

# TEST REPORT

## No. AI16S0648150-01Rev.1

### SURGE IMMUNITY TEST

performed in accordance with

- IEC 61000-4-5:2005  
 EN 61000-4-5:2006  
 CEI EN 61000-4-5:2007

<b>PRODUCT</b>	LED Luminaire
<b>MODEL TESTED</b>	6999.036.A01
<b>TRADE MARK</b>	NERI
<b>APPLICANT</b>	NERI S.p.A. Via Emilia, 1622 - 47020 Longiano (FC) - Italy

Tested by	Painini P. <i>[Laboratory technician]</i>	
Approved by	Mastrodomenico G. <i>[Laboratory manager]</i>	

#### Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2017-05-12	First edition Digital signed - AI16S0648150-01_TR EN61000-4-5_SURGE_NERI
Release No.	Date	Revision Description
Rev. 1	2017-06-07	First edition Digital signed - AI16S0648150-01_TR EN61000-4-5_SURGE_NERI_Rev.1 The Rev.1 of this test report has been issued on June 07, 2017 to cover different Performance Criteria (B instead of C) on page 9.

## 1. GENERAL DATA

SAMPLE		
Samples received on	2017-05-08	(item sent and sampling by applicant)
IMQ reference samples	<b>BEM</b>	<b>86284</b>
Samples tested No.	1	
Object under analysis recognition	<b>Not carried out</b>	
Remark:	Except where stated, characteristics of products were taken from client description and were not verified by the laboratory	
Date of acceptance of test item	2017-05-08	
TEST LOCATION		
Testing dates	2017-05-10 ÷ 2017-05-10	
Testing laboratory	IMQ S.p.A. - Via Quintiliano, 43 – I – 20138 Milano	
Testing site	Via Quintiliano, 43 – I – 20138 Milano	
ENVIRONMENTAL CONDITIONS		
<i>Parameter</i>	<i>Range</i>	
Ambient Temperature	20 ÷ 25 °C	
Relative Humidity	50 ÷ 60 %	
Atmospheric Pressure	900 ÷ 1000 mbar	
Remark: Our EMC laboratory is monitored by a continuous environmental conditions measurements system. Temperature and humidity data are recorded on a weekly basis and stored in local archive. Pressure is measured by a local sensor.		

## 2. REFERENCE DOCUMENT

	DOCUMENT	DATE	TITLE
<input type="checkbox"/>	IEC 61000-4-5	2005	Electromagnetic Compatibility (EMC) Part 4-5: Testing and measurement techniques Surge immunity test
<input checked="" type="checkbox"/>	EN 61000-4-5	2006	Electromagnetic Compatibility (EMC) Part 4-5: Testing and measurement techniques Surge immunity test
<input type="checkbox"/>	CEI EN 61000-4-5	2 <sup>nd</sup> ed. 2007	Electromagnetic Compatibility (EMC) Part 4-5: Testing and measurement techniques Surge immunity test

### 3. EQUIPMENT UNDER TEST (EUT) DETAILS

MODEL (basic)	Description						
Art. 6999.036.A01	LED street lighting equipment 230V 73W Class II IP66						
	<table border="1"> <thead> <tr> <th>Light source</th> <th>LED</th> <th>LED Driver</th> </tr> </thead> <tbody> <tr> <td>32 LED 3000 K</td> <td>CREE XP-G3</td> <td>Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt</td> </tr> </tbody> </table>	Light source	LED	LED Driver	32 LED 3000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt
	Light source	LED	LED Driver				
32 LED 3000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt					
VARIANTS (derived)	Description						
	<p>The samples mod. 6999.036.A01 have been selected for the tests as it represent the most onerous condition. The evaluation of the luminaires is extended to all the luminaires concerning the series:</p>						
Art. 6999.036.B01	LED street lighting equipment 230V 54W Class II IP66						
	<table border="1"> <thead> <tr> <th>Light source</th> <th>LED</th> <th>LED Driver</th> </tr> </thead> <tbody> <tr> <td>24 LED 3000 K</td> <td>CREE XP-G3</td> <td>Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt</td> </tr> </tbody> </table>	Light source	LED	LED Driver	24 LED 3000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt
	Light source	LED	LED Driver				
24 LED 3000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt					
Art. 6999.036.B02	LED street lighting equipment 230V 48W Class II IP66						
	<table border="1"> <thead> <tr> <th>Light source</th> <th>LED</th> <th>LED Driver</th> </tr> </thead> <tbody> <tr> <td>24 LED 4000 K</td> <td>CREE XP-G3</td> <td>Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt</td> </tr> </tbody> </table>	Light source	LED	LED Driver	24 LED 4000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt
	Light source	LED	LED Driver				
24 LED 4000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt					

<b>Art. 6999.030.Axx</b>	LED street lighting equipment 230V 73W Class II IP66		
	<i>Light source</i>	<i>LED</i>	<i>LED Driver</i>
	32 LED 3000K or 4000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt
xx:= progressive number to identifies different customization like "photometric distribution" or "CCT" or energy saving function not related to immunity of product			
<b>Art. 6999.030.Bxx</b>	LED street lighting equipment 230V 48W Class II IP66		
	<i>Light source</i>	<i>LED</i>	<i>LED Driver</i>
	20 LED 3000K or 4000 K	CREE XP-G3	Philip Xi LP 75W 0.3-1.0A S1 230V S240 sXt
xx:= progressive number to identifies different customization like "photometric distribution" or "CCT" or energy saving function not related to immunity of product			

<b>MANUFACTURER</b>	NERI S.p.A. Via Emilia, 1622 - 47020 Longiano (FC) - Italy
<b>ASSEMBLY PLANT</b>	NERI S.p.A. Via Emilia, 1622 - 47020 Longiano (FC) - Italy

#### EUT IDENTIFICATION

<b>EUT type</b>	Lighting equipment appliance
<b>EUT description</b>	Led Luminaire for road and street lighting
<b>EUT classification</b>	Insulation class II
<b>EUT standing</b>	Fixed, Pole mounting
<b>EUT single or system</b>	Single

#### EUT TECHNICAL DATA

Parameters	Value
<b>Supply Voltage IN</b>	1/N AC 230V
<b>Supply Voltage OUT</b>	/
<b>Frequency</b>	50/60 Hz
<b>Power</b>	73W (art.6999.036.A01)
<b>Ambient rating</b>	/

### EUT CONFIGURATION

The following peripheral devices and interface cables were connected during the measurement: none

Port	Name	Type (*)	Cable max. >3m	Cable Shielded	Comments
0	Enclosure	N/E	—	—	None
1	AC Mains	AC	Yes	No	None
2	DC Mains	DC	—	—	None
3	Load	LP	—	—	None
4	Control	CP	—	—	None

(\*) **Note:** AC = AC Power Port  
DC = DC Power Port  
N/E = Non-Electrical  
LP = Load ports (Not Involved in Process Control)  
CP = Control Ports

### MODE OF OPERATION DURING THE TESTS

Ref.	Mode	Description
<input checked="" type="checkbox"/> #1	Normal operation	LEDs ON

**ELECTROMAGNETICALLY RELEVANT COMPONENTS: /**

## 4. PERFORMANCE CRITERIA

Immunity performance criteria
<p>The test results is classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by the manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.</p> <ul style="list-style-type: none"> <li>A. normal performance within limits specified by the manufacturer, requestor or purchaser;</li> <li>B. temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;</li> <li>C. temporary loss of function or degradation of performance, the correction of which requires operator intervention;</li> <li>D. loss of function or degradation of performance which is not recoverable, owing to damage to hardware or software, or loss of data.</li> </ul>

### EUT PERFORMANCE ASSESSMENT

As declared by manufacturer:

<b>Primary function</b>	The EUT is a LED lighting equipment
<b>Representative parameter</b>	The EUT shall continue to perform as intended
<b>Acceptable level of performance</b>	As standard requirements

## 5. SUMMARY OF TEST RESULTS

POSSIBLE TEST CASE VERDICTS:	
Test object does meet the requirement	PASS
Test object does not meet the requirement	FAIL

PORT	ENVIRONMENTAL PHENOMENON	RESULT
AC mains	Surge immunity test	PASS

## 6. RESULTS

### SURGE IMMUNITY TEST

TEST REQUIREMENT	
Reference standard	EN 61000-4-5
Test set-up	§ 7
IMQ operational instruction	FL-EM80-I08 + FL-EM80-I11
Test procedure	EN 61000-4-5 § 8.2
Deviation to test procedure	None
EUT operating condition	#1, during the test the EUT enclosure was connected to PE (Protective Earth), to simulate the real installation.

art. 6999.036.A01

Port under test	Mode	Test voltage (kV)	Repetition rate	Phase angle	Polarity		Perf. criteria	Results
					+	-		
AC mains	☑ Common L-PE and N-PE	10	1 per minute (5 pulse)	90°	x		B	PASS
				270°		x		
	☑ Differential N-L	6	1 per minute (5 pulse)	90°	x		B	PASS
				270°		x		

#### REMARKS

The tested sample complies with the performance criteria and continues to operate as intended during and after the test.

## 7. MEASUREMENTS AND TESTS UNCERTAINTY

The reported expanded uncertainty are in accordance with IMQ Internal procedure No. IO-80-U01. The expanded uncertainty was calculated for all measurements and tests listed in this test report according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements", with UKAS document LAB 34 and is documented in the quality system accordance to ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device

## 8. MEASUREMENT EQUIPMENT AND INSTRUMENTATION

Surge immunity test			
Instrument	Manufacturer	Model	IMQ Ref.
<input checked="" type="checkbox"/> Surge generator	EMC PARTNER	MIG 1206-1P	S-07044

## 9. PHOTOGRAPHIC DOCUMENTATION

### EUT IDENTIFICATION

EUT



EUT (internal)



**END OF TEST REPORT**