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TEST REPORT

No. 18PBI040241

CUSTOMER

Hess GmbH Licht+Form
Lantwattenstraße 22
D-78050 Villingen-Schwenningen

DEVICE UNDER TEST

EL-U V8447 2x27 740 II O7

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Test centre E&C Testlab GmbH
Industriestrasse 8
78647 Trossingen, Germany

Place of test E&C Testlab GmbH
Industriestrasse 8
78647 Trossingen, Germany

Customer Hess GmbH Licht+Form
Lantwattenstraße 22
D-78050 Villingen-Schwenningen

Customer represented by Mr Schreiner

Device under test EL-U V8447 2x27 740 II O7
(EUT 1- 10)

Serial number 0000 9201 1033 (10 devices)

Status of test item Serial device


Manufacturer Customer

Tested according to Customers information

Date of test 21-02-2018 - 27-02-2018

Test result All performed tests passed

Author


Adrian Werner

Trossingen, 14-03-2018

Authorized reviewer


Jörg Hechenberger

Table of contents

1.	Device under test specifications.....	4
2.	Summary of performed tests and results.....	6
3.	Criteria.....	8
4.	Immunity tests	9
4.1	Harmonic interference	9
4.2	Power Consumption	13
5.	Document History.....	16

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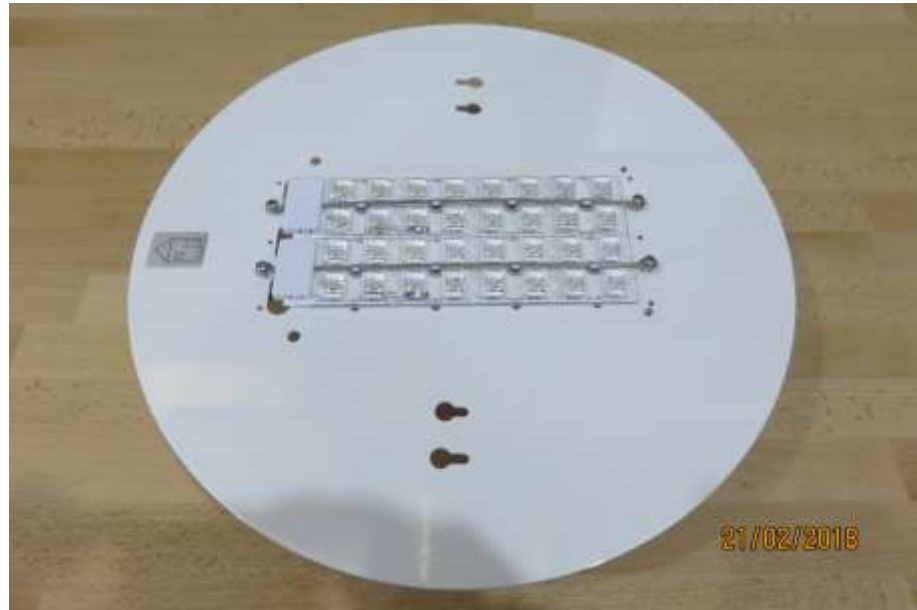
1. Device under test specifications

Type of device:	EL-U V8447 2x27 740 II O7
Functional description:	Street lamp
Power supply:	240 V AC / 50 Hz
Interfaces:	----
Housing:	Metal / Aluminum / ESG glass
Testing state:	in operation with 240 V AC 50 Hz power supply. Warm up period before measurement was min. 2-3 hours

EUT 1:



EUT 2-10:



Type label EUT:



Power adapter:



2. Summary of performed tests and results

Emissions tests	Result
<input type="checkbox"/> Mains terminal interference voltage / current DIN EN 55011: 2011	n/a
<input type="checkbox"/> Radiated electromagnetic field DIN EN 55011: 2011	n/a
<input checked="" type="checkbox"/> Harmonic interference DIN EN 61000-3-2: 2015	Pass
<input type="checkbox"/> Flicker DIN EN 61000-3-3: 2014	n/a
Immunity tests	Result
<input type="checkbox"/> Electrostatic discharge (ESD) DIN EN 61000-4-2: 2009	n/a
<input type="checkbox"/> Radiated, radio-frequency, electromagnetic field DIN EN 61000-4-3: 2011	n/a
<input type="checkbox"/> Electrical fast transient (Burst) DIN EN 61000-4-4: 2013	n/a
<input type="checkbox"/> Surge DIN EN 61000-4-5: 2015	n/a
<input type="checkbox"/> Conducted disturbances, inducted by radio frequency field DIN EN 61000-4-6: 2014	n/a
<input type="checkbox"/> Power frequency magnetic field DIN EN 61000-4-8: 2010	n/a

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<input type="checkbox"/> Voltage dips, short interruptions and voltage variations DIN EN 61000-4-11: 2005	n/a
Power Consumption	Result
<input checked="" type="checkbox"/> Power Consumption EUT	Pass

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3. Criteria

A:

The device shall continue to operate as intended during and after the test. No degradation of performance or loss of functions allowed below the level specified by the manufacturer.

B:

The device shall continue to operate as intended after the test. No degradation of performance or loss of functions allowed below the level specified by the manufacturer. During the test a degradation of performance or loss of functions is allowed. No change of the actual operating state or loss of stored data is allowed.

C:

Temporary degradation or loss of performance is allowed during the test, provided the function is self-recoverable, or can be restored at the end of the test by the operating of the controls.

D:

Permanent degradation or loss of performance is allowed during the test, which is not restored at the end of the test by the operating of the controls.

Customer-specific monitoring criteria see individual measurements on the following pages.

4. Immunity tests

4.1 Harmonic interference

according to DIN EN 61000-3-2: 2015

Environmental conditions

Date of test	Temperature [°C]	rel. Humidity[%]	Air pressure [mbar]
21-02-2018	23.3	18.1	1013.7



Test setup

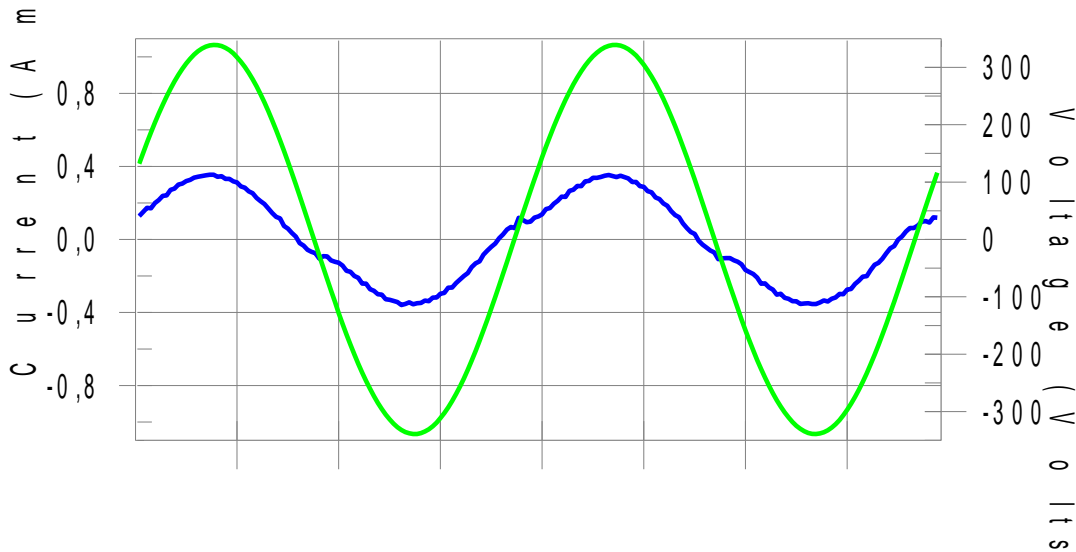
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Harmonics – Class-C per Ed. 4.0 (2014)(Run time)

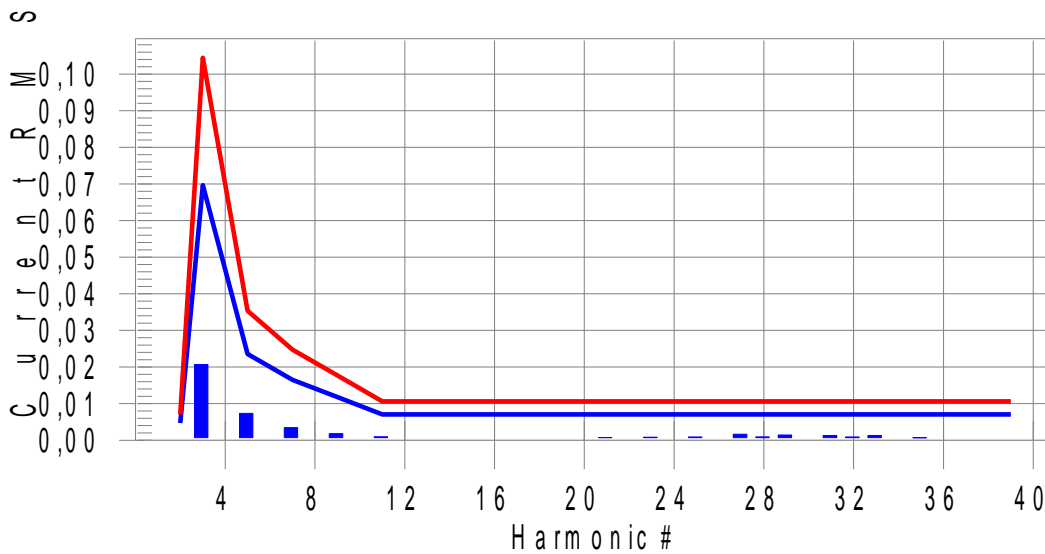
EUT: EL-U V8447 2x27 740 II O7
 Test category: Class-C per Ed. 4.0 (2014) (European limits) Tested by: H. Zecheru
 Test date: 21.02.2018 Start time: 12:16:02 Test Margin: 100
 Test duration (min): 2,5 Data file name: H-002271.cts_data End time: 12:18:44
 Comment: 240 V AC / 50 Hz
 Customer: Hess GmbH Licht+Form

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class C limit line **European Limits**



Test result: Pass Worst harmonics H5-21,4% of 150% limit, H5-31,1% of 100% limit

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Current Test Result Summary (Run time)

EUT: EL-U V8447 2x27 740 II O7 Tested by: H. Zecheru
 Test category: Class-C per Ed. 4.0 (2014) (European limits) Test Margin: 100
 Test date: 21.02.2018 Start time: 12:16:02 End time: 12:18:44
 Test duration (min): 2,5 Data file name: H-002271.cts_data
 Comment: 240 V AC / 50 Hz
 Customer: Hess GmbH Licht+Form

Test Result: Pass Source qualification: Normal
 THC(A): 0,023 I-THD(%): 9,6 POHC(A): 0,003 POHC Limit(A): 0,022

Highest parameter values during test:

V_RMS (Volts): 239,96	Frequency(Hz): 50,00
I_Peak (Amps): 0,680	I_RMS (Amps): 0,237
I_Fund (Amps): 0,236	Crest Factor: 2,885
Power (Watts): 55,9	Power Factor: 0,985

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0,001	0,005	0,0	0,001	0,007	0,0	Pass
3	0,021	0,070	29,8	0,022	0,104	20,7	Pass
4	0,000	0,000	0,0	0,001	0,000	0,0	Pass
5	0,007	0,024	31,1	0,008	0,035	21,4	Pass
6	0,000	0,000	0,0	0,000	0,000	0,0	Pass
7	0,003	0,016	0,0	0,004	0,025	0,0	Pass
8	0,000	0,000	0,0	0,000	0,000	0,0	Pass
9	0,002	0,012	0,0	0,002	0,018	0,0	Pass
10	0,000	0,000	0,0	0,000	0,000	0,0	Pass
11	0,001	0,007	0,0	0,001	0,011	0,0	Pass
12	0,000	0,000	0,0	0,000	0,000	0,0	Pass
13	0,001	0,007	0,0	0,001	0,011	0,0	Pass
14	0,000	0,000	0,0	0,000	0,000	0,0	Pass
15	0,000	0,007	0,0	0,000	0,011	0,0	Pass
16	0,000	0,000	0,0	0,000	0,000	0,0	Pass
17	0,000	0,007	0,0	0,001	0,011	0,0	Pass
18	0,000	0,000	0,0	0,000	0,000	0,0	Pass
19	0,001	0,007	0,0	0,001	0,011	0,0	Pass
20	0,000	0,000	0,0	0,000	0,000	0,0	Pass
21	0,001	0,007	0,0	0,001	0,011	0,0	Pass
22	0,000	0,000	0,0	0,000	0,000	0,0	Pass
23	0,001	0,007	0,0	0,001	0,011	0,0	Pass
24	0,000	0,000	0,0	0,000	0,000	0,0	Pass
25	0,001	0,007	0,0	0,001	0,011	0,0	Pass
26	0,000	0,000	0,0	0,000	0,000	0,0	Pass
27	0,002	0,007	0,0	0,002	0,011	0,0	Pass
28	0,001	0,000	0,0	0,001	0,000	0,0	Pass
29	0,001	0,007	0,0	0,002	0,011	0,0	Pass
30	0,001	0,000	0,0	0,001	0,000	0,0	Pass
31	0,001	0,007	0,0	0,002	0,011	0,0	Pass
32	0,001	0,000	0,0	0,001	0,000	0,0	Pass
33	0,001	0,007	0,0	0,002	0,011	0,0	Pass
34	0,000	0,000	0,0	0,000	0,000	0,0	Pass
35	0,001	0,007	0,0	0,001	0,011	0,0	Pass
36	0,000	0,000	0,0	0,000	0,000	0,0	Pass
37	0,001	0,007	0,0	0,001	0,011	0,0	Pass
38	0,000	0,000	0,0	0,000	0,000	0,0	Pass
39	0,001	0,007	0,0	0,001	0,011	0,0	Pass
40	0,000	0,000	0,0	0,000	0,000	0,0	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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Test Equipment

Geräte-Nr. / Equipment No	Gerät / Equipment	Typ / Type	Bereich / Frequency range	Kalibriert bis / calibrated up to	Serien-Nr. / Serial No.
	Software	Win 2100 V4			
2 10 0159	Netzoberwellenanalysator/ Flicker <i>Harmonics and Flicker analyzer</i>	CCN 1000-1		11.2018	72819
2 10 0160	Spannungsquelle <i>Voltage source</i>	NSG 1007		11.2018	59952

Emission requirements according to DIN EN 61000-3-2 are fulfilled.

Mode

Testing state

Monitoring

By observer

4.2 Power Consumption

Environmental conditions

Date of test	Temperature [°C]	rel. Humidity[%]	Air pressure [mbar]
21-02-2018	23.3	18.1	1013.7



Test setup, with case (EUT 1)



Test setup, without case (EUT 2-10)

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Measurement display of V-A-Hz-W



Measurement display of power factor

Test results

EUT	Supplied voltage [V]	Frequency [Hz]	Measurement power [kW]	Measured current [mA]	Power Factor
1	240	50	0.054	0.236	0.96
2	240	50	0.054	0.237	0.96
3	240	50	0.055	0.238	0.96
4	240	50	0.055	0.237	0.96
5	240	50	0.054	0.236	0.96
6	240	50	0.055	0.237	0.96
7	240	50	0.054	0.235	0.96
8	240	50	0.055	0.237	0.96
9	240	50	0.054	0.236	0.96
10	240	50	0.055	0.237	0.96

Test Equipment

Geräte-Nr. / Equipment No	Gerät / Equipment	Typ / Type	Bereich / Frequency range	Kalibriert bis / calibrated up to	Serien-Nr. / Serial No.
2 10 0159	Netzoberwellenanalysator/ Flicker <i>Harmonics and Flicker analyzer</i>	CCN 1000-1		11.2018	72819
2 10 0160	Spannungsquelle <i>Voltage source</i>	NSG 1007		11.2018	59952

Mode

Testing state

Monitoring

By observer

Remark

EUT 1 was measured with case, the other were measured without case.

Warm up period before measurement was min. 2-3 hours

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5. Document History

Edition	Date	Page	Description of change
	14-03-2018		Test report created
1)			
1)			

1) The new report edition replaces the previous versions and makes it invalid.

- End of the test report -

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