

RTECH-PHOTOMETRY LABORATORY

Testreport : Measurement of luminous intensity distribution related to the standard
NBN-EN 13032-1; CIE 121-1996; IES LM-79-08 and procedures PT-P-01 and PT-P-02
rue de Mons, 3 B-4000 LIEGE - Tel : 04/224.71.40 - Fax : 04/224.25.90
Measurement for Schröder group.

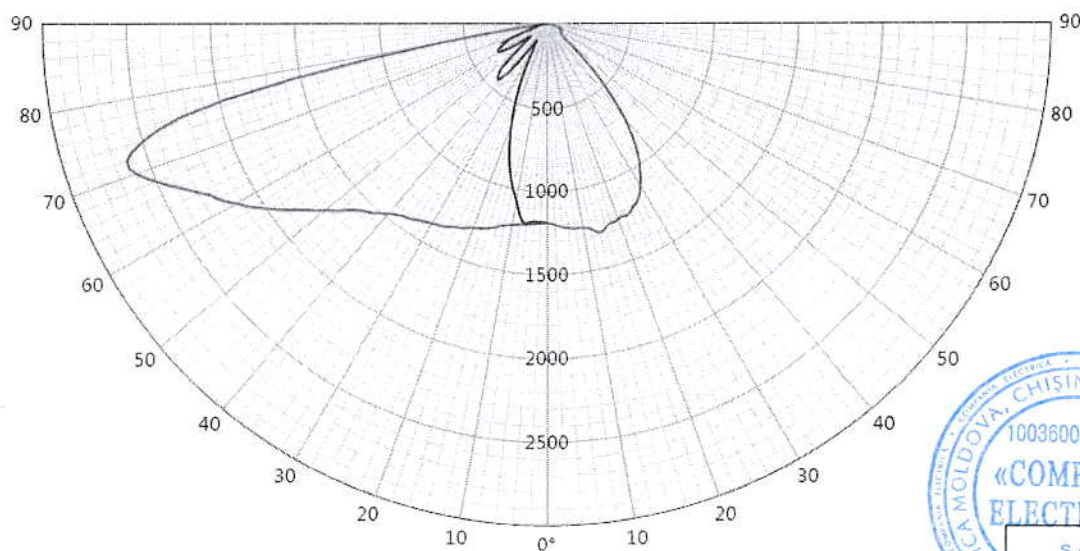
LED

Origin Socelec SA	Production Socelec SA	Luminaire AXIA 2.1	Request # FD36045
Source			
Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT
		# LEDs 24	Reflector 5178
Master		Reflector	
Gaggione Led assembly Road lighting Assembled 0,0°		No	5178
Protector Refractor Lens			
Protector Without protector Lens Gaggione 5178 PC			
Laboratory observation			
Axia 2.1 with 24 Nichia NVSL219CT Mounting screws tightened : 1.5Nm Used flux for efficiency matrix calculation = 4006lm - CCT = 3945K - CRI = 73,19 (see sphere test report 2015/1424 on appendix)			
Purpose DOC		Sample date 30/09/2015	Sample # 35R264
Observation			
Axia 2.1 with lenses 5178			
Flux coefficient multiplicator (only for efficiency matrix): From 350 to 500 mA : 1,373 From 350 to 700 mA : 1,825 From 350 to 1000 mA : 2,428			
Fixture powered with driver OSRAM optotronic OT60/120-240/1A0 4DIMLT2E for matrix @350/500/700mA Fixture powered with driver OSRAM optotronic OT90/120-240/1A0 4DIMLT2E for matrix @1000mA			
Asked by PVN	Measured by CLD	Approved by LME	Appendix 1
		226-TEST NBN EN ISO/IEC 17025 : 2005	
			
		38342	

LUMINOUS INTENSITY DIAGRAM

Origin Socelec SA		Production Socelec SA		Luminaire AXIA 2.1		Request # FD36045	
Source	Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT	# LEDs 24	Reflector 5178	
Reflector	Gaggione Led assembly Road lighting Assembled 0,0°					No 5178	
Matrices	383421 Φ 0-90° = 3620lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Without protector Lens 24 x Gaggione 5178 PC						
Observation	Matrix in total flux @350 mA Electrical measurement on LED (#1) : Voltage = 67,43 V Current = 0,350 A Power = 23,63 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,128 A Power = 27,80 W PF = 0,942 Total luminaire power = 27,80 W : Lm/Watt = 130,21 lm/W Driver #1 : See observations for driver details - Pcb Réf.: 00-17-504-Rev.A						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10	2627	71	G				
90	1283	14	D				
270	1193	6	G				

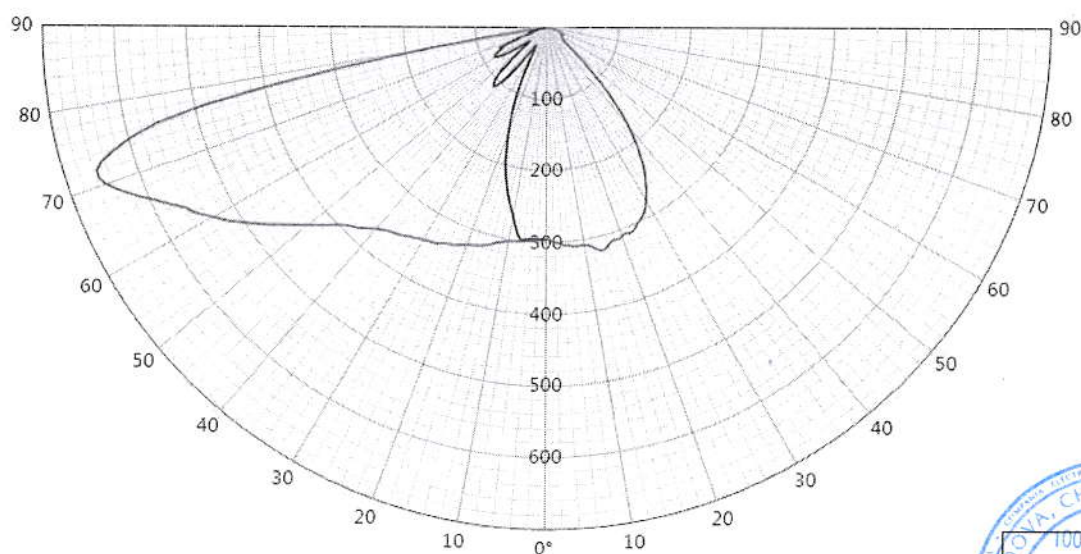


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LUMINOUS INTENSITY DIAGRAM

Origin Socelec SA		Production Socelec SA		Luminaire AXIA 2.1		Request # FD36045	
Source	Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT	# LEDs 24	Reflector 5178	
Reflector	Gaggione Led assembly Road lighting Assembled 0,0°					No 5178	
Matrices	383422 η 0-90° = 90,4% - 90-180° = 0,0%					Relative measurement	
Protector Refractor Lens	Protector Without protector Lens 24 x Gaggione 5178 PC						
Observation	Matrix in efficiency @350 mA Electrical measurement on LED (#1) : Voltage = 67,43 V Current = 0,350 A Power = 23,63 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,128 A Power = 27,80 W PF = 0,942 Total luminaire power = 27,80 W Driver #1 : See observations for driver details - Pcb Réf.: 00-17-504-Rev.A						

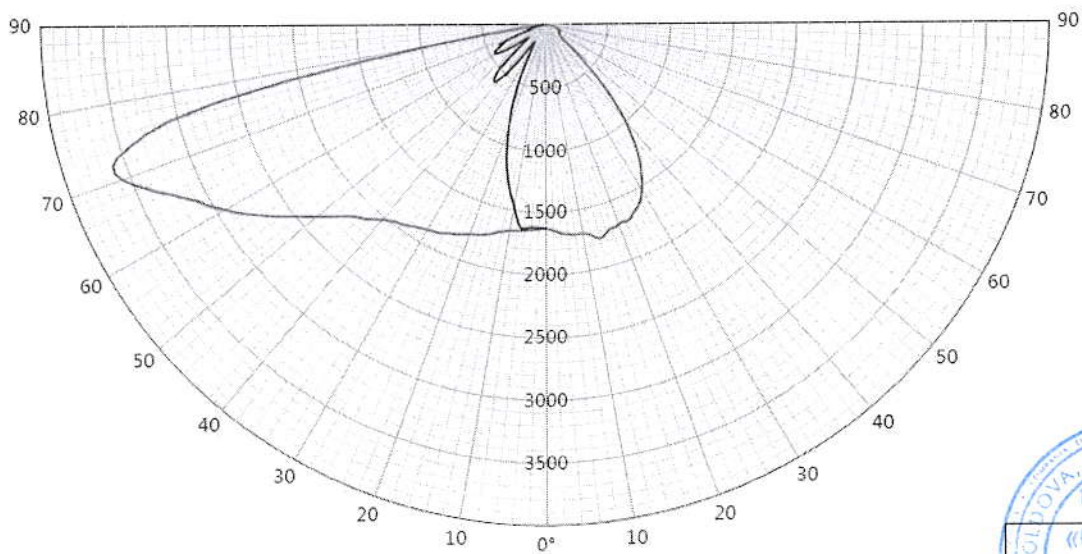
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10	656	71	G	296	25,0°	17/03/2016	
90	320	14	D				
270	298	6	G				



LUMINOUS INTENSITY DIAGRAM

Origin Socelec SA		Production Socelec SA		Luminaire AXIA 2.1		Request # FD36045	
Source	Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT	# LEDs 24	Reflector 5178	
Reflector	Gaggione Led assembly Road lighting Assembled 0,0°					No	5178
Matrices	383423 Φ 0-90° = 4970lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Without protector Lens 24 x Gaggione 5178 PC						
Observation	Matrix in total flux @500 mA Electrical measurement on LED (#1) : Voltage = 68,59 V Current = 0,500 A Power = 34,26 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,175 A Power = 38,85 W PF = 0,965 Total luminaire power = 38,85 W : Lm/Watt = 127,93 lm/W Driver #1 : See observations for driver details - Pcb Réf.: 00-17-504-Rev.A						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10	3607	71	G	1627	25,0°	17/03/2016	
90	1762	14	D				
270	1638	6	G				

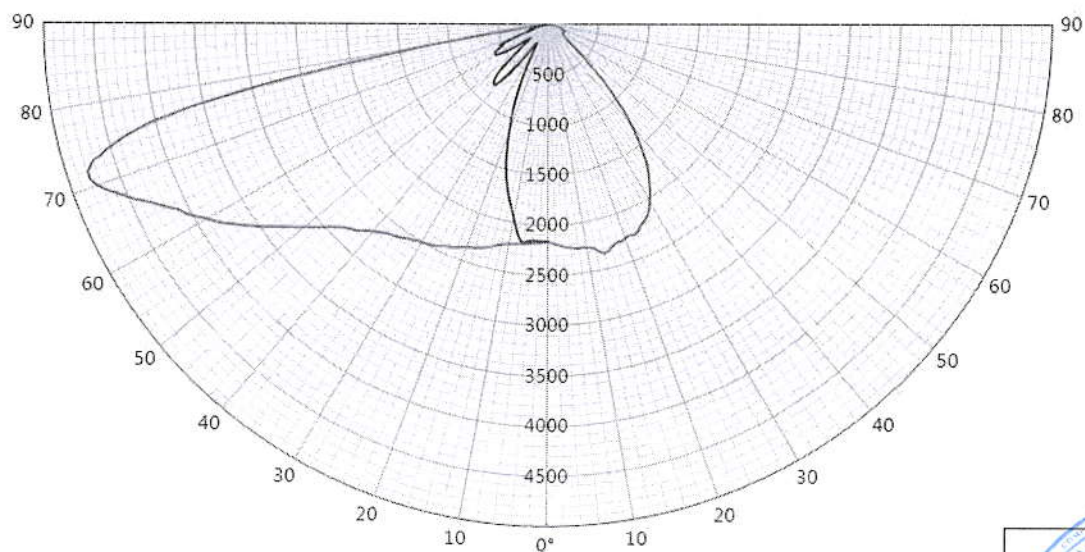


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LUMINOUS INTENSITY DIAGRAM

Origin Socelec SA		Production Socelec SA		Luminaire AXIA 2.1		Request # FD36045	
Source	Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT	# LEDs 24	Reflector 5178	
Reflector	Gaggione Led assembly Road lighting Assembled 0,0°					No 5178	
Matrices	383424 Φ 0-90° = 6606lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Without protector Lens 24 x Gaggione 5178 PC						
Observation	Matrix in total flux @700 mA Electrical measurement on LED (#1) : Voltage = 69,88 V Current = 0,700 A Power = 48,96 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,240 A Power = 54,30 W PF = 0,984 Total luminaire power = 54,30 W : Lm/Watt = 121,66 lm/W Driver #1 : See observations for driver details - Pcb Réf: 00-17-504-Rev.A						

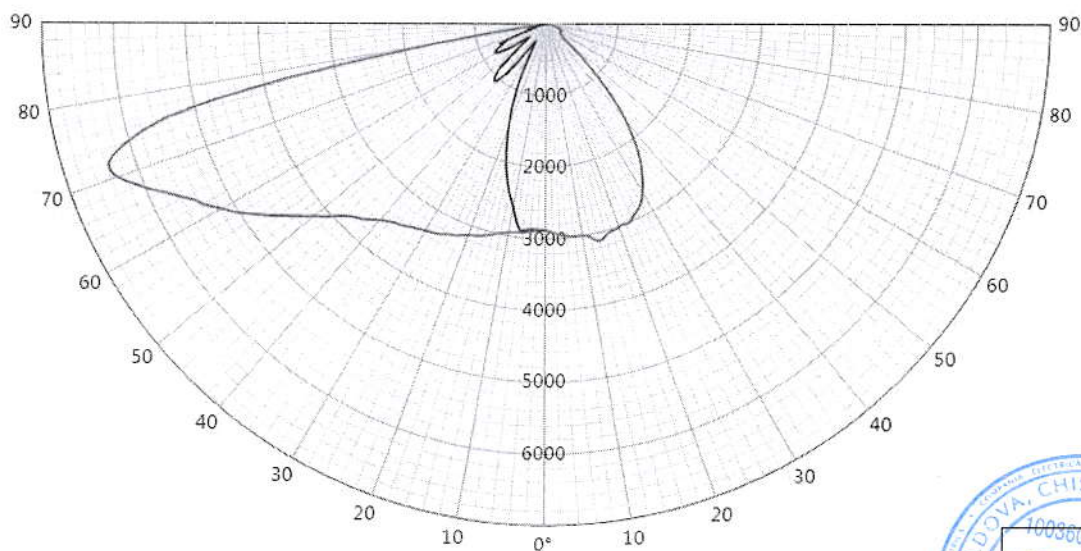
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10	4794	71	G				
90	2341	14	D				
270	2177	6	G				



LUMINOUS INTENSITY DIAGRAM

Origin Socelec SA		Production Socelec SA		Luminaire AXIA 2.1		Request # FD36045	
Source	Type LED	BIN SM405D300R70	Trademark Nichia	Reference NVSL219CT	# LEDs 24	Reflector 5178	
Reflector	Gaggione Led assembly Road lighting Assembled 0,0°					No 5178	
Matrices	383425 Φ 0-90° = 8789lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Without protector Lens 24 x Gaggione 5178 PC						
Observation	Matrix in total flux @1000 mA Electrical measurement on LED (#1): Voltage = 71,36 V Current = 1,000 A Power = 71,36 W Electrical measurement on driver (#1): Voltage = 230,00 V Current = 0,350 A Power = 78,60 W PF = 0,974 Total luminaire power = 78,60 W : Lm/Watt = 111,82 lm/W Driver #1 : See observations for driver details - Pcb Réf.: 00-17-504-Rev.A						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10	6378	71	G				
90	3115	14	D				
270	2897	6	G				



Measurement fulfil Standards:

- NBN-EN 13032-1
- NBN-EN 17025:2005
- CIE 121-1996
- LM79-08

Measurement quantities measured:

- Light distribution in relative or absolute photometry
- Led alone cold lumen package
- Led CCT and CRI
- Power consumption of the fitting
- Lm/watt

Electrical measurement, If not specified:

- Primary values are AC with 50Hz frequency
- Secondary values on SSL are DC

CCT, CRI and chromaticity coordinates: are Measured on sphere.
if specified Main test report refer to sphere extra test report.

Light distribution : are measured on gonio.

Number of hours operated prior to measurement: If no other specified, 0 hours (no aging)

Stabilization time: If no other specified, a minimal stabilization time of 1 hour is applied.

Total operating time of the product including stabilization:

45 minutes have to be added by measurement.

Minimal operating time is 105 minutes

Luminous intensity distribution: available on electronic file with

.mat format (internal schreder format)

.ldt format (European standard)

.IES format (American standard)

Statement of uncertainties (K=2 95% of confidence level):

Intensity measurement: +/- 3%

Angle: +/- 0.5°

Flux: +/- 2.5%

Electrical DC

Power: +/- 0.25%

Voltage: +/- 0.1%

Current: +/- 0.2%

Electrical AC

Power: +/- 0.1%



Voltage: +/- 0.1%
Current: +/- 0.4%
Temperature: +/- 1.5%
CCT: +/- 5%
CRI: +/- 2%
x/y: +/- 2%

Measuring instruments in use:

Gonio

Type C with Moving mirror

Manufacturer: LMT Lichtmesstechnik GmbH Berlin, Helmholtzstrasse 9 10587 Berlin, Germany

Type: GO-DS 2000

Calibration: traceable to PTB (Physikalisch-Technische Bundesanstalt D-Braunschweig)

Photometric test distance : By default 10 meter, on request 30 meter.

Sphere n°1

4p geometry

Manufacturer: LMT Lichtmesstechnik GmbH, Helmholtzstrasse 9 10587 Berlin, Germany

Type: UL2000 + U1000 V-Lambda photometer

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Sphere n°2

4p geometry

Manufacturer: Instrument Systems GmbH, Neumarkter Str. 83, 81673 Muenchen, Germany

Type: ISP2000 + Spectroradiometer CAS120 and CAS140

Calibration: traceable to NIST

Colorimetric portable spectroradiometer

Manufacturer: JETI Technische Instrumente GmbH, Tatzendpromenade 2 07745 Jena

Type: SPECBOS 1201

Calibration: traceable to NIST

Multimeters

Manufacturer: Agilent

Type: 34401A

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Wattmeters

Manufacturer: Yokogawa

Type: WT210

Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Thermometers

Votcraft K101 (Sphere IS2000)

LMT U1000 (Sphere LMT)

Gossen digem f96x48 CK/EK (gonio)

Calibration: traceable to PTB (Physikalisch-Technische Bundesanstalt)

*AK*

LED Flux measurement

FORM-L-41 ED1 REV 0

Date : 20/11/2015

Operator : FC

Filename : 2015_1424.xml



226 - TEST

NBN EN ISO/IEC 17025 : 2005

LEDs

Trademark : Nichia

Entry number : 35R264

Type : NVSL219CT

Power (Catalogue) : 1.01 W

BIN Description : SM405D300R70

Flux : 170 lm/LED

Part number : Unknown

Color or CCT (Theoretical) : NW

Number of LEDs : 24

Lenses

Trademark : None

Type : None

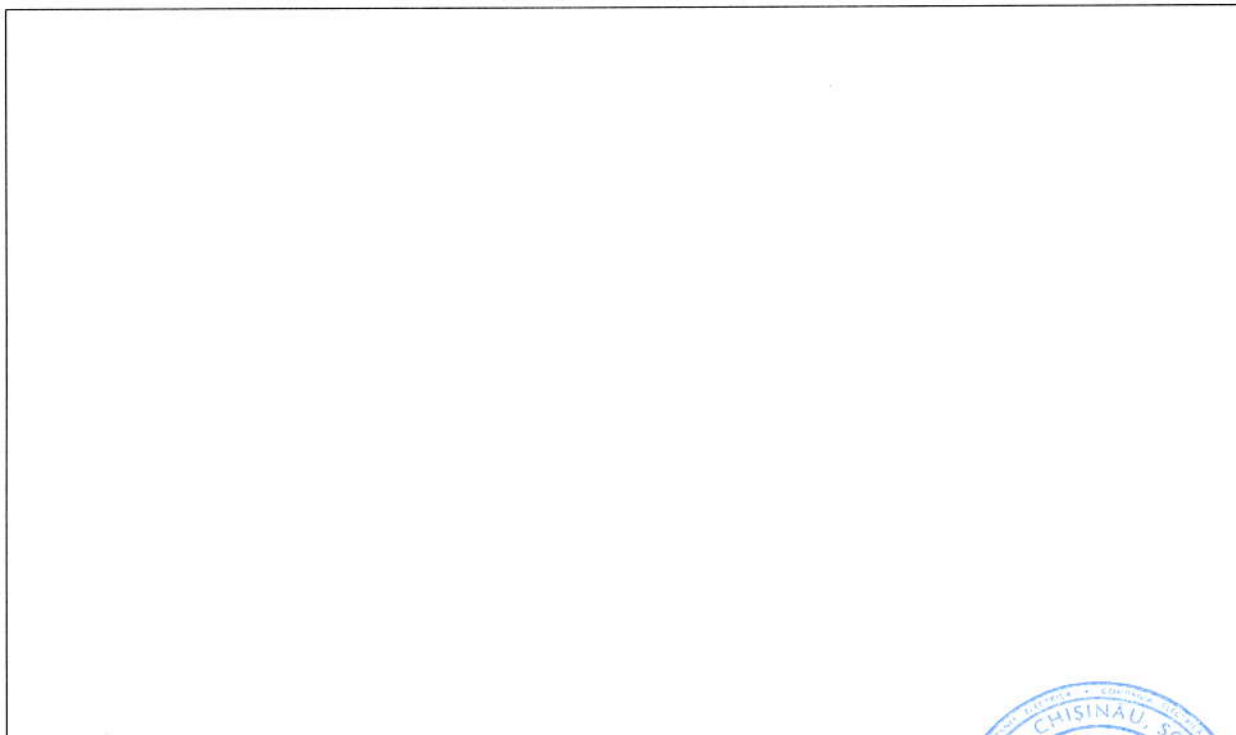
Power & Print

Type : DELTA SM400-AR-4

Print description : 00-17-504 REV.A

Active ☐

Picture



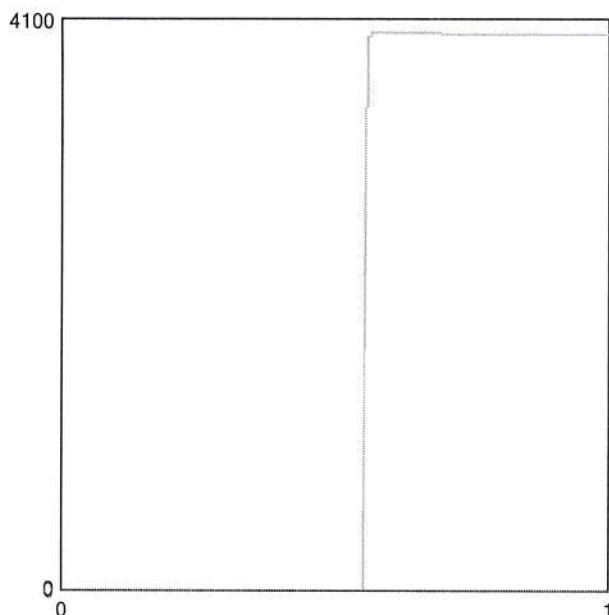
LED 2015/1424 1/3

hR

Sphere photometric measurement

Average flux : lumens

Maximum flux : lumens



Position in sphere :



Electrical measurement

● Secondary electrical measurement

Voltage : **67.74** V

Current : **0.350** A

Power : **23.69** Watt

→ LEDs light efficiency at thermal stabilization :

75.6 lm/W

74.6 lm/Led

→ LEDs light efficiency at 25° :

169.1 lm/W

166.9 lm/Led

● Primary electrical measurement

Voltage : **N/A** V

Current : **N/A** A

Power : **N/A** Watt

Cos ϕ : **N/A**

→ Driver losses : **N/A** %

→ LEDS & Driver light efficiency :

N/A lm/W

Description :

FLux @25°C/350mA - PCB 24 Nichia pour AXIA1 Gen2 - ctr of 2015/1194 + ctr lied to PH37681

Comment :

Approved by :

FORM-L-41 ED1 REV 0



226 - TEST

NBN EN ISO/IEC 17025 : 2005



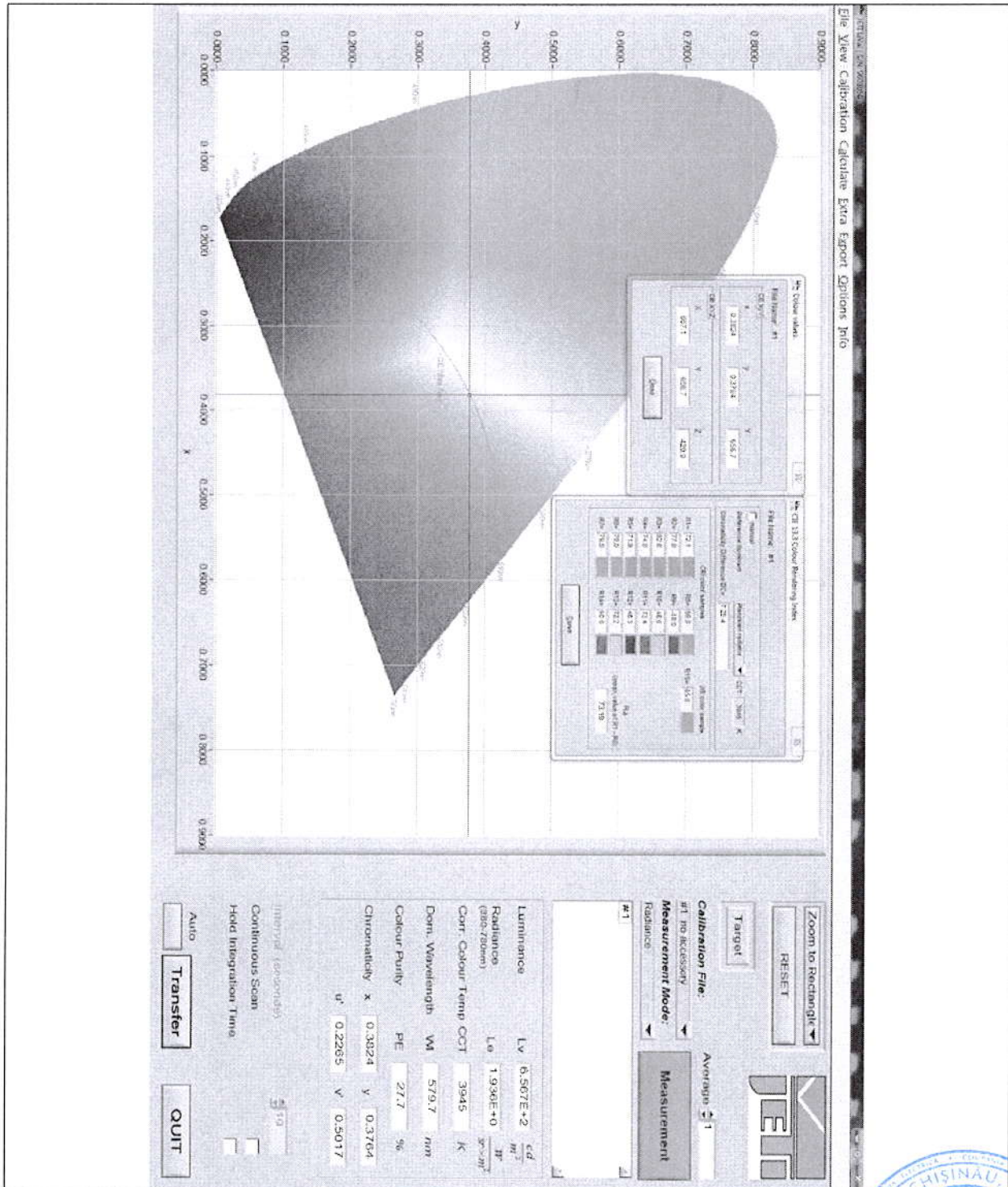
LED 2015/1424 2/3

Colorimetry



226 - TEST

NBN EN ISO/IEC 17025 : 2005



LED 2015/1424 3/3

Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 / 24 led's @ 890 mA

Sample n°: P-E15479

Test purpose: Electrical measurements

Remarks:

Test request n°: P-D15688

Folder n°: P-F15070

TEST CONDITIONS:

Operator: ABRY Marc

Load: 24 led's

Typical Vf: 2,94 V

Driver: OSRAM OPTOTRONIC OT90

Set on 890mA

Owlet: Luco LC-ADP UV1 06C

Surge Protector: CITEL MLPC1-230L-R / SCH

Power Supply:

Elgar Tw 3500-4

Supply voltage: 230 V 50 Hz

Measurement device:

Fluke Norma 4000 (HF Powermeter, User 10, filter OFF)

CONCLUSIONS:

- Efficiency: 90.1 %
- PF: 0.97
- THD: 10.8 %
- Harmonics distribution complies with the IEC/EN 61000-3-2 Standard.

Duplicate to: Mr M. Thijs

LAB 25/09/2015

L. Maghe

//P-15CR688



page 1/1

AENOR

ENEC Certification Body registered under ID # 01. For further information, please consult www.enec.com

LICENCE

to use the European Mark



Licence Nr. ENEC/001028

Under the conditions given in the following pages of this document, the licence to use the ENEC Mark in conjunction with the suffix 01, as shown above, has been issued to:

SCHRÉDER GROUP
RUE DE LUSAMBO, 67
B-1190 BRUXELLES (Belgica Belgium)

For the product(s):

Luminaire for road and street lighting

Trade name(s):

SCHRÉDER

Complying with the following European Standards:

EN 60598-1:2015; EN 60598-2-3:2003;
EN 60598-2-3:2003/A1:2011; EN 62262:2002

Date: 2017-02-01

Signature:

A handwritten signature in black ink, appearing to be 'A. Brito', enclosed within a large, loopy circular flourish.

Name: Avelino Brito

Position: Chief Executive Officer

This licence has been issued under the presumption and conditional on the fact that the licensee holds all necessary legal rights with regard to the product presented for testing and certification.

AENOR INTERNACIONAL, S.A.U.
CI Génova, 6
28004 MADRID (Spain)



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AENOR

CERTIFICADO ENEC DE PRODUCTO



Tipo de producto / Type of Product	LUMINARIA PARA ALUMBRADO PÚBLICO
r1) N° Certificado / Certificate n°	ENEC/001028
r2) Fecha Certificado / Date of the Certificate	2017-02-01
r3) N° de Informe de ensayo / Test report n°	2016050306B1
r4) Nombre y dirección del licenciario Name and address of the licensee	SCHRÉDER GROUP RUE DE LUSAMBO, 67 B-1190 BRUXELLES (Bélgica)
r5) Dirección de la factoría Address of the factory	AV ROANNE 66 - PI EL HENARES 19130 MARCHAMALO (Guadalajara - España)
r6) Referencia de la Norma Española Spanish Standard	UNE-EN 60598-1:2015; UNE-EN 60598-2-3:2003; UNE-EN 60598-2-3:2003/A1:2011; UNE-EN 62262:2002
r7) Referencia de la Norma Europea European Standard	EN 60598-1:2015; EN 60598-2-3:2003; EN 60598-2-3:2003/A1:2011; EN 62262:2002
r8) Referencia / Type reference	Ver Anexo I <i>refer to Annex I</i>
r9) Marca comercial / Trade mark	SCHRÉDER
r10) Tensión y frecuencia asignadas Rated voltage and frequency	230 V-; 50/60 Hz
r11) N° de lámparas x potencia asignada N° of lamps x rated wattage	Ver Anexo I <i>refer to Annex I</i>
r12) Tipo de lámparas y portalámparas Type of lamps and lampholder	LED (module); SMD
13) Grado de protección / Degree of protection (IP)	IP 66; IK 08
r14) Medios de conexión a la red Means for power supply connection	Terminals
r15) Clasif. por material superficie apoyo Class. respect supporting material	Suitable for normally flammable surfaces
r16) Protección contra choques eléctricos (clase) Protection against electric shock (class)	Class I
r17) Limitaciones / Limitations	Horizontal mounting. Fixed to post or arm. Ta max. = 50 °C. Min. clearance to illum. objects: 0,2 m
r18) Características generales / Technical data	AXIA 2.1 Series. Neutral white
Fecha de caducidad / Date of expiry	2021-06-14

Este certificado anula y sustituye al 007/001028, de fecha 2016-06-14.
This certificate supersedes certificate 007/001028, dated 2016-06-14.

Original Electrónico

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.es

Entidad de certificación de producto acreditada por ENAC con n° 01/C-PR275
Product certification body accredited by ENAC, number 01/C-PR275



AENOR

CERTIFICADO ENEC DE PRODUCTO



ANEXO I AL CERTIFICADO ENEC/001028
ANNEX I TO CERTIFICATE ENEC/001028

REFERENCIA <i>Type reference</i>	Nº DE LÁMPARAS X POTENCIA ASIGNADA <i>Nº of lamps x rated wattage</i>
AXIA 2.1 16 LED 21 W Cl. I	16 LED; 21 W; 390 mA
AXIA 2.1 16 LED 26 W Cl. I	16 LED; 26 W; 480 mA
AXIA 2.1 16 LED 32 W Cl. I	16 LED; 32 W; 600 mA
AXIA 2.1 16 LED 36 W Cl. I	16 LED; 36 W; 690 mA
AXIA 2.1 16 LED 40 W Cl. I	16 LED; 40 W; 760 mA
AXIA 2.1 24 LED 38 W Cl. I	24 LED; 38 W; 490 mA
AXIA 2.1 24 LED 41 W Cl. I	24 LED; 41 W; 540 mA
AXIA 2.1 24 LED 48 W Cl. I	24 LED; 48 W; 630 mA
AXIA 2.1 24 LED 53 W Cl. I	24 LED; 53 W; 690 mA
AXIA 2.1 24 LED 57 W Cl. I	24 LED; 57 W; 750 mA
AXIA 2.1 24 LED 68 W Cl. I	24 LED; 68 W; 890 mA
AXIA 2.1 4 LED 10 W Cl. I	4 LED; 10 W; 680 mA
AXIA 2.1 8 LED 13 W Cl. I	8 LED; 13 W; 480 mA
AXIA 2.1 8 LED 19 W Cl. I	8 LED; 19 W; 690 mA
AXIA 2.1 8 LED 22 W Cl. I	8 LED; 22 W; 820 mA

AENOR INTERNACIONAL S.A.U.
Génova, 6. 28004 Madrid. España
Tel. 91 432 60 00.- www.aenor.es

Entidad de certificación de producto acreditada por ENAC con nº 01/C-PR275
Product certification body accredited by ENAC, number 01/C-PR275



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1

Sample n°: P-E16101, P-E16102, P-E16103, P-E16104, P-E16105, P-E16106, P-E16107

Test purpose: Mechanical impact resistance test following IEC/EN 62262 Standard

Remarks:

Test request n°: P-D16158

Folder n°: P-F15070

TEST CONDITIONS:

Operator: LEONARD Philippe

At pendulum hammer

7 impact points distributed on protector surface

One impact on each point

Tests:

IK08 : Impact energy: 5 joules
Hammer weight: 1,7 kg
Height of fall: 29,4 cm

IK09 : Impact energy: 10 joules
Hammer weight: 5 kg
Height of fall: 20 cm

IK10: Impact Energy: 20 joules
Hammer Weight: 5 Kg
Height of fall: 40 cm

Results:

Lens	5165	5166	5167	5177	5178	5179	5187
Level	IK09	IK10	IK09	IK10	IK09	IK08	IK09

CONCLUSIONS:

AXIA 2.1 complies with Mechanical impact resistance test following IEC/EN 62262 Standard, according to levels indicated here above.

Duplicate to: Mr M. Thijs
LAB 09/03/2016
L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 / 24 led's @ 890mA + NEMA 7P – class I

Sample n°: P-E15472

Test purpose: EMC tests according to EN 55015 & EN 61547 Standards

Remarks:

Test request n°: P-D15800

Folder n°: P-F15070

TEST CONDITIONS:

Operator: EMC - ULg

Test Summary

EN 55015 & EN 61547 Standards

Emission

Standard	Limit / Level	Result	
		PASS	FAIL
EN 55015 Conducted Emission 9kHz- 30 MHz		X	
EN 55015 Annex B 30 MHz – 300 MHz		X	

Immunity

Standard	Limit / Level	Result	
		PASS	FAIL
EN 61000-4-5	0.5, 1, 2 & 4 kV M.D. & M.C. Criteria C required	X	

Driver : Osram OT 90/170-240/ 1A0 4DIM LT2 E set 890mA

EMC Auxiliaries: Citel MLPC 1-230L-P/SCH

Luco P7 + Nema Socket

PIR detector

CONCLUSIONS:



AXIA 2.1 24 led's driven by OT90 driver @ 890 mA in class I protection complies with the CISPR/EN 55015 and EN 61547 Standards.

Remark: Surge protection tested OK up to 4 KV for both Common and Differential modes
(Max ULg facilities)

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LAB 05/11/2015

L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 / 24 led's @ 890 mA

Sample n°: P-E15480

Test purpose: Photobiological safety tests following IEC-EN 62471 Standard

Remarks:

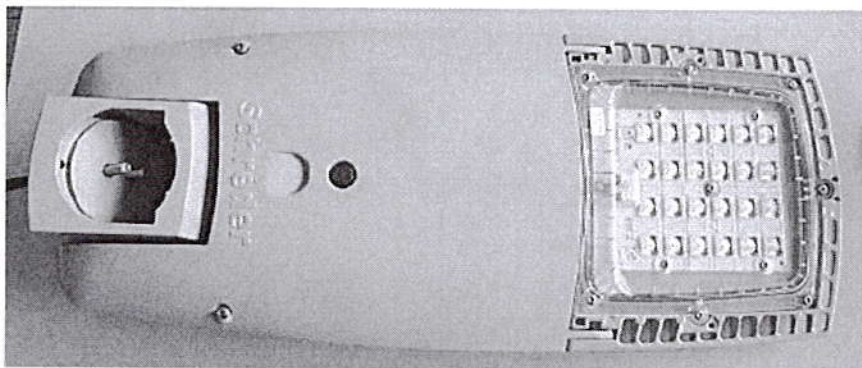
Test request n°: P-D16010

Folder n°: P-F15070

TEST CONDITIONS:

Operator: Laborelec

AXIA 2.1 24 led's NW or WW @ 890 mA



Test program:

Spectral radiance and irradiance measurements of the device under test in the following wavelength ranges:

- 200 to 400 nm : « Actinic UV skin & eye » irradiance
- 315 to 400 nm : « Eye UV-A » irradiance
- 300 to 700 nm : « Blue Light » radiance
- 380 to 1400 nm : « Thermal Retinal » radiance
- 780 to 1400 nm : « Thermal Retinal » radiance (weak visual stimulus)

Determination of the Risk Group classification for each hazard and recommendation about the marking of the product.

CONCLUSIONS:

Fitting is risk Group 2 at 200 mm => moderate risk for maintenance users
 1 at 215 mm => no risk for user
 0 at 2,2 m => no risk for user

Duplicate to: Mr M. Thijs
LAB 20/01/2016
L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 - Side entry configuration for pole Ø 60 mm

Sample n°: P-E15470

Test purpose: Vibration test following ANSI C 136-31 Standard (3G)

Remarks:

Test request n°: P-D16456

Folder n°: P-F15070

TEST CONDITIONS:

Operator: V2i

Testing protocol

ANSI C 136-31 Standard Amplitude: 3,0g	
Test Item	Luminaire for bridge and overpass applications
Excitation Direction	3 directions
Search for frequencies	Excitation: sine sweep Frequency band: 5 - 100 Hz Sweep speed: 1 octave/min. Acceleration: 0.5g
Test	Excitation: sine dwel Frequency: at or near f_0 Amplitude: 3,0g at gravity center Duration: 100,000 cycles
N.B.	A separate sample luminaire may be used for each excitation direction
Search for frequencies	Excitation: sine sweep Frequency band: 5 - 100 Hz Sweep speed : 1 oct/min. Acceleration : 0.5g

CONCLUSIONS:



AXIA 2.1 in Side-Entry configuration for pole Ø 60 mm complies with vibrations test following ANSI C 136-31 Standard (3G).

Duplicate to: Mr Thijs
LAB, 02/08/2016
L. Maghe

//P-16CR456



AXIA 2.1

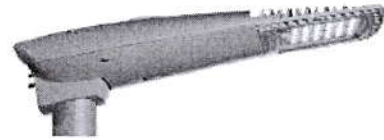
5178

Optic: 5178

Protector: Integrated lenses

Source: 24 Nichia NVSL219CT

Matrix: 383422



Features

Comprehensive LED lighting for road & urban applications

- Energy savings of up to 75% compared with traditional light sources
- Cost-effective and efficient lighting solution for a fast return on investment
- Designed to incorporate Owllet range of control solutions: stand-alone (PIR, photocell...), autonomous network and interoperable network
- Integrated lenses for performing photometry adapted to various applications
- ThermiX® and LEDSafe® for long lasting performance
- IP 66 tightness level
- FutureProof : smart upgradability
- 2 sizes for flexibility
- Surge protection 10kV
- Universal fixation

Types of application

- Squares and pedestrian areas
- Parks
- Pedestrian crossings
- Roads and highways
- Railways stations and metros
- Urban roads and streets
- Bridges
- Roundabouts
- Car parks
- Residential streets
- Bike paths

Information for 1000 lm matrix

Efficacy (%): 90.4	G Class (EN 13201-2): G1
ULOR (%): 0.0	Imax (cd): 656
DLOR (%): 90.4	Aperture 0-180°: 24 - 24
UWLR (%): 0.0	Aperture 90-270°: X - X
	I 70-80-90-95 (cd): 649 - 199 - X - X



Summary

CONCEPT

Luminaire specifically designed for LEDs

Recommended installation height: between 5-8m for AXIA 2.1 and 6-10m for AXIA 2.2

For optimal heat dissipation, the driver and LED engine are in separate compartments and juxtaposed in a horizontal section

HOUSING & FINISH

- Housing in high-pressure, die-cast aluminium, polyester powder coated, with a flat area for a photoelectric cell.
- Housing is surrounded by lateral cooling fins for optimal heat extraction.
- Colour: RAL grey 7040 or black RAL 9005.

INSTALLATION

- Incorporated universal fixation with adjustable inclination in 2.5° steps
- Fixation with tiltable clamp and 2 Allen grub screws M8x45 in stainless steel
- Post-top 48-60mm and 76mm spigot at 5° inclination, allows tilt on a vertical pole from 0 to +10° by 2.5° steps
- Lateral mounting on 32 (with sleeve), 42, 48 or 60mm spigot at 0°, allows tilt on horizontal spigot from +5° to -10° by 2.5° steps
- Cover opens via 2 stainless screws positioned on the lower side of the housing to prevent dirt and corrosion build up

OPTICAL UNIT

- Flatbed PCB with polycarbonate lens overlay principle offering various photometric distributions from narrow, medium to wide road; the IP 66 level allows long lasting performance
- CRI > 70
- ULOR: 0%
- Lifetime residual flux @ Tq=25°C @ 100.000 hrs: 90%

ELECTRICAL

- Class I or Class II (size 2 only)
- Input voltage: 230V ± 10% - 50-60Hz
- Power factor > 85% at full load
- 10kV, 10kA surge protection

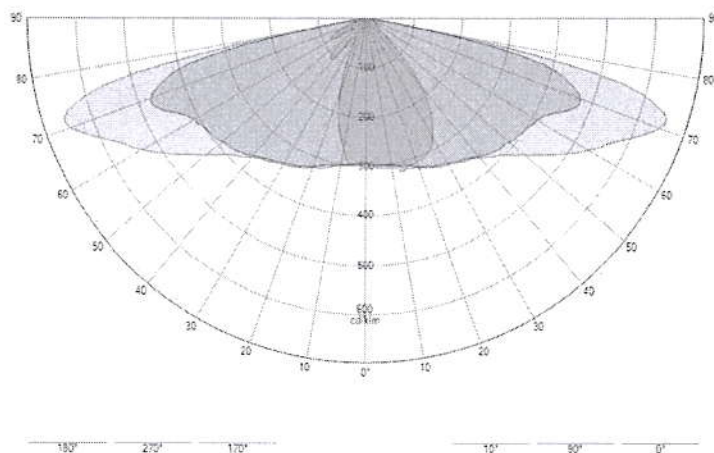
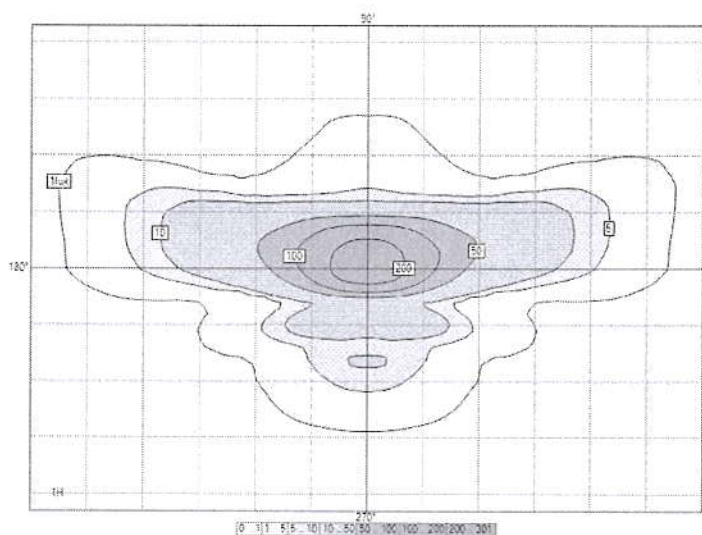
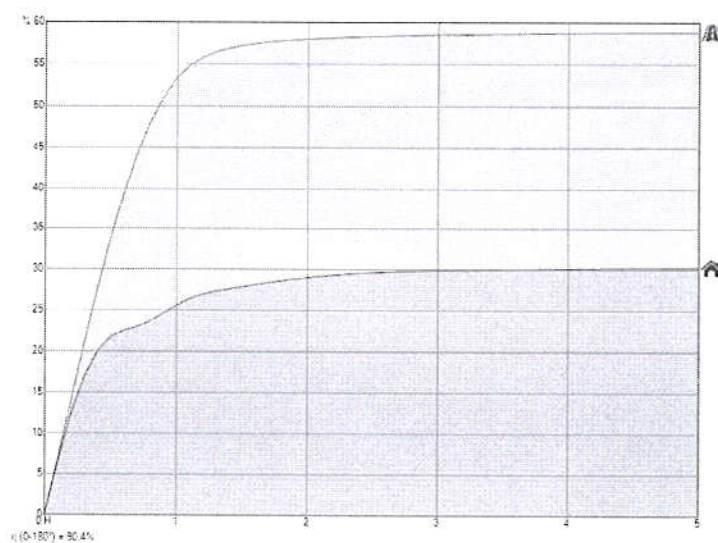
STANDARDS & CERTIFICATIONS

- CE
- ENEC
- LM79-80
- ROHS
- All measurements in ISO17025 accredited laboratory

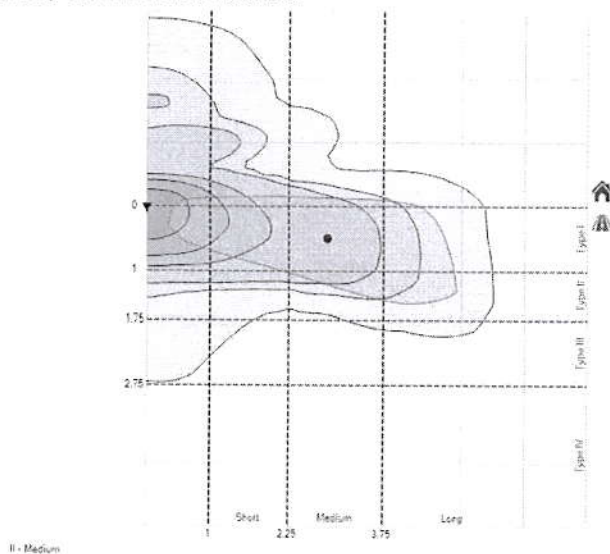
OPTIONS

- Other RAL or AKZO colours
- Owllet remote management
- Custom dimming profile; Constant Light Output (CLO); Dali; 0-10V
- Photocell
- Presence detection
- External light control louvres
- Supplied pre-cabled for easy installation

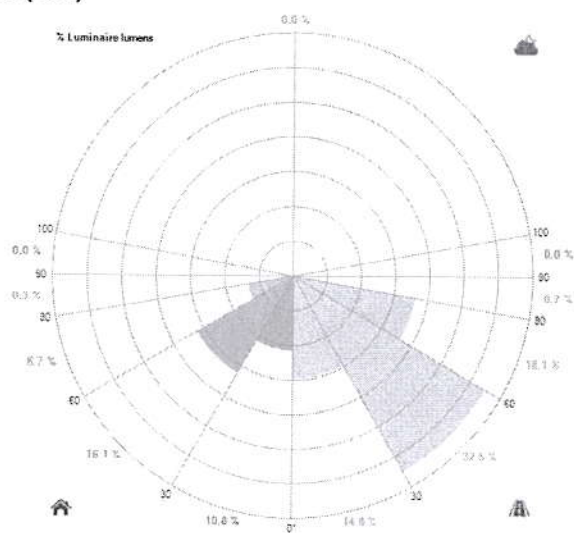


Polar/Cartesian diagram

Isolux

K-Curve


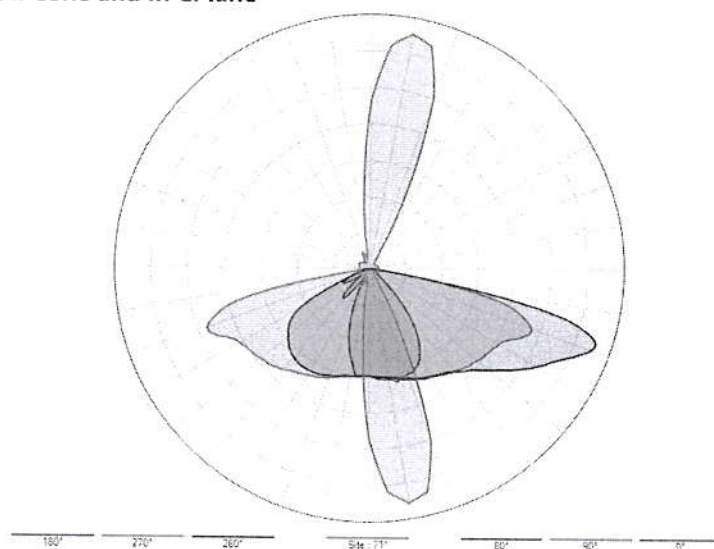

IES Roadway Classification / Nema Classification



Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 / 24 led's @ 890mA + Photocell 20 mm HL

Sample n°: P-E15476

Test purpose: Tightness test IP66 following IEC/EN 60598-1 Standard

Remarks:

Test request n°: P-D15792

Folder n°: P-F15070

TEST CONDITIONS:

Operator: BOMBIL Patrick

Preconditioning: endurance test

Test	Result
IP6X : -Luminaire switched ON until stable T° -Talcum in suspension (blowing ON) -After 1', luminaire OFF -Talcum for 3 hours	OK
IPX6 : - Luminaire switched ON until stable T° - Luminaire switched OFF and immediately sprayed with water jet - Hose Φ 12,5 mm - Water pressure: 1 kg/cm ² - Spraying distance: 3 m - Duration of test: 3 minutes	OK

CONCLUSIONS:



AXIA 2.1 / 24 led's @ 890mA + Photocell 20 mm HL complies with IP66 test following IEC/EN 60598-1 Standard.

Duplicate to: Mr M. Thijs

LAB 05/11/2015

L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1

Sample n°: P-E15481

Test purpose: Vibration test following "Street Lighting Luminaires" testing protocol

Test request n°: P-D15748

Folder n°: P-F15070

TEST CONDITIONS:

Operator: V2i

Testing protocol	
	"Street Lighting Luminaires" testing protocol
Test Item	Post-top and Side-entry Luminaire
Excitation Direction	3 directions
Search for frequencies and quality factor Q	Excitation: sine sweep Frequency band: 5 - 55 Hz Sweep speed: 1 octave/min. Acceleration: 0.5g
Test	Q < 2 (no natural frequency) Excitation: RANDOM (*) Frequency band: 5 - 55 Hz Acceleration: 0.84g _{RMS} Duration: 1h
	Q > 2 Excitation: sine dwell Frequency: f ₀ (Q _{max}) Acceleration: 0.5g Duration: 30 minutes
	Search for frequencies and quality factor Q Excitation: sine sweep Frequency band: 5 - 55 Hz Sweep speed: 1 octave/min. Acceleration: 0.5g
(*) The RANDOM equivalent test consist in an accelerated ageing process of one hour which presents, on a reference one-degree-of-freedom system, an equivalent fatigue damage spectrum than 20 years of mean wind and 90 hours of storms.	

CONCLUSIONS:



AXIA 2.1 complies with vibrations test "Street Lighting Luminaires" testing protocol.

Duplicate to: Mr M. Thijs

LAB 14/10/2015

L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1

Sample n°: P-E15474

Test purpose: Aerodynamic wind test

Remarks:

Test request n°: P-D15749

Folder n°: P-F15070

TEST CONDITIONS:

Operator: ULg – CAT Soufflerie

2 tests realized:

- 1) Aerodynamic Coefficient determination
- 2) Endurance test

1) Aerodynamic coefficient determination

<u>Wind Direction</u>	<u>Value (m²)</u>		
	<u>Cd.S (drag)</u>	<u>Cs.S (Side)</u>	<u>Cl.S (Lift)</u>
Front 0°	0,012	0,002	0,010
Front 15°	0,025	0,007	0,054
Side	0,037	0,005	0,028

2) Endurance test: wind qualification test

Wind direction: Front 15°

Wind resistance: 10' at 188 km/h

Result: OK

CONCLUSIONS:



AXIA 2.1 satisfies the wind speed test 188 Km/h for 10 minutes.

See Aerodynamic coefficients here above.

Duplicate to: Mr M. Thijs

LAB 26/01/2016

L. Maghe



Laboratory Service PHYSICAL TEST REPORT



R-Tech
Rue de Mons 3 – B-4000 Liège – Belgium
Tel.: +32 4 224 71 40 – Fax: +32 4 224 25 90
Member of Schröder Group

Subject: AXIA 2.1 / 24 led's @ 890 mA

Sample n°: P-E15479

Test purpose: Thermal test evaluation following IEC/EN 60598-1 Standard

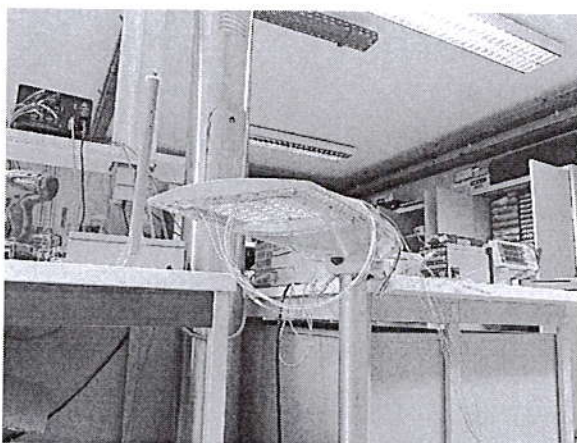
Remarks:

Test request n°: P-D15687

Folder n°: P-F15070

TEST CONDITIONS:

Operator: ABRY Marc



Load: 24 led's

Driver: OSRAM Optotronic
OT90/170-240/1A0 4DIM LT2 E
Set on 890mA
Tc 90°C

OWLET: LUCO LC-ADP UV1 06C
Ta -40/+80°C

SPD: CITEL MLPC1-230L-R / SCH

Measurement device:

Yokogawa TX10: thermal measurement

Yokogawa WT 210: primary EM

Fluke 87: secondary & Led EM

Junction Temperature measurement method

Junction temperature measurement by base temperature measurement and electrical measurement.

$$T_j = T_b + R_{jb} \times P_{led}$$

CONCLUSIONS:

Ta (IEC): 55 °C limited by Driver

Tq (IEC): 35 °C limited by Driver

Tq given for 85 khrs of lifetime

T° given without wind effect to comply with IEC 62722-2-1

Duplicate to: Mr M. Thijs

LAB 25/09/2015

L. Maghe

