

TEST REPORT

Application No.: GZEM1912018062LM
Applicant: Glamor Optoelectronics Technology Co.,Ltd
Address of Applicant: No.3, Guangfeng Industrial Park, West District, Zhongshan City, Guangdong, China
Manufacturer: The same as applicant.
Address of Manufacturer: The same as applicant.
Factory: The same as applicant.
Address of Factory: The same as applicant.
Equipment Under Test (EUT):
EUT Name: LED Strip Light
Model No.: ST2835-180T-X, ST2835-60S-X, ST2835-120S-X, ST5050-60S-X, ST5730-60S-X, ST5730-120S-X, ST2835-120D-X, ST5730-120D-X, ST5730-180T-X, BW2835-60S-X, BW2835-120S-X, BW5050-60S-X, BW5730-60S-X, BW5730-120S-X, BW2835-120D-X, BW5730-120D-X, BW2835-180T-X, BW5730-180T-X (X=1-96, indicate the length of light) □
 □ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s): EN 55015:2013+A1:2015
 EN IEC 61000-3-2:2019
 EN 61000-3-3:2013
 EN 61547:2009
Date of Receipt: 2019-12-30
Date of Test: 2020-01-03 to 2020-02-28
Date of Issue: 2020-03-24

Test Result:	Pass*
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* 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.


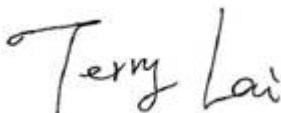


Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-03-24		Original

Authorized for issue by:				
Tested By				2020-01-03 to 2020-02-28
		Allen_Zhou /Project Engineer		Date
Checked By				2020-03-24
		Terry_Lai /Reviewer		Date



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Emissions	EN 55015:2013 +A1:2015	EN 55015:2013 +A1:2015	Clauses 5.1 & 5.2.2 & 5.11	Pass **
Harmonic Current Emission	EN IEC 61000-3- 2:2019	EN IEC 61000-3- 2:2019	Class C	Pass ¹⁾
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Immunity	EN 61547:2009	EN 61547:2009	Clause 6.2 of EN 61547	Pass **

** : Please refer to Section 6.1 & 7 of this report for details.

¹⁾ The EUT passed: Harmonic Current Emission test after modification.



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Declaration of EUT Family Grouping:

Model No.: ST2835-180T-X, ST2835-60S-X, ST2835-120S-X, ST5050-60S-X, ST5730-60S-X, ST5730-120S-X, ST2835-120D-X, ST5730-120D-X, ST5730-180T-X, BW2835-60S-X, BW2835-120S-X, BW5050-60S-X, BW5730-60S-X, BW5730-120S-X, BW2835-120D-X, BW5730-120D-X, BW2835-180T-X, BW5730-180T-X(X=1-96, indicate the length of light)

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the outer appearance and single unit power, amount of LED.

Model	Single unit power(W)	Maximum power(W)	Model	Single unit power(W)	Maximum power(W)
ST2835-180T-X	15	480	BW2835-120D-X	9	480
ST2835-60S-X	5	480	BW5730-120D-X	13	480
ST2835-120S-X	9	480	BW2835-180T-X	15	480
ST5050-60S-X	9	480	BW5730-180T-X	15	480
ST5730-60S-X	9	480	/	/	/
ST5730-120S-X	9	480	/	/	/
ST2835-120D-X	9	480	/	/	/
ST5730-120D-X	13	480	/	/	/
ST5730-180T-X	15	480	/	/	/
BW2835-60S-X	5	480	/	/	/
BW2835-120S-X	9	480	/	/	/
BW5050-60S-X	9	480	/	/	/
BW5730-60S-X	9	480	/	/	/
BW5730-120S-X	13	480	/	/	/

Therefore only one model ST2835-180T-32 was tested in this report.



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4 General Information

4.1 Details of E.U.T.

Power Supply: AC 220-240V 50/60Hz
 Test Voltage: AC 230V 50Hz
 Cable: 2 wires x 1.0m unscreened mains cable

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

EMC

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	±3.63dB (9kHz to 150kHz)
		±3.22dB (150kHz to 30MHz)
2	Disturbance Power	±3.78dB
3	Radiated Emissions	±5.0dB (30MHz-1GHz)
		±5.0dB (1GHz-6GHz)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
 198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
 Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

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

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

The EUT passed: Harmonic Current Emission test after modification.



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5 Equipment List

Harmonic Current Emission					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2019-04-01	2020-03-31
Power Analyzer	California	PACS	EMC0607	2019-04-01	2020-03-31
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
AC Power Source	California	50001iX	EMC0608	2019-04-01	2020-03-31
Power Analyzer	California	PACS	EMC0607	2019-04-01	2020-03-31
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15



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6 Emission Test Results

6.1 Emission Test for EN 55015:2013+A1:2015

Test Requirement: EN 55015:2013+A1:2015

Test Method: N/A: See Remark Below

There is no need for emission tests to be performed on this product in accordance with EN 55015.

For further details, please refer to clause 5.1:

"No emission requirements apply to lamps other than self-ballasted lamps nor to auxiliaries incorporated in luminaires, in self-ballasted lamps or in semi-luminaires.

NOTE – Where in this standard the term 'incandescent lamp' is use, all types of incandescent lamps including halogen lamps are meant"

Or

Clause 5.2.2:

"Incandescent lamp luminaires, where the lamps are a.c. mains or d.c. operated or which do not incorporate a light regulating device or electronic switch, are not expected to produce electro-magnetic disturbance. Therefore they are deemed to fulfil all relevant requirements of this standard without further testing.

NOTE – Where in this standard the term 'incandescent lamp' is use, all types of incandescent lamps including halogen lamps are meant"

Or

Clause 5.11:

LED light sources and associated luminaires that do not contain any active electronic switching components are deemed to comply with the requirements of this standard without further testing.



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6.2 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2:2019

Test Method: EN IEC 61000-3-2:2019

Frequency Range: 100Hz to 2kHz

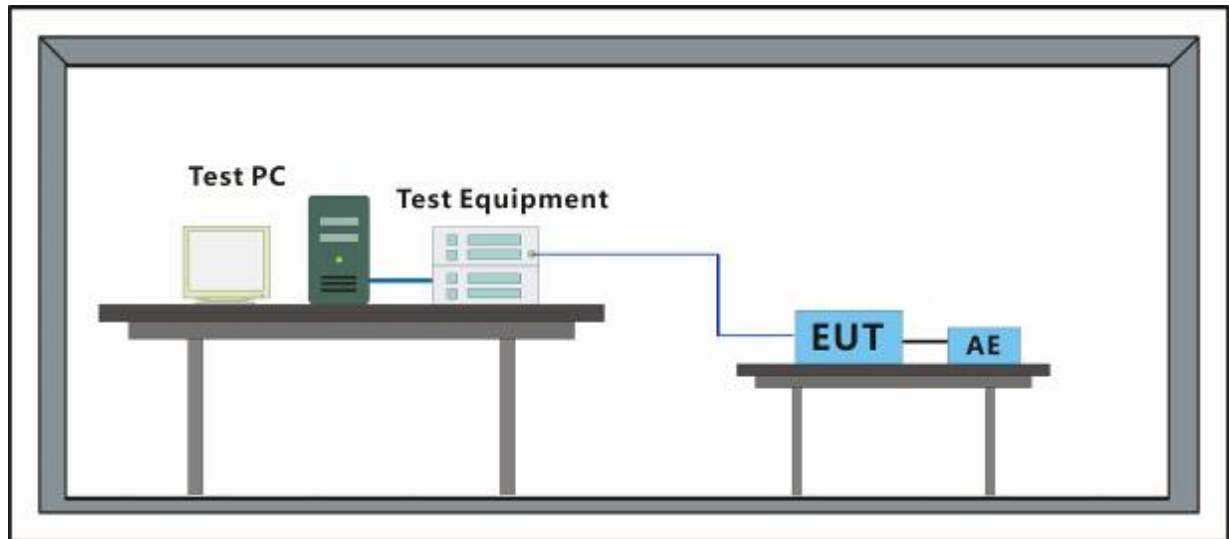
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 53.3 % RH Atmospheric Pressure: 1020 mbar

Test mode a:LED lighting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Mode:a

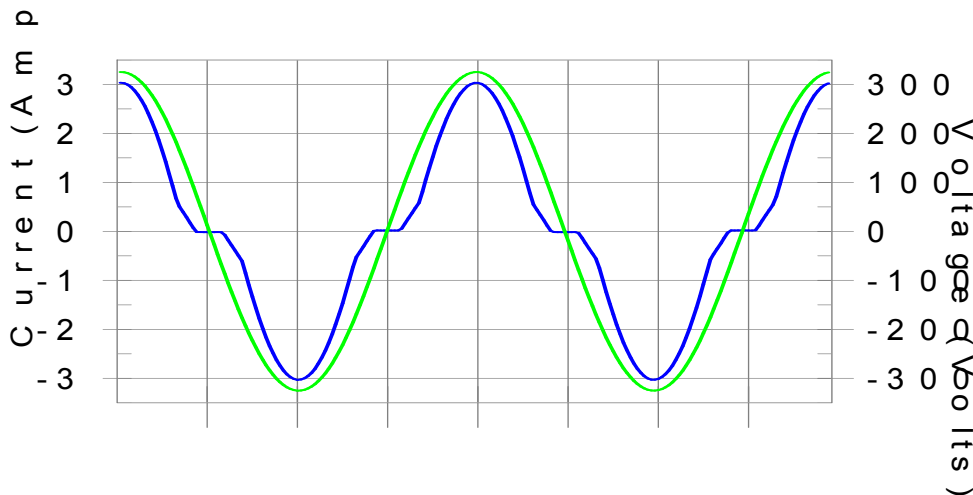
Harmonics – Class-C per Ed. Ed. 5.0 (2018)(Replay)

Test category: Class-C per Ed. 5.0 (2018) (European limits) Test Margin: 100

Test duration (min): 2.5

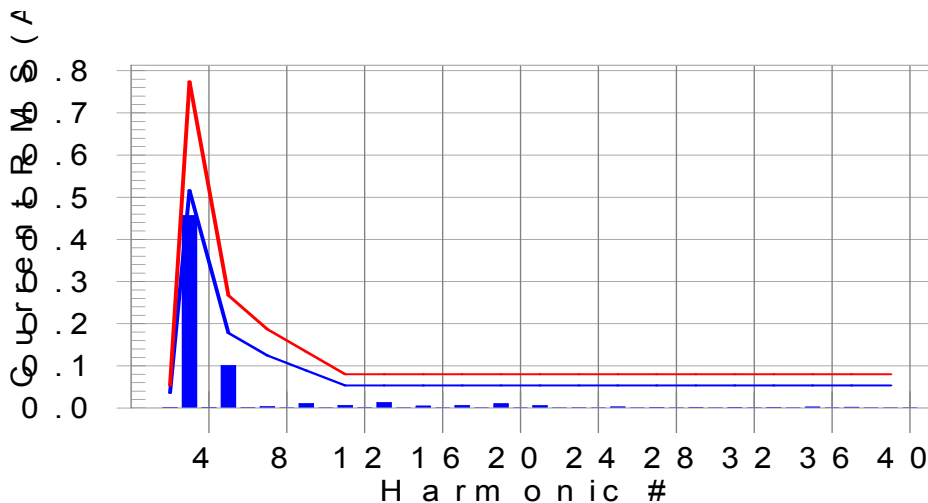
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class C limit line

European Limits



Test result: Pass Worst harmonics H3-59.2% of 150% limit, H3-88.5% of 100% limit



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Current Test Result Summary (Replay)

Test category: Class-C per Ed. 5.0 (2018) (European limits) Test Margin: 100
Test duration (min): 2.5

Test Result: Pass Source qualification: Normal
THC(A): 0.469 I-THD(%): 26.3 POHC(A): 0.008 POHC Limit(A): 0.169

Highest parameter values during test:

V_RMS (Volts):	230.02	Frequency(Hz):	50.00
I_Peak (Amps):	3.037	I_RMS (Amps):	1.841
I_Fund (Amps):	1.781	Crest Factor:	1.651
Power (Watts):	409.5	Power Factor:	0.967

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.036	N/A	0.002	0.053	N/A	Pass
3	0.457	0.517	88.5	0.458	0.775	59.2	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.101	0.178	56.9	0.102	0.267	38.1	Pass
6	0.001	0.000	N/A	0.001	0.000	N/A	Pass
7	0.003	0.125	N/A	0.004	0.187	N/A	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.011	0.089	N/A	0.011	0.134	N/A	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.006	0.053	N/A	0.007	0.080	N/A	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.013	0.053	25.0	0.013	0.080	16.7	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.005	0.053	N/A	0.005	0.080	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.006	0.053	N/A	0.007	0.080	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.011	0.053	N/A	0.011	0.080	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.006	0.053	N/A	0.006	0.080	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.000	0.053	N/A	0.000	0.080	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.003	0.053	N/A	0.003	0.080	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.001	0.053	N/A	0.001	0.080	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.053	N/A	0.001	0.080	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.053	N/A	0.001	0.080	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.053	N/A	0.001	0.080	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.003	0.053	N/A	0.003	0.080	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.002	0.053	N/A	0.002	0.080	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.000	0.053	N/A	0.000	0.080	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.



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6.3 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

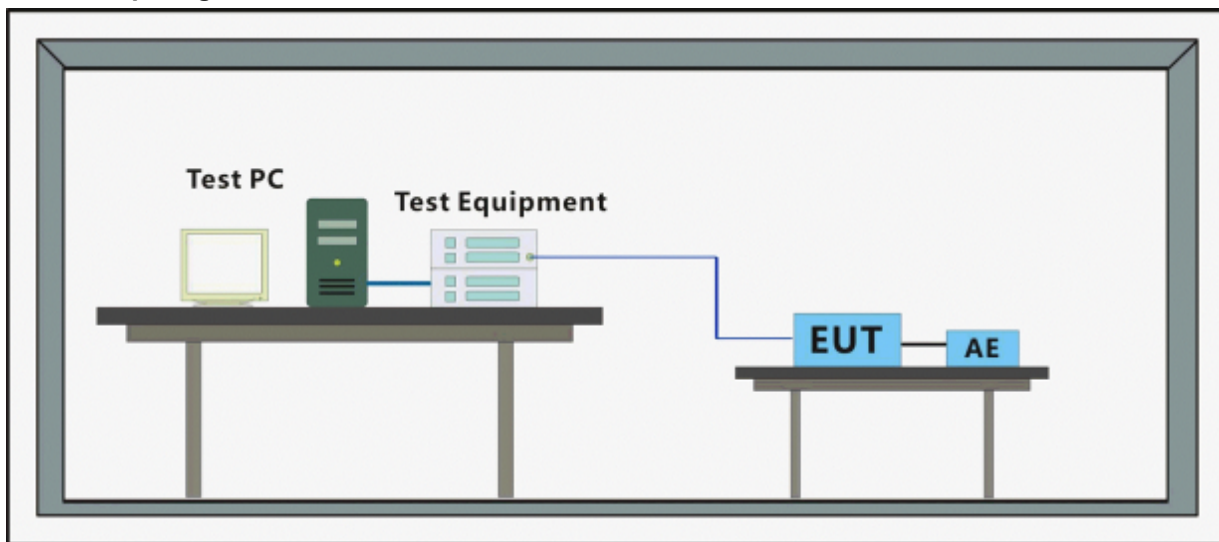
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 53.4 % RH Atmospheric Pressure: 1020 mbar

Test mode a:LED lighting mode.

6.3.2 Test Setup Diagram



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6.3.3 Measurement Data

Mode:a

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

Test category: dt,dmax,dc and Pst (European limits)

Test Margin: 100

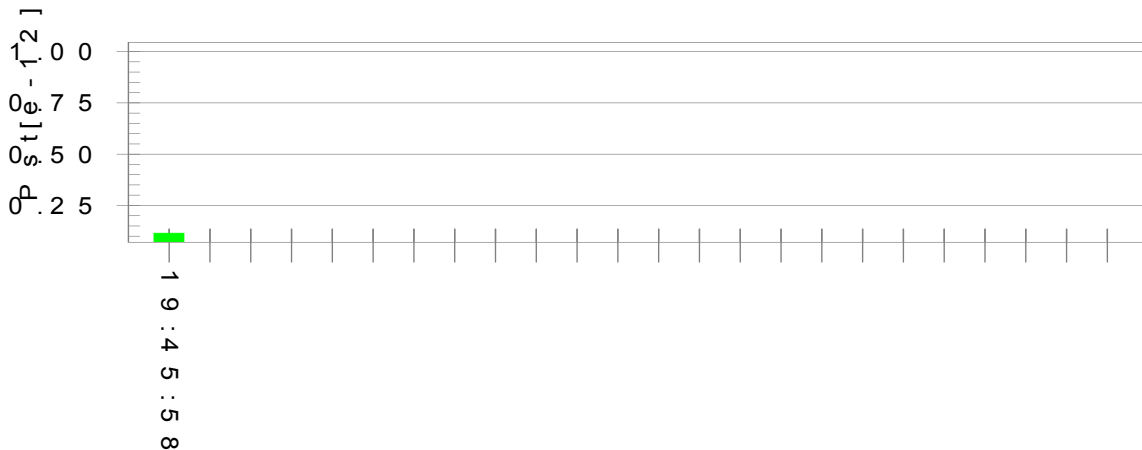
Test duration (min): 10

Test Result: Pass

Status: Test Completed

Pst_i and limit line

European Limits



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.03

T-max (mS): 0

Highest dc (%): 0.39

Highest dmax (%): 0.44

Highest Pst (10 min. period): 0.115

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass



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7 Immunity Test Results

Test Requirement: EN 61547:2009
 Test Method: N/A: See Remark Below

There is no need for immunity tests to be performed on this product in accordance with EN 61547.

For further details, please refer to clause 6.2 of EN 61547 which states:

“Lighting equipment, with the exception of emergency lighting luminaries, in which the light source is mains frequency or battery operated and which does not contain any active electronic component is deemed to fulfil the immunity requirements without testing.”



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8 Photographs

8.1 Harmonic Current Emission Test Setup



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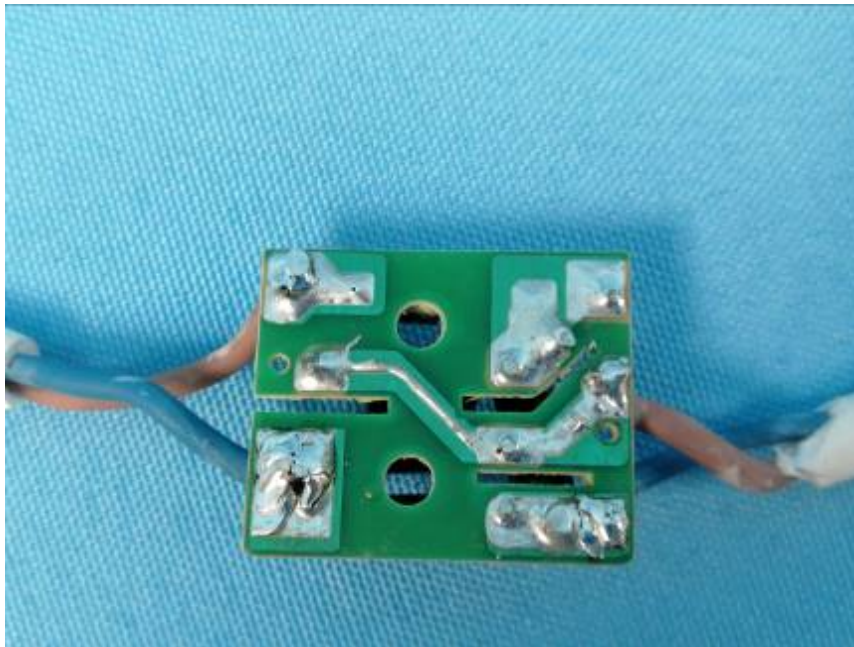
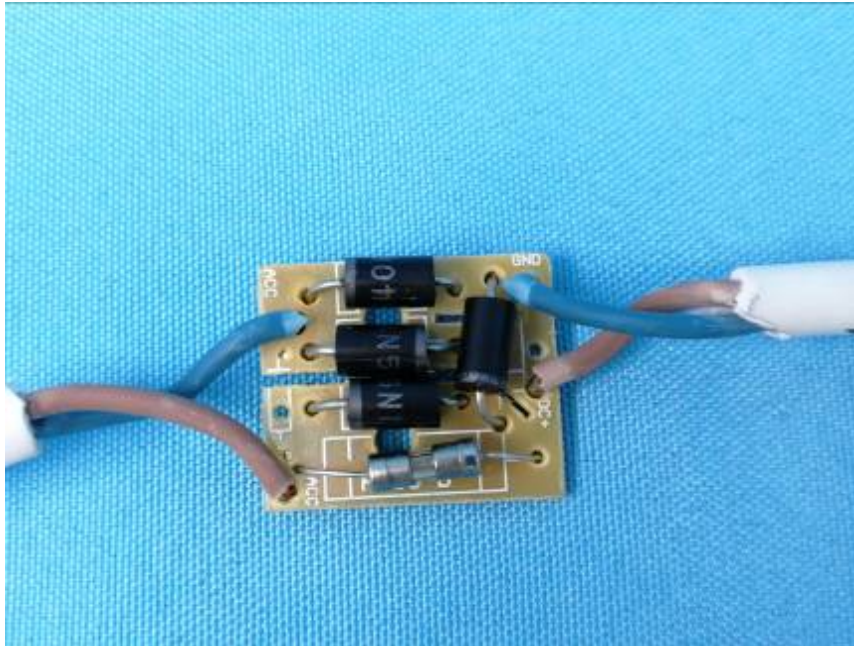
8.2 Voltage Fluctuations and Flicker Test Setup



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8.3 EUT Constructional Details





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--End of Report--