

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 (E	EUT)
Product Name:	LED LIGHTING FIXTURE
Brand Name:	Braytron
Model No.:	Please refer to page 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:	March 1, 2021
Date of Test:	March 2, 2021 To March18, 2021
Date of report issued:	March 19, 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

in wom

Kevin Wang Laboratory Manager





2 Version

Version No.	Date	Description
00	March 19, 2021	Original

Prepared By:

Gang Wang

Project Engineer

Date:

Reviewed By:

Cevin wom?

Reviewer

Date:



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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Radiated Emissions (30MHz-300MHz)	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 61000-3-2	EN 61000-3-2	N/A	N/A
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	$Contact \pm 4 \ kV \ Air \pm 8 \ kV$	Pass
Radiated Immunity	EN 61547	EN 61000-4-3	3V/m 80%, 1kHz, AM	Pass
Electrical Fast Transients	EN 61547	EN 61000-4-4	$AC \pm 1.0 kV$	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
			0 % UT for 0.5per	
Voltage dips and Interruptions	EN 61547	EN 61000-4-11	70 % UT for 10per UT is Supply Voltage	Pass

Remark:

UT* is the nominal supply voltage.

N/A: Not applicable.



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:	LED LIGHTING FIXTURE
Brand Name:	Braytron
Model No.:	Please refer to page 6
Test Model No.: BP01-62410	
Power Supply:	AC 220-240V, 24W, 50/60Hz

5.3 Test mode

On mode	Keep the EUT lighting

5.4 Description of Support Units

None.

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



Model No.:

BP01-62410	BP01-603X0	BP01-703X0	BP01-606X0
BP01-609X0	BP01-612X0	BP01-615X0	BP01-618X0
BP01-624X0	BP01-632X0	BP01-636X0	BP01-303X0
BP01-306X0	BP01-309X0	BP01-312X0	BP01-315X0
BP01-318X0	BP01-324X0	BP01-332X0	BP01-336X0
BP01-003X0	BP01-006X0	BP01-009X0	BP01-012X0
BP01-015X0	BP01-018X0	BP01-024X0	BP01-032X0
BP01-036X0	BP02-309X0	BP02-312X0	BP02-315X0
BP02-318X0	BP02-324X0	BP02-332X0	BP02-003X0
BP02-103X0	BP02-303X0	BP02-403X0	BP02-603X0
BP02-703X0	BP02-609X0	BP02-612X0	BP02-615X0
BP02-618X0	BP02-624X0	BP02-009X0	BP02-012X0
BP02-015X0	BP02-018X0	BP02-024X0	BP02-032X0
BP03-606X0	BP03-612X0	BP03-618X0	BP03-624X0
BP03-636X0	BP04-606X0	BP04-612X0	BP04-618X0
BP04-624X0	BP03-606X1	BP03-612X1	BP03-618X1
BP03-624X1	BP03-636X1	BP04-606X1	BP04-612X1
BP04-618X1	BP04-624X1	BP04-636X1	BP03-306X0
BP03-312X0	BP03-318X0	BP03-324X0	BP03-336X0
BP03-306X1	BP03-312X1	BP03-318X1	BP03-324X1
BP03-336X1	BP04-306X1	BP04-312X1	BP04-318X1
BP04-324X1	BP04-336X1	BP04-636X0	BP03-006X0
BP03-012X0	BP03-018X0	BP03-024X0	BP03-036X0
BP04-006X0	BP04-012X0	BP04-018X0	BP04-024X0
BP04-036X0	BP04-306X0	BP04-312X0	BP04-318X0
BP04-324X0	BP04-336X0	BP10-003X0	BP10-004X0
BP10-005X0	BP10-006X0	BP10-008X0	BP10-009X0
BP10-010X0	BP10-012X0	BP10-014X0	BP10-015X0
BP10-016X0	BP10-018X0	BP10-022X0	BP10-024X0
BP10-032X0	BP10-036X0	BP12-003X0	BP12-004X0
BP12-005X0	BP12-006X0	BP12-008X0	BP12-009X0
BP12-010X0	BP12-012X0	BP12-014X0	BP12-015X0
BP12-016X0	BP12-018X0	BP12-022X0	BP12-024X0
BP12-032X0	BP12-036X0	BP12-303X0	BP12-304X0
BP12-305X0	BP12-306X0	BP12-308X0	BP12-309X0



BP12-310X0	BP12-312X0	BP12-314X0 BP12-315X0			
BP12-316X0	BP12-318X0	BP12-322X0	BP12-324X0		
BP12-332X0	BP12-336X0	BP13-003X0 BP13-004X0			
BP13-005X0	BP13-006X0	BP13-008X0 BP13-009X0			
BP13-010X0	BP13-012X0	BP13-014X0 BP13-015X0			
BP13-016X0 BP13-018X0 BP13-022X0 BP13-024X0					
BP13-032X0 BP13-036X0 (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.					



6 Test Instruments List

Radi	Radiated Emission (30MHz-300MHz):							
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	9.0(L)*6.0(W)* 6.0(H)	GTS250	Jul. 3 2016	Jul. 2 2021		
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A		
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Jun. 29 2020	Jun. 28 2021		
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Jun. 29 2020	Jun. 28 2021		
5	Double-ridged horn antenna	SCHWARZBECK	9120D	GTS208	Jun. 29 2020	Jun. 28 2021		
6	RF Amplifier	HP	8347A	GTS204	Jun. 29 2020	Jun. 28 2021		
7	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	Jun. 29 2020	Jun. 28 2021		
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
9	Coaxial cable	GTS	N/A	GTS210	N/A	N/A		
10	Coaxial Cable	GTS	N/A	GTS211	N/A	N/A		
11	Thermo meter	KTJ	TA328	GTS256	Jun. 29 2020	Jun. 28 2021		

Radi	Radiated Emissions (9kHz-30MHz) :							
ltem	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	Jul. 3 2016	Jul. 2 2021		
2	EMI Test Receiver	R&S	ESCI 7	GTS552	Jun. 29 2020	Jun. 28 2021		
3	TPIPLE-LOOP ANTENNA	EVERFINE	LLA-2	GTS539	Jun. 29 2020	Jun. 28 2021		
4	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jun. 29 2020	Jun. 28 2021		
5	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun. 29 2020	Jun. 28 2021		
6	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A		
7	Thermo meter	KTJ	TA328	GTS233	Jun. 29 2020	Jun. 28 2021		



Con	Conducted Emission									
ltem	Test Equipment	st Equipment Manufacturer Mo		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	Jul. 3 2016	Jul. 2 2021				
2	EMI Test Receiver	R&S	ESCI 7	GTS552	Jun. 29 2020	Jun. 28 2021				
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jun. 29 2020	Jun. 28 2021				
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun. 29 2020	Jun. 28 2021				
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	Jun. 29 2020	Jun. 28 2021				
6	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A				
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A				
8	Thermo meter	KTJ	TA328	GTS233	Jun. 29 2020	Jun. 28 2021				
9	ISN	EMTEST	FCC-TLISN-T8-02	GTS563	Jun. 29 2020	Jun. 28 2021				

EFT,	EFT, Surge, Voltage dips and Interruption:								
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	EMTEST system	EMTEST	UCS500N	GTS239	Jun. 29 2020	Jun. 28 2021			
2	Thermo meter	KTJ	TA328	GTS233	Jun. 29 2020	Jun. 28 2021			
3	capacitive Clamp	EMTEST	HFK	GTS557	Jun. 29 2020	Jun. 28 2021			

ESD:						
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	ESD Simulator	KIKUSUI	KES4021A	GTS242	Jun. 29 2020	Jun. 28 2021
2	Thermo meter	KTJ	TA328	GTS243	Jun. 29 2020	Jun. 28 2021

Harmonic/ Flicker:									
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	HARMONIC/FLICKER ANALYZER	KIKUSUI	KHA1000	GTS235	Jun. 29 2020	Jun. 28 2021			
2	AC POWER SUPPLY	KIKUSUI	PCR4000LE	GTS236	Jun. 29 2020	Jun. 28 2021			
3	LINE IMPEDANCE NETWORK	KIKUSUI	LIN1020JF	GTS237	Jun. 29 2020	Jun. 28 2021			
4	Thermo meter	KTJ	TA328	GTS256	Jun. 29 2020	Jun. 28 2021			



Conducted Immunity:									
ltem	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)			
1	Signal Generator	SCHLODER	CDG-6000-25	GTS553	Jun. 29 2020	Jun. 28 2021			
2	CDN	SCHLODER	CDN-M2+3	GTS554	Jun. 29 2020	Jun. 28 2021			
3	EM-Clapm	SCHLODER	EMCL-20	GTS555	Jun. 29 2020	Jun. 28 2021			
4	ATT	SCHLODER	ATT-6DB-100	GTS556	Jun. 29 2020	Jun. 28 2021			

Radiated Immunity:									
ltem	Test Equipment	Manufacturer	Model No.	Serial NO.	Cal.Date (mm-dd-yy)	Cal.Due Date (mm-dd-yy)			
1	Signal Generator	Rohde & Schwarz	SMT03	100059	Jan. 16 2020	Jan. 15 2021			
2	Power Amplifier	AR	150W1000	300999	Jan. 16 2020	Jan. 15 2021			
3	Power Amplifier	AR	25S1G4AM1	305993	Jan. 16 2020	Jan. 15 2021			
4	Power Amplifier	AR	150A220M6	305965	Jan. 16 2020	Jan. 15 2021			
5	Broadband antenna	CHASE	CBL6111C	2576	Jan. 16 2020	Jan. 15 2021			
6	Horn Antenna	AR	AT4002A	2783	Jan. 16 2020	Jan. 15 2021			



7 Emission Test Results

7.1 Radiated Emissions (9kHz-30MHz)

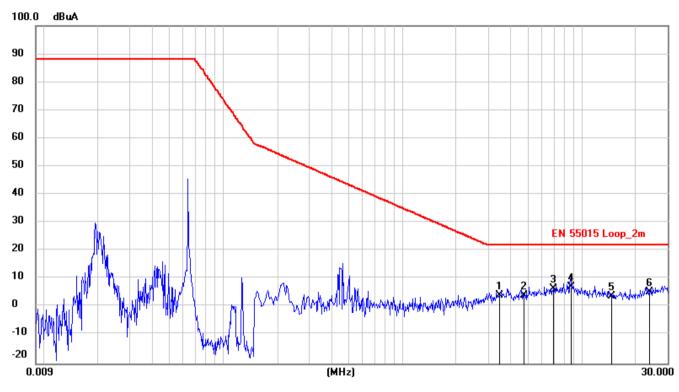
Test Requirement:	EN IEC 55015		
Test Method:	EN IEC 55015		
Test Frequency Range:	9kHz to 30MHz		
Limit:	Frequency range (MHz)	s for loop diameter
	0.000.0.070		dBuA @2m
	0.009-0.070		88 00 to 50*
	0.070-0.150		88 to 58*
	0.15-3.0		58 to22*
	3.0-30		22
	• •	with the logarithm of the	
		· Hz is 58 dB(μA) for 2 r	limit in the frequency range n, 51dB(µA) for 3 m and 45
	Test Receives	Polanization Swatcher Jan Loop Aranaza	
Test procedure		n was performed in the er in peak detection mo	e 2m loop antenna using the ode.
	2. The EUT was me	easured for X(A), Y(B),	Z(C) polarities.
		from the EUT were dete	vere performed since no ected within 6dB of the limit
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	or details.	
Test results:	Pass		



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Measurement Data

Axial: X

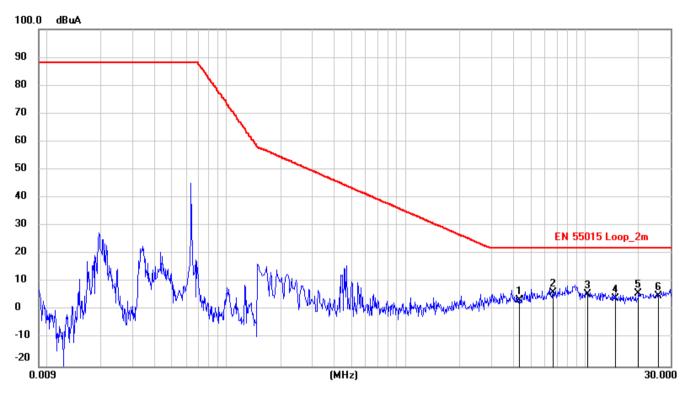


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuA)	dB	(dBuA)	(dBuA)	(dB)	
1	3.4891	-30.45	34.55	4.10	22.00	-17.90	QP
2	4.7581	-30.83	34.92	4.09	22.00	-17.91	QP
3	6.9631	-28.67	35.09	6.42	22.00	-15.58	QP
4	8.6776	-27.84	34.88	7.04	22.00	-14.96	QP
5	14.6491	-30.76	34.66	3.90	22.00	-18.10	QP
6	23.7391	-29.56	35.01	5.45	22.00	-16.55	QP



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Axial: Y

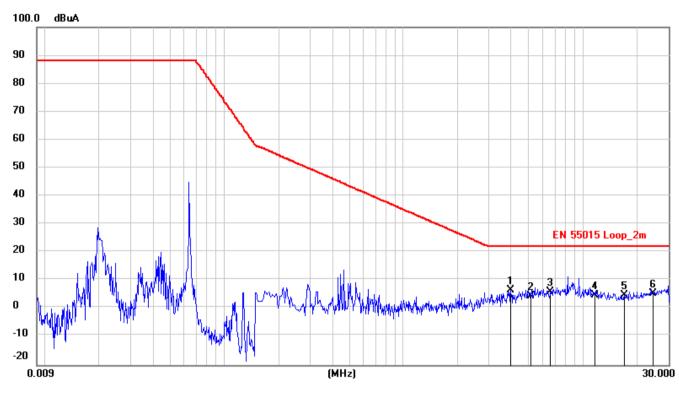


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuA)	dB	(dBuA)	(dBuA)	(dB)	
1	4.3351	-31.37	34.86	3.49	22.00	-18.51	QP
2	6.6751	-28.96	35.09	6.13	22.00	-15.87	QP
3	10.4326	-29.20	34.71	5.51	22.00	-16.49	QP
4	14.8516	-30.47	34.66	4.19	22.00	-17.81	QP
5	19.8466	-28.80	34.69	5.89	22.00	-16.11	QP
6	25.7731	-30.23	35.16	4.93	22.00	-17.07	QP



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Axial: Z



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuA)	dB	(dBuA)	(dBuA)	(dB)	
1	3.9751	-28.30	34.79	6.49	22.00	-15.51	QP
2	5.1450	-30.65	34.99	4.34	22.00	-17.66	QP
3	6.6301	-29.06	35.10	6.04	22.00	-15.96	QP
4	11.6251	-30.05	34.70	4.65	22.00	-17.35	QP
5	17.0296	-29.84	34.67	4.83	22.00	-17.17	QP
6	24.6616	-29.61	35.08	5.47	22.00	-16.53	QP

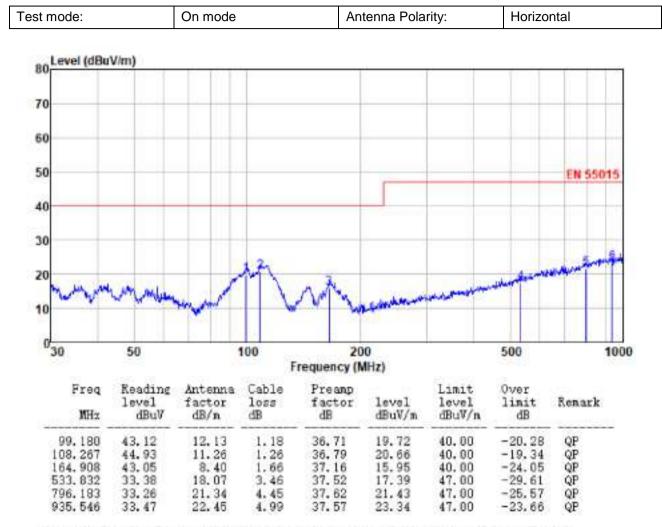


7.2 Radiated Emissions (30MHz-1000MHz)

Test Requirement:	EN IEC 55015				
Test Method:	EN IEC 55015				
Test Frequency Range:	30MHz to 1000MHz				
Measurement Distance:	3m				
Limit:	Frequency rang	ge(MHz)	Limit (dBuV/m)		
	30 to 23	0	40.00		
	230 to 10	00	47.00		
Test setup:					
Test procedure	 chamber. 2. The tabletop EUT the ground referer EUT was placed c separated from mo 0.1m of insulation. 3. Before final measurements. 	was placed upon a no nce plane. And for floor on the horizontal groun etallic contact with the urements of radiated e	ground reference plane by missions, 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 °CHumid.: 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				



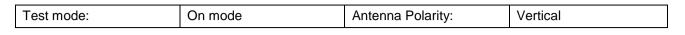
Measurement Data

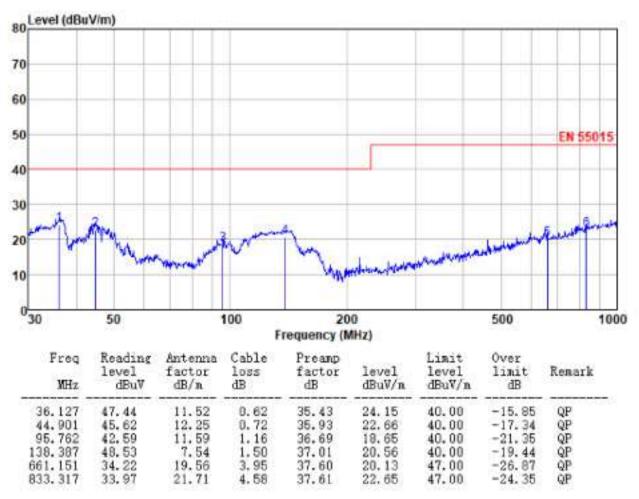


Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor



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Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

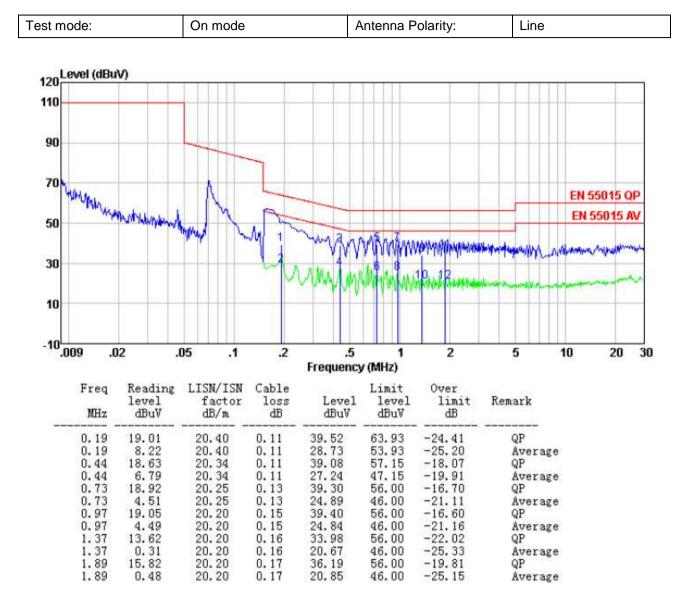


7.3 Conducted Emissions

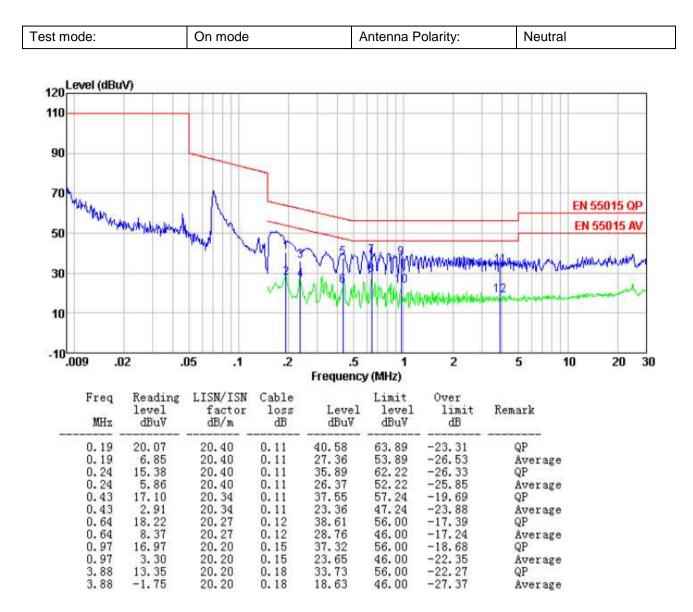
Test Method: EN IEC 55015 Test Frequency Range: 9KHz to 30MHz Limit: Frequency range (MHz) Limit (dBuV) Quasi-peak Average 0.009-0.05 110 - 0.05-0.15 90-80* - 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50 * Decreases with the logarithm of the frequency. Test setup: Reference Plane LISN AUX EUT Estimation plane Filter Filter Estimation plane Filter AC power Filter Test procedure 1. The E.U.T EMI Estimation helwork: Test procedure 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(LLIS.N). The provide a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm 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 c	Test Requirement:	EN IEC 55015						
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: Reference Plane Image: Fundation Feat table/Insulation plane Filter Auxing: Fundation Feat table/Insulation plane Filter Auxing: Fundation Feat table/Insulation plane Fundation Feat table/Insulation plane Fundation Test procedure 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 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm 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	Test Method:	EN IEC 55015						
Frequency range (MHz) 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: Reference Plane LISN 40cm 80cm Filter AC power Receiver E.U.T E.U.	Test Frequency Range:	9kHz to 30MHz						
Test procedure 1 The E.U.T 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: Reference Plane Image: E.U.T E.U.T EVENT E.U.T Test setup: Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Reference Plane Test table/Insultation Network T	Limit:	Frequency range (MHz)	L	_imit (dBu	V)		
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: Reference Plane LISN LISN LISN LISN LISN EUT Evaluation plane Refract: LISN LISN Eutration plane Refract: Eutration plane Refract: Eutration plane Refract: Eutration plane Refract: Evaluation plane Refract: Eutration plane Refract: Eutration Eutration Refract: Eutration Eutration <td colspan="2" e<="" th=""><th></th><th></th><th>1VII 12)</th><th>Quasi-pea</th><th>k</th><th>Average</th></td>	<th></th> <th></th> <th>1VII 12)</th> <th>Quasi-pea</th> <th>k</th> <th>Average</th>				1VII 12)	Quasi-pea	k	Average
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: Reference Plane LISN 40cm 80cm LISN EUT Equipment Linder Test LISN 40cm 80cm Linder Test LISN Equipment Linder Test LISN Equipment Linder Test LISN Line impedence rest LISN Line impedence stabilization network Test procedure 1 The E.U.T and simulators are connected to the main power through a line impedence stabilization network LinsN,). The provide a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refs to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ENS5022 Class B on conducted measurement. Test Instruments: Temp: 25 °C Humid: 50% Press: 1012mbar		0.009-0.05		110		-		
0.5-5 56 46 5-30 60 50 * Decreases with the logarithm of the frequency. Reference Plane Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2" Test setup: Reference Plane Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2" Test setup: Reference Plane Image: Colspan="2">Colspan="2" Reference Plane Image: Colspan="2" Reference Plane Image: Colspan="2" Reference Plane Image: Colspan="2" Reference Plane Image: Colspan="2" Reference EU.T Image: EU.T Image: Colspan="2" Test table/Insulation plane Image: Colspan="2" Test table/Insulation network(L.I.		0.05-0.15		90-80*		-		
5-30 60 50 * Decreases with the logarithm of the frequency. Test setup: Reference Plane Image: transfer the setup of the setup		0.15-0.5		66 to 56*	ŧ	56 to 46*		
* Decreases with the logarithm of the frequency. Test setup: Image: transformed bill of the setup of								
Reference Plane LISN + 40cm 80cm + 1SN + 1SN + 40cm 80cm + 1SN + 40cm + +								
Test procedure 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization Network Test table/lnsulation plane 2. The peripheral devices are also connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 500hm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm 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		* Decreases with the	logarithm	of the frequent	cy.			
Image: August and the system of the syste	Test setup:	Reference Plane						
through a LISN that provides a 500hm/50uH coupling impedance with 500hm 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 °CHumid.: 50%Press.: 1012mbarMeasurement Record:Uncertainty: ± 3.45dB	Test procedure	AUX Equipment Test table/Insulation Remark: E.U.T. Equipment Under Te. LISN: Line Impedence Stable Test table height=0.8m 1. The E.U.T and si a line impedance 50ohm/50uH cou	E.U.T on plane st ilization Nete mulators stabiliza ipling imp	Receiver Nork are connected tion network(L.) bedance for the	to the ma I.S.N.). Th measurin	in power through ne provide a ng equipment.		
Measurement Record: Uncertainty: ± 3.45dB		 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 						
	Test Instruments:	Temp.: 25 °C Humid.: 50% Press.: 1012mbar				012mbar		
Test Instruments: Refer to section 6 for details	Measurement Record:	Uncertainty: ± 3.45dB						
	Test Instruments:	Refer to section 6 for	details					
Test mode: Refer to section 5.3 for details.	Test mode:	Refer to section 5.3 for details.						
Test results: Pass	Test results:	Pass						



Measurement Data









7.4 Harmonics Current Emission

Test Requirement:	EN IEC 61000-3-2			
Test Method:	EN IEC 61000-3-2	EN IEC 61000-3-2		
Frequency range:	100Hz to 2kHz	100Hz to 2kHz		
Measurement Time:	2.5 min	2.5 min		
Class/Severity:	Class C			
Detector:	As per EN IEC 6100	As per EN IEC 61000-3-2		
Test environment:	Temp.:24 °C	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	EN 61000-3-3		
Class/Severity:	Clause 5 of EN 6100	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	Pass		

Measurement Data

	EUT values	Limit	Result
Pst	0.024	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.052	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: ±4kV
	Air Discharge: ±8kV
	HCP/VCP: ±4kV
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point.
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum
Performance Criterion:	В
Test setup:	Eutopolistic Oscharge
Test Procedure:	 Air discharge: 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.



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	4. Indirect discharge	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:

Toot nointe.	I: Metal shell	I: Metal shell				
Test points:	II: Seams					
Direct discharge						
Discharge Voltage (KV)	Type of discharge	Test points	Observations (Performance Criterion)	Result		
± 4	Contact	I	A	Pass		
\pm 2, \pm 4, \pm 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		

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:	Careers Assesting Tower Assesting Towe
Test Procedure:	 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. 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. 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). 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.		
	 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. 		
	 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)		
			V	Frank	A		
			Н	Front	А		
			V	Rear	А		
	Н	1 kHz, 80 % Amp. Mod,	80 % Amp Mod	Н	Real	А	
				80 % Amp Mod H	V	Left	А
	80 MHz-1 GHz 3 V/m 80 % Amp. Mod, 1 % increment, dwell time=3seconds				Н		А
		1 % increment, dwell	V	Right	А		
			time=3seconds	Н	Right	А	
			V	Ton	A		
			Н	Тор	A		
			V	Pottom	А		
			Н	Bottom	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:	В		
Test setup:	EMC Tester EUT 10cm 10		
Test Procedure:	 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. 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.		
	 The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal. 		
	 Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes. 		
	 The length of the signal and power lines between the coupling device and the EUT is 0.5m 		
Test environment:	Temp.: 26 °CHumid.: 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	А	Pass	
N	± 1.0	Direct	А	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:		Test Levels				
	Characteristics	Self-ballasted lamps and semi-	Luminaires and independent auxiliaries			
		luminaires	≤25W	>25W		
	Line to line	±0.5kV	±0.5kV	±1.0kV		
	Line to ground	±1.0kV	±1.0kV	±2.0kV		
		the specified test le ould also be satisfed		test levels as detailed in		
Polarity:	Positive & Negative	9				
Generator source impedance:	2Ω (line-line coupling)					
No. of surges:	5 positive at 90°, 5 negative at 270°					
Performance Criterion:	C					
	80cm Regenoeg					
		ound Reference Plane				
Test procedure	open-circuit co	e coupling mode, pro ondition) and 8/20us r active line / neutral	current surg			
	 At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test. 					
	•	e angles are done i				
	4. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.					
Test environment:	Temp.: 26 °C	Humid.: 5	3%	Press.: 1012mbar		
Test Instruments:	Refer to section 6 f	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	+1	5	60s	90°		Page
L-IN	-1	5	005	270°	A	Pass

Remarks:

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



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 (ur	nmodulated emf into 150) Ω)		
Modulation:	80%, 1kHz Amplitude N	Modulation			
Performance Criterion:	A				
Test setup:	Shielding Room Shed investor Shed investor Amplitur Her-conduined Table Ground Reference Plane Sequent Reference Plane				
Test Procedure:	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 (Su	0% of U_T (Supply Voltage) for 0.5 Periods				
	70 % of U_{T} (Supply Volt	age) for 10 P	eriods		
No. of Dips / Interruptions:	3 per Level					
Performance Criterion:	100% VD	-Performan	ce criterion: I	В		
	30% VD	Performanc	e criterion: C			
Test setup:	EMC Tester EUT					
Test Procedure:	 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					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 % UT	Duration (Periods)	Phase angle	No. of drop out	Time between dropout	Observations (Performance Criterion)	Result
0	0.5	0°,90°,180°,270°	3	10s	А	Pass
70	10	0°,90°,180°,270°	3	10s	В	Pass

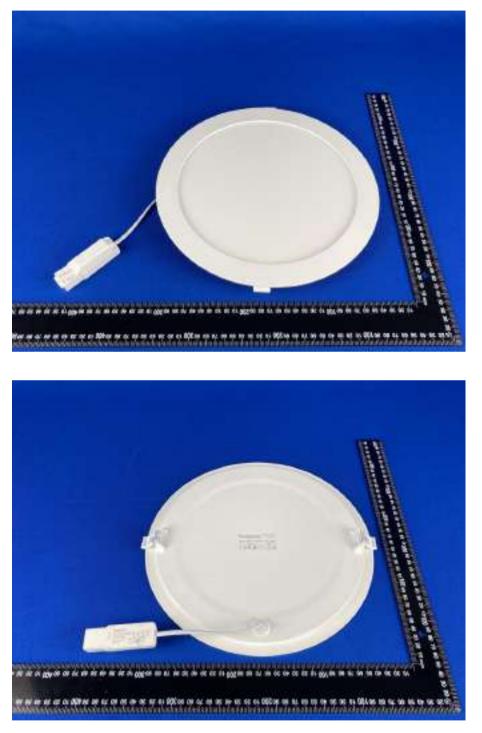
Remark:

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



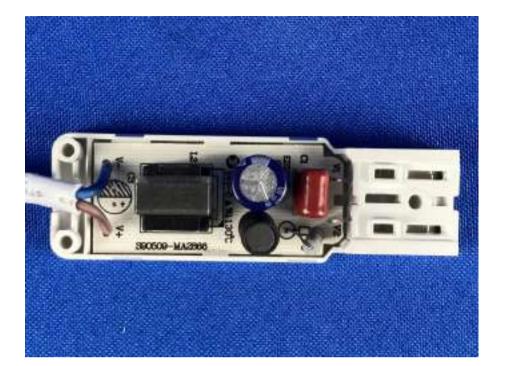
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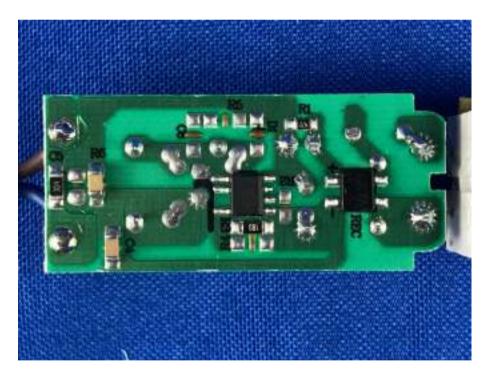
9 EUT Constructional Details



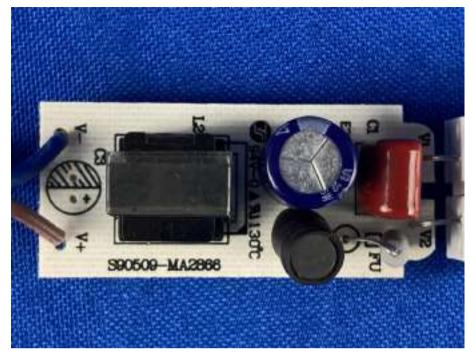


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