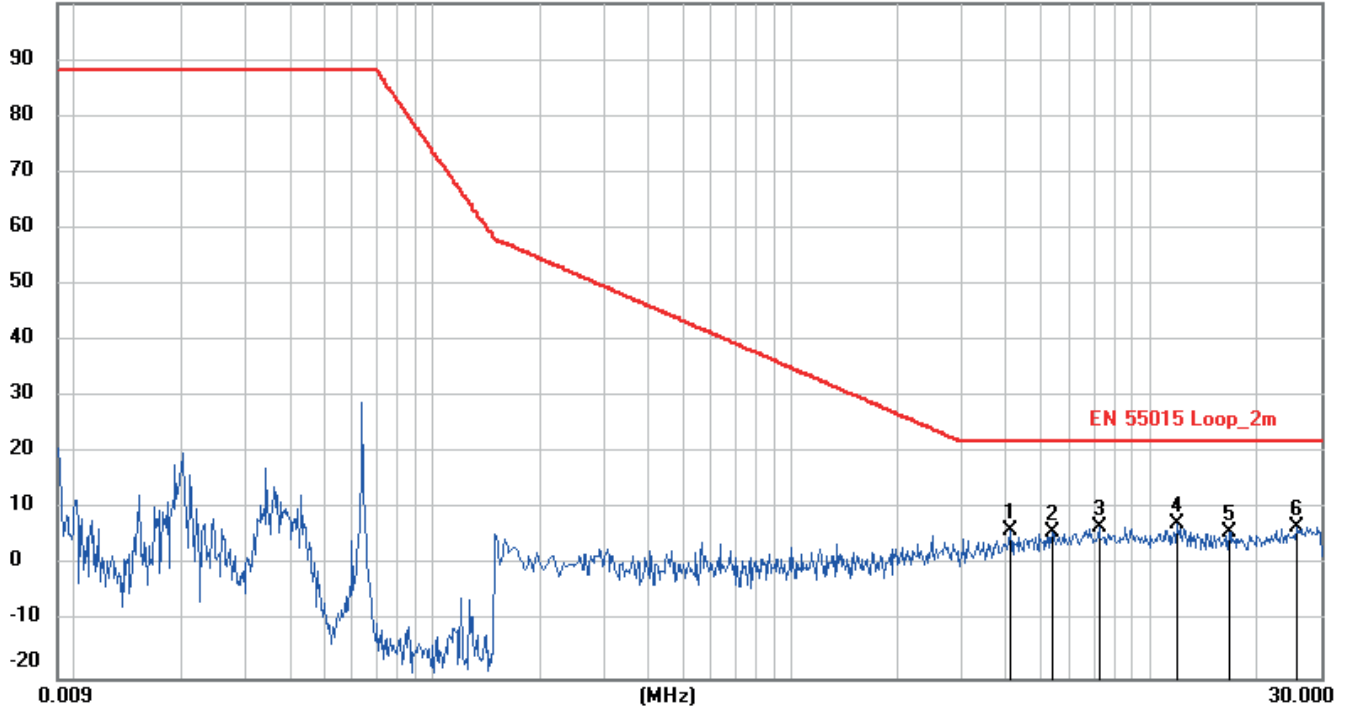
Test Requirement:	EN IEC 55015		
Test Method:	EN IEC 55015		
Test Frequency Range:	9kHz to 30MHz		
Limit:	Frequency range (MHz)		Limits for loop diameter dBuA @2m
	0.009-0.070		88
	0.070-0.150		88 to 58*
	0.15-3.0		58 to 22*
	3.0-30		22
<p>*Decreasing linearly with the logarithm of the frequency.</p> <p>For electrodeless lamps and luminaires, the limit in the frequency range of 2,2 MHz to 3,0 MHz is 58 dB(μA) for 2 m, 51dB(μA) for 3 m and 45 dB(μA) for 4 m loop diameter.</p>			
Test Setup:			
Test procedure	<ol style="list-style-type: none"> 1. An initial pre-scan was performed in the 2m loop antenna using the spectrum analyser in peak detection mode. 2. The EUT was measured for X(A), Y(B), Z(C) polarities. 3. No further quasi-peak measurements were performed since no peak emissions from the EUT were detected within 6dB of the limit for 2m diameter loop antenna. 		
Test Instruments:	Temp.: 25 C	Humid.: 50%	Press.: 1012mbar
Measurement Record:	Uncertainty: ± 4.5dB		
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details.		
Test results:	Pass		



Measurement Data

Axial: X

100.0 dBuA

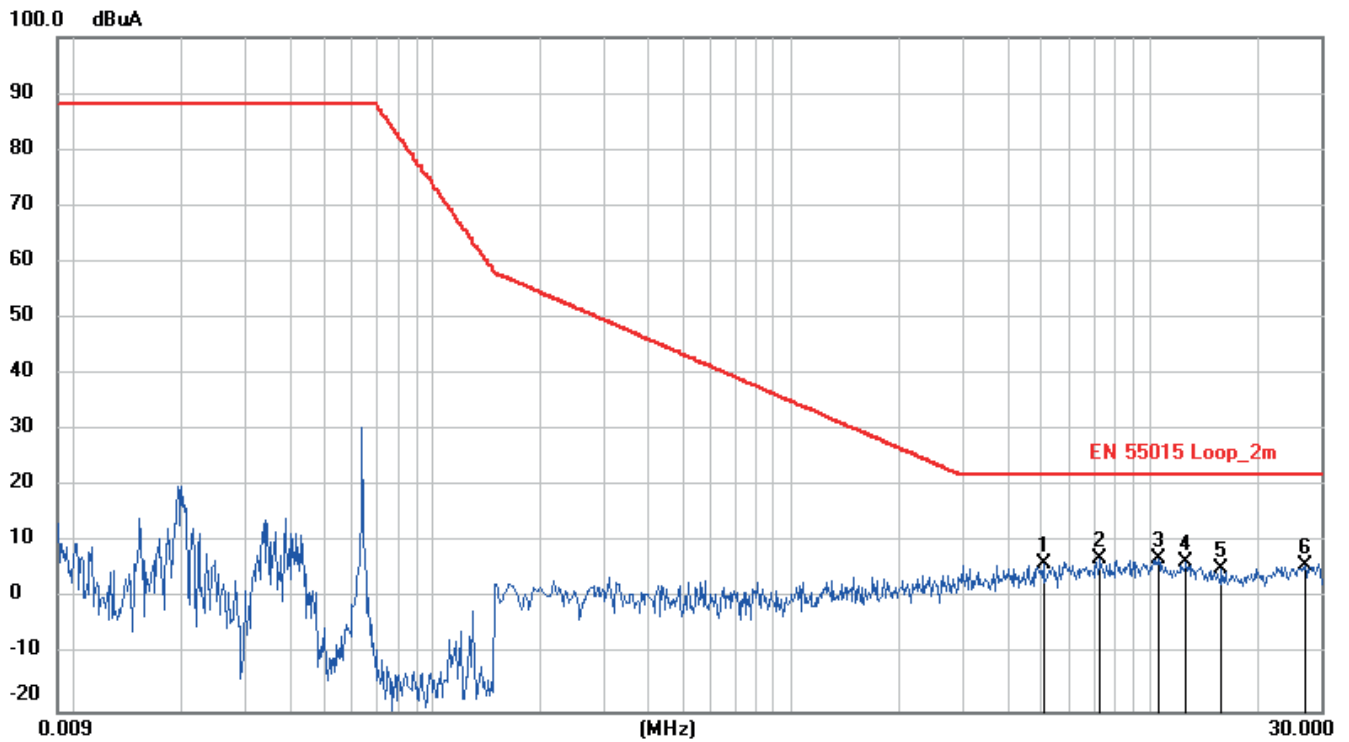


No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	4.0876	-27.90	34.23	6.33	22.00	-15.67	QP
2	5.3566	-28.53	34.55	6.02	22.00	-15.98	QP
3	7.2286	-27.96	34.84	6.88	22.00	-15.12	QP
4	11.9086	-27.46	34.90	7.44	22.00	-14.56	QP
5	16.6471	-28.98	34.87	5.89	22.00	-16.11	QP
6	25.8451	-28.36	35.08	6.72	22.00	-15.28	QP

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Axial: Y



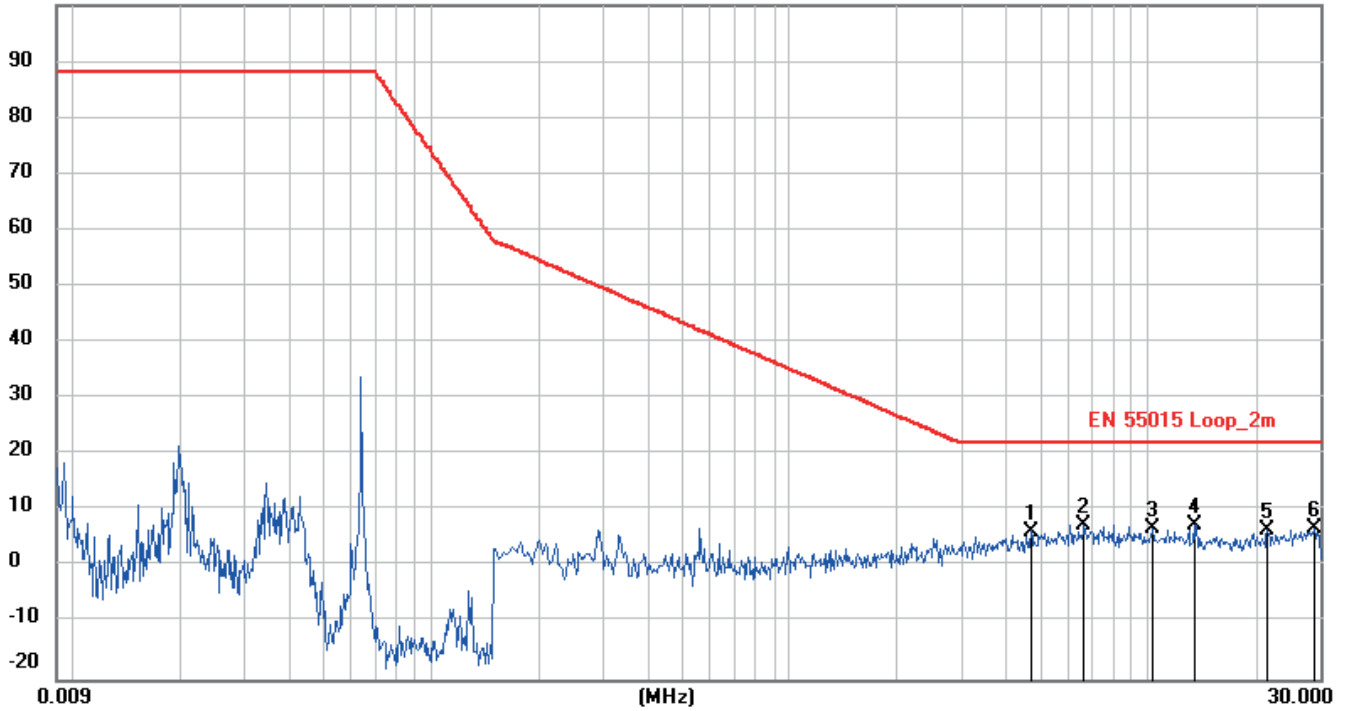
No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	5.0461	-28.33	34.71	6.38	22.00	-15.62	QP
2	7.3006	-27.82	35.04	7.22	22.00	-14.78	QP
3	10.5856	-28.02	35.05	7.03	22.00	-14.97	QP
4	12.6151	-28.36	34.83	6.47	22.00	-15.53	QP
5	15.8281	-29.15	34.48	5.33	22.00	-16.67	QP
6	27.1996	-28.46	34.44	5.98	22.00	-16.02	QP

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Axial: Z

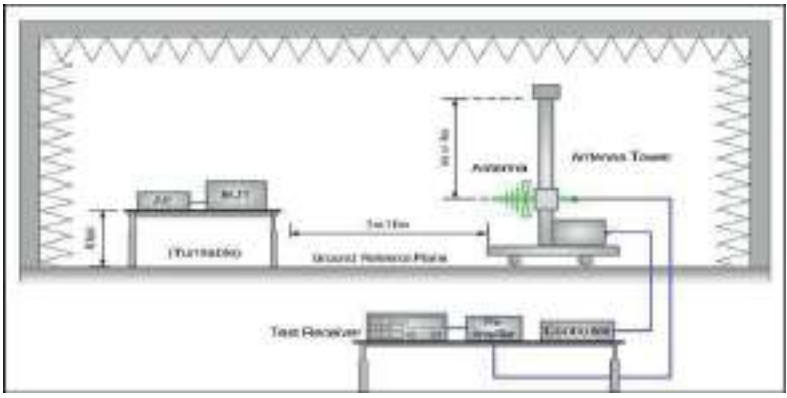
100.0 dBuA



No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	4.6906	-27.98	34.38	6.40	22.00	-15.60	QP
2	6.5851	-27.21	34.78	7.57	22.00	-14.43	QP
3	10.2346	-28.19	34.92	6.73	22.00	-15.27	QP
4	13.3576	-27.36	34.88	7.52	22.00	-14.48	QP
5	21.4891	-28.51	34.94	6.43	22.00	-15.57	QP
6	29.0131	-28.23	35.12	6.89	22.00	-15.11	QP

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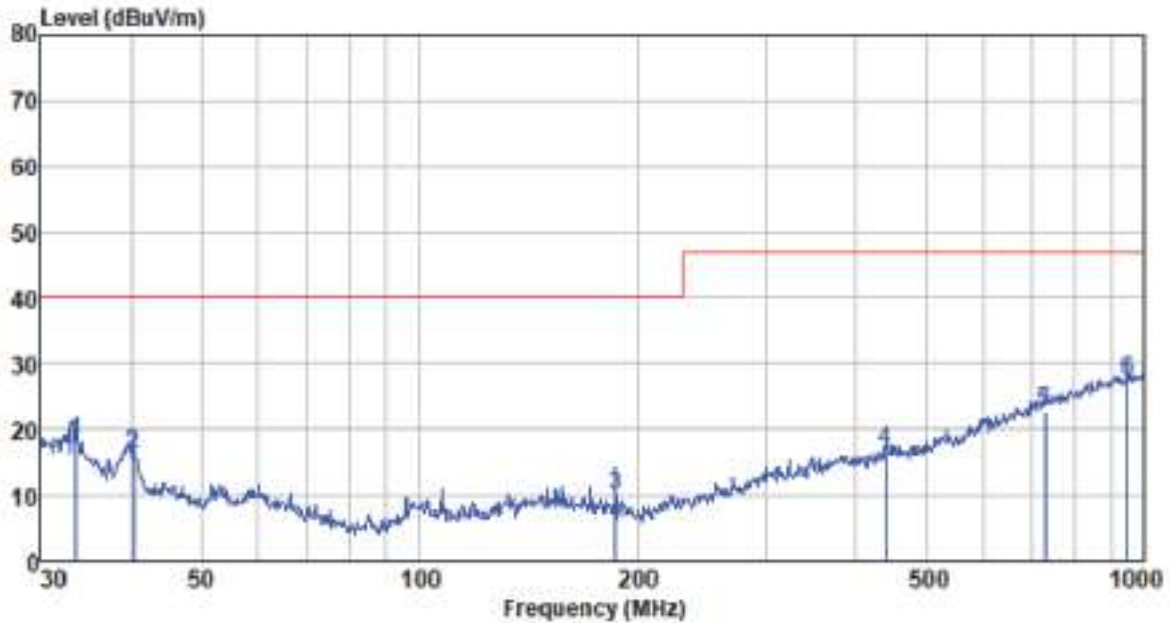
7.2 Radiated Emissions (30MHz-1000MHz)

Test Requirement:	EN IEC 55015		
Test Method:	EN IEC 55015		
Test Frequency Range:	30MHz to 1000MHz		
Measurement Distance:	3m		
Limit:	Frequency range(MHz)	Limit (dBuV/m)	
	30 to 230	40.00	
	230 to 1000	47.00	
Test setup:			
Test procedure	<ol style="list-style-type: none"> 1. The radiated emissions test was conducted in a semi-anechoic chamber. 2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation. 3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT. 4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. 		
Test Instruments:	Temp.: 25 C	Humid.: 50%	Press.: 1012mbar
Measurement Record:	Uncertainty: ± 4.50dB		
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details.		
Test results:	Pass		



Measurement Data

Test mode:	On mode	Antenna Polarity:	Horizontal
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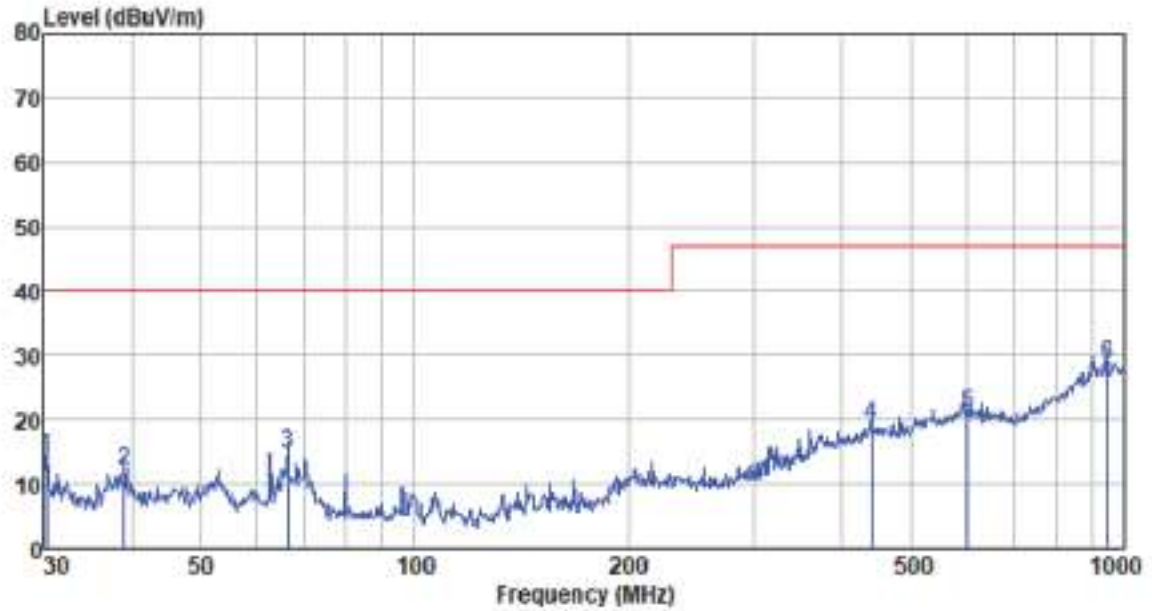


Freq MHz	Reading level dBuV	Antenna factor dB/n	Cable loss dB	Preamp factor dB	level dBuV/n	Limit level dBuV/n	Over limit dB	Remark
33.562	26.16	19.87	1.10	28.90	18.23	40.00	-21.77	QP
40.276	28.24	18.09	1.17	29.20	16.30	40.00	-23.70	QP
186.441	27.80	10.92	2.29	30.98	10.03	40.00	-29.97	QP
440.196	27.40	17.29	3.97	31.73	16.93	47.00	-30.07	QP
729.358	26.10	22.59	5.37	31.39	22.67	47.00	-24.33	QP
948.761	27.13	25.10	6.43	31.31	27.35	47.00	-19.65	QP

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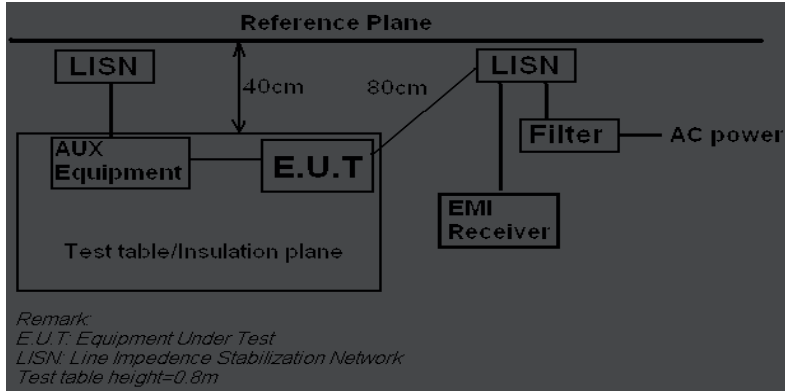
Test mode:	On mode	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
30.317	33.04	8.94	1.05	28.73	14.30	40.00	-25.70	QP
38.888	29.08	10.93	1.16	29.14	12.03	40.00	-27.97	QP
66.266	34.67	8.58	1.41	30.02	14.64	40.00	-25.36	QP
440.196	28.36	18.54	3.97	31.73	19.14	47.00	-27.86	QP
601.427	27.05	20.57	5.01	31.63	21.00	47.00	-26.00	QP
948.761	28.66	24.79	6.43	31.31	28.57	47.00	-18.43	QP

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7.3 Conducted Emissions

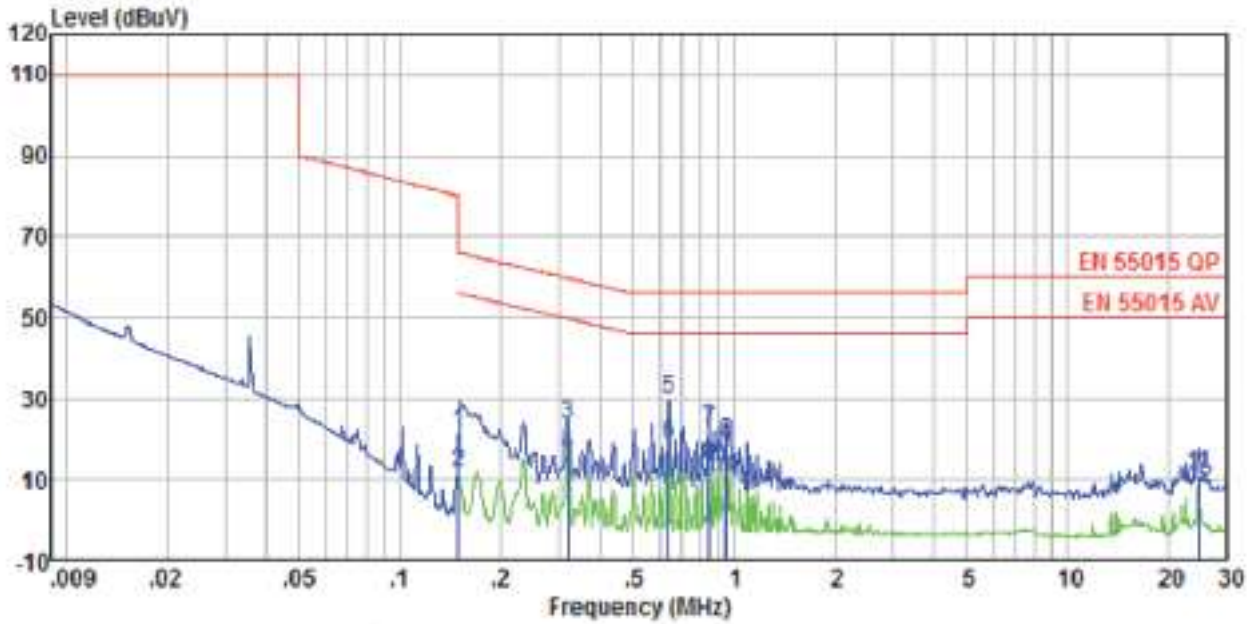
Test Requirement:	EN IEC 55015		
Test Method:	EN IEC 55015		
Test Frequency Range:	9kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.009-0.05	110	-
	0.05-0.15	90-80*	-
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:			
Test procedure	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN55022 Class B on conducted measurement. 		
Test Instruments:	Temp.: 25 C	Humid.: 50%	Press.: 1012mbar
Measurement Record:	Uncertainty: 3.45dB		
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details.		
Test results:	Pass		

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Measurement Data

Test mode:	On mode	Antenna Polarity:	Line
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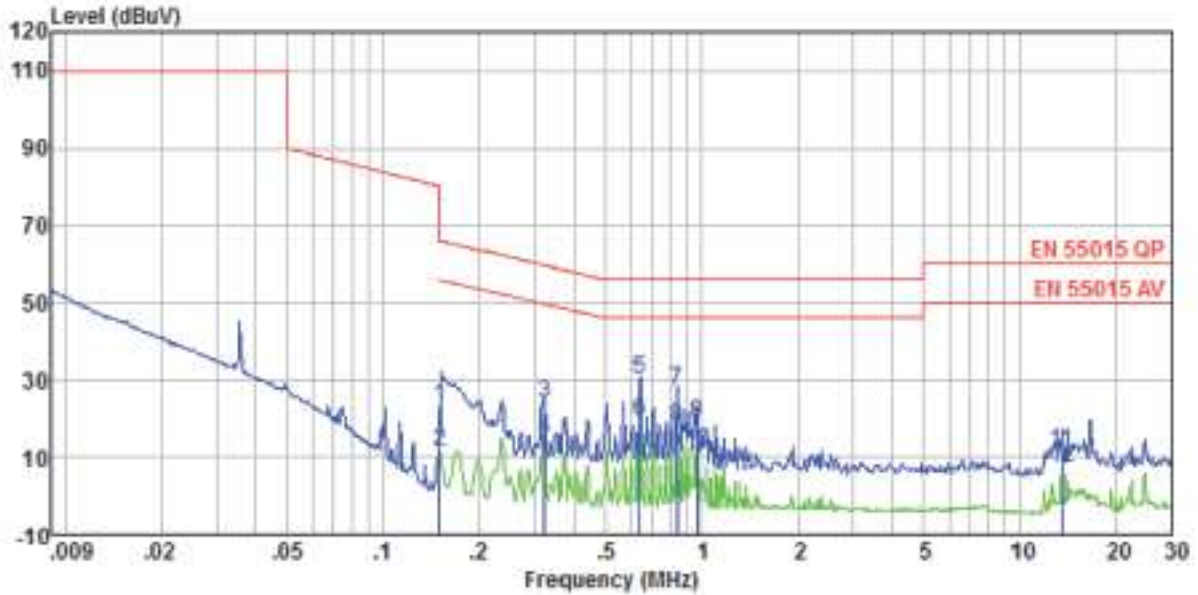


Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	21.18	0.40	0.07	21.63	66.00	-44.37	QP
0.15	11.06	0.40	0.07	11.53	56.00	-44.47	Average
0.32	23.09	0.39	0.10	23.58	59.71	-36.13	QP
0.32	15.36	0.39	0.10	15.86	49.71	-33.86	Average
0.64	29.24	0.28	0.12	29.64	56.00	-26.36	QP
0.64	18.40	0.28	0.12	18.80	46.00	-27.20	Average
0.84	21.56	0.23	0.14	21.93	56.00	-34.07	QP
0.84	13.18	0.23	0.14	13.55	46.00	-32.45	Average
0.95	18.66	0.21	0.15	19.02	56.00	-36.98	QP
0.95	9.64	0.21	0.15	10.00	46.00	-36.00	Average
24.79	10.71	0.35	0.23	11.29	60.00	-48.71	QP
24.79	7.25	0.35	0.23	7.83	50.00	-42.17	Average

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Test mode:	On mode	Antenna Polarity:	Neutral
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Freq MHz	Reading level dBuV	LISH/ISH factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	22.48	0.40	0.07	22.95	66.00	-43.05	QP
0.15	11.27	0.40	0.07	11.74	66.00	-44.26	Average
0.32	23.52	0.39	0.10	24.01	59.66	-35.65	QP
0.32	14.61	0.39	0.10	15.10	49.66	-34.56	Average
0.64	30.02	0.28	0.12	30.42	58.00	-25.58	QP
0.64	18.98	0.28	0.12	19.38	46.00	-26.62	Average
0.84	27.09	0.23	0.14	27.46	56.00	-28.54	QP
0.84	17.32	0.23	0.14	17.69	46.00	-28.31	Average
0.97	18.20	0.21	0.15	18.56	56.00	-37.44	QP
0.97	11.32	0.21	0.15	11.68	46.00	-34.32	Average
13.55	11.05	0.20	0.21	11.46	60.00	-48.54	QP
13.55	6.71	0.20	0.21	7.12	50.00	-42.88	Average

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7.4 Harmonics Current Emission

Test Requirement:	EN IEC 61000-3-2		
Test Method:	EN IEC 61000-3-2		
Frequency range:	100Hz to 2kHz		
Measurement Time:	2.5 min		
Class/Severity:	Class C		
Detector:	As per EN 61000-3-2		
Test environment:	Temp.:24 C	Humid.: 51%	Press.: 1012mbar
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

7.5 Voltage Fluctuations and Flicker

Test Requirement:	EN 61000-3-3		
Test Method:	EN 61000-3-3		
Class/Severity:	Clause 5 of EN 61000-3-3		
Measurement Time:	10 min		
Detector:	As per EN 61000-3-3		
Test environment:	Temp.:24 C	Humid.: 51%	Press.: 1012mbar
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement Data

	EUT values	Limit	Result
Pst	0.032	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.057	4.00	PASS
dt [s]	0.000	0.50	PASS

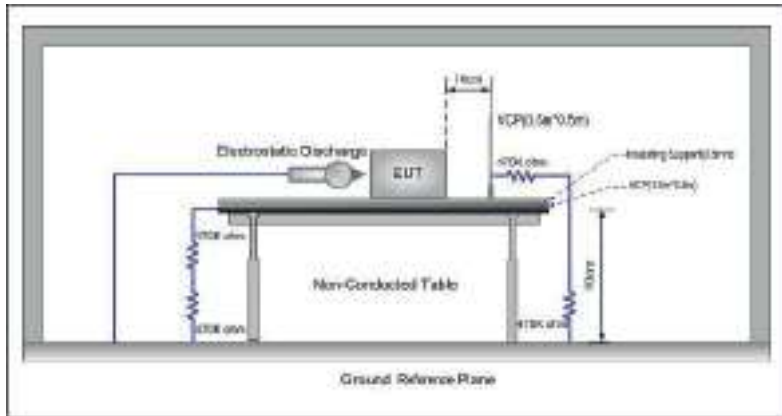


8 Immunity Test Results

8.1 Performance Criteria Description of EN 61547

Criterion A:	During the test no change of the luminous 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.

8.2 Electrostatic Discharge

Test Requirement:	EN 61547
Test Method:	EN 61000-4-2
Discharge Voltage:	Contact Discharge: $\pm 4\text{kV}$ Air Discharge: $\pm 8\text{kV}$ HCP/VCP: $\pm 4\text{kV}$
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Performance Criterion:	B
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> Air discharge: The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure was repeated until all the air discharge completed Contact Discharge: The test was applied on conductive surfaces of EUT. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. Indirect discharge for horizontal coupling plane At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge. Consideration should be given to exposing all sides of the EUT.



	4. Indirect discharge for vertical coupling plane At least 10 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.		
Test environment:	Temp.: 24 C	Humid.: 51%	Press.: 1012mbar
Test mode:	Refer to section 5.3 for detail		
Test Instruments:	Refer to section 6 for details		
Test results:	Pass		

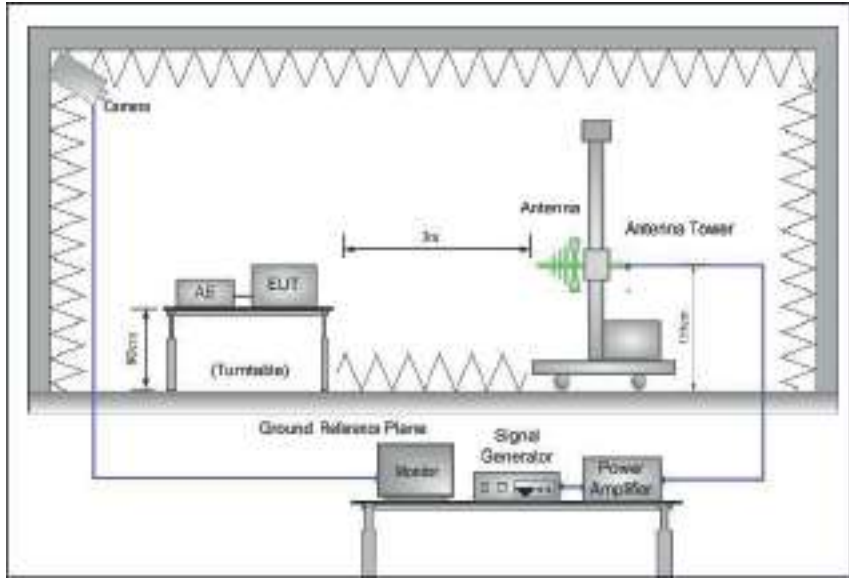
Measurement Record:

Test points:	I: Screw			
	II: Seams			
Direct discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observations (Performance Criterion)	Result
4	Contact	I	A	Pass
8	Air	II	A	Pass
Indirect discharge				
Discharge Voltage (KV)	Type of discharge	Test points	Observation Performance	Result
4	HCP-Bottom/Top/ Front/Back/Left/Right	Edge of the HCP	A	Pass
4	VCP-Front/Back /Left/Right	Center of the VCP	A	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.3 Radiated Immunity

Test Requirement:	EN 61547
Test Method:	EN 61000-4-3
Frequency range:	80MHz to 1GHz
Test Level:	3V/m
Modulation:	80%, 1kHz Amplitude Modulation
Performance Criterion:	A
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> 1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing

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	each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.		
Test environment:	Temp.: 25 C	Humid.: 52%	Press.: 1012mbar
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

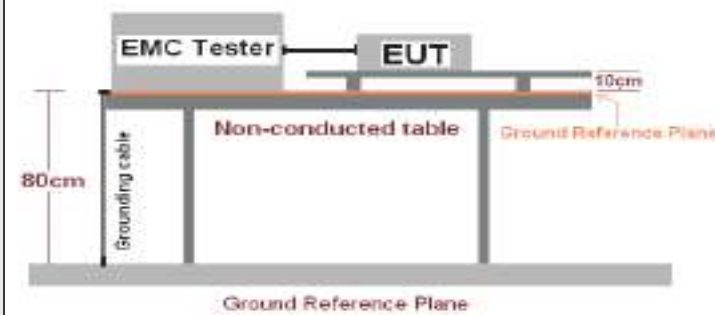
Measurement Record:

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)
80 MHz-1 GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			V	Bottom	A
			H		A

Remarks:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.4 Electrical fast transients

Test Requirement:	EN 61547
Test Method:	EN 61000-4-4
Test Level:	1.0kV on AC port
Polarity:	Positive & Negative
Repetition Frequency:	5kHz
Burst Duration:	15ms
Burst Period:	300ms
Test Duration:	2 minute per level & polarity
Performance Criterion:	B
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. 2. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. 3. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables. 4. The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal. 5. Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes. 6. The length of the signal and power lines between the coupling device and the EUT is 0.5m
Test environment:	Temp.: 26 C Humid.: 54% Press.: 1012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass



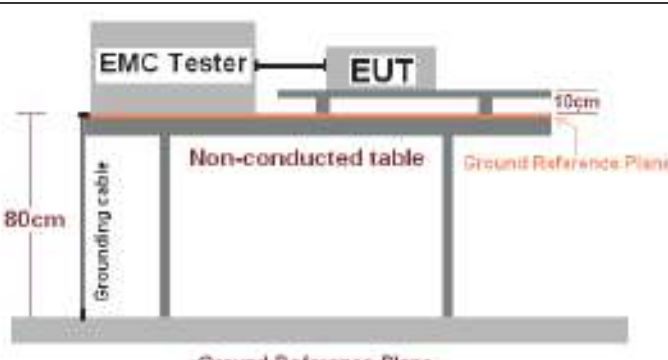
Measurement Record:

Lead under Test	Level (kV)	Coupling Direct/Clamp	Observations (Performance Criterion)	Result
L	1.0	Direct	A	Pass
N	1.0	Direct	A	Pass
L-N	1.0	Direct	A	Pass

Remarks:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.5 Surges

Test Requirement:	EN 61547			
Test Method:	EN 61000-4-5			
Test Level:	Characteristics	Test Levels		
		Self-ballasted lamps and semi-luminaires	Luminaires and independent auxiliaries	
	Line to line	±0.5kV	≤25W	>25W
	Line to ground	±1.0kV	±0.5kV	±1.0kV
			±2.0kV	
Note: In addition to the specified test level, all lower test levels as detailed in IEC 61000-4-5 should also be satisfied.				
Polarity:	Positive & Negative			
Generator source impedance:	2Ω (line-line coupling)			
No. of surges:	5 positive at 90°, 5 negative at 270°			
Performance Criterion:	C			
Test setup:				
Test procedure	<ol style="list-style-type: none"> For line-to-line coupling mode, provide a 1.2/50μs voltage surge (at open-circuit condition) and 8/20μs current surge to EUT selected points, and for active line / neutral lines to ground. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test. Different phase angles are done individually. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test. 			
Test environment:	Temp.: 26 C	Humid.: 53%	Press.: 1012mbar	
Test Instruments:	Refer to section 6 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Pass			



Measurement Record:

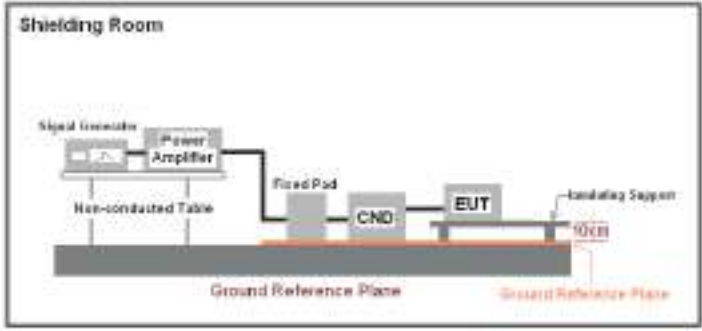
Location	Level(kV)	Pulse No	Surge Interval	Phase(deg)	Observations (Performance Criterion)	Result
L-N	+0.5	5	60s	90	A	Pass
	-0.5			270		

Remarks:

Performance Criteria: A, B, C: Refer to section 8.1 for details

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8.6 Conducted Immunity

Test Requirement:	EN 61547		
Test Method:	EN 61000-4-6		
Frequency range:	0.15MHz to 80MHz		
Test Level:	3V rms on AC Ports (unmodulated emf into 150)		
Modulation:	80%, 1kHz Amplitude Modulation		
Performance Criterion:	A		
Test setup:			
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). 2. The disturbance signal described below is injected to EUT through CDN. 3. The EUT operates within its operational mode(s) under intended climatic conditions after power on. 4. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion. 		
Test environment:	Temp.: 24 C	Humid.: 51%	Press.: 1012mbar
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		



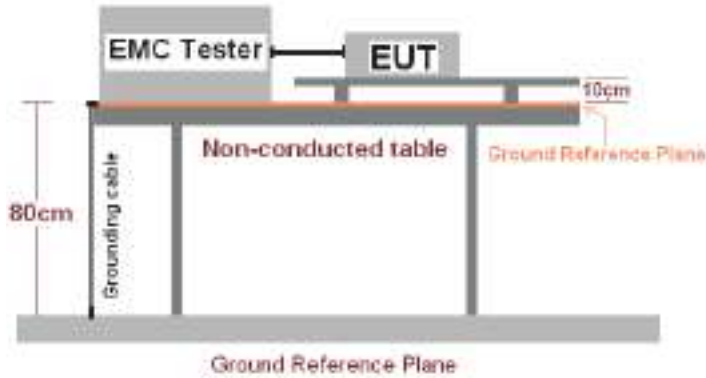
Measurement Record:

Frequency	Injected Position	Level	Modulation	Observations (Performance Criterion)	Result
150kHz to 80MHz	AC Mains	3Vrms	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=2seconds	A	Pass

Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

8.7 Voltage Dips and Interruptions

Test Requirement:	EN 61547
Test Method:	EN 61000-4-11
Test Level:	0% of U_T (Supply Voltage) for 0.5 Periods 70 % of U_T (Supply Voltage) for 10 Periods
No. of Dips / Interruptions:	3 per Level
Performance Criterion:	100% VD ----Performance criterion: B 30% VD ----Performance criterion: C
Test setup:	
Test Procedure:	<ol style="list-style-type: none"> The EUT and test generator were setup as shown on above setup photo. The interruptions are introduced at selected phase angles with specified duration. Record any degradation of performance.
Test environment:	Temp.: 26 C Humid.: 53% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Record:

Test Level % U_T	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0 ,90 ,180 ,270	3	10s	A	Pass
70	10	0 ,90 ,180 ,270	3	10s	B	Pass

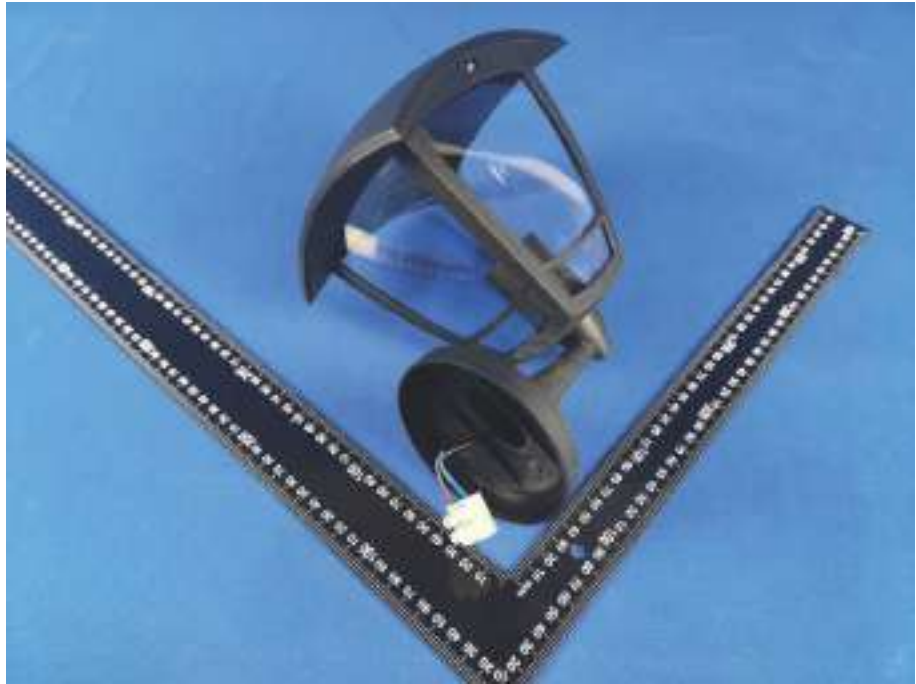
Remark:

Performance Criteria: A, B, C: Refer to section 8.1 for details

9 EUT Constructional Details



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