

Lumen maintenance report

LED information

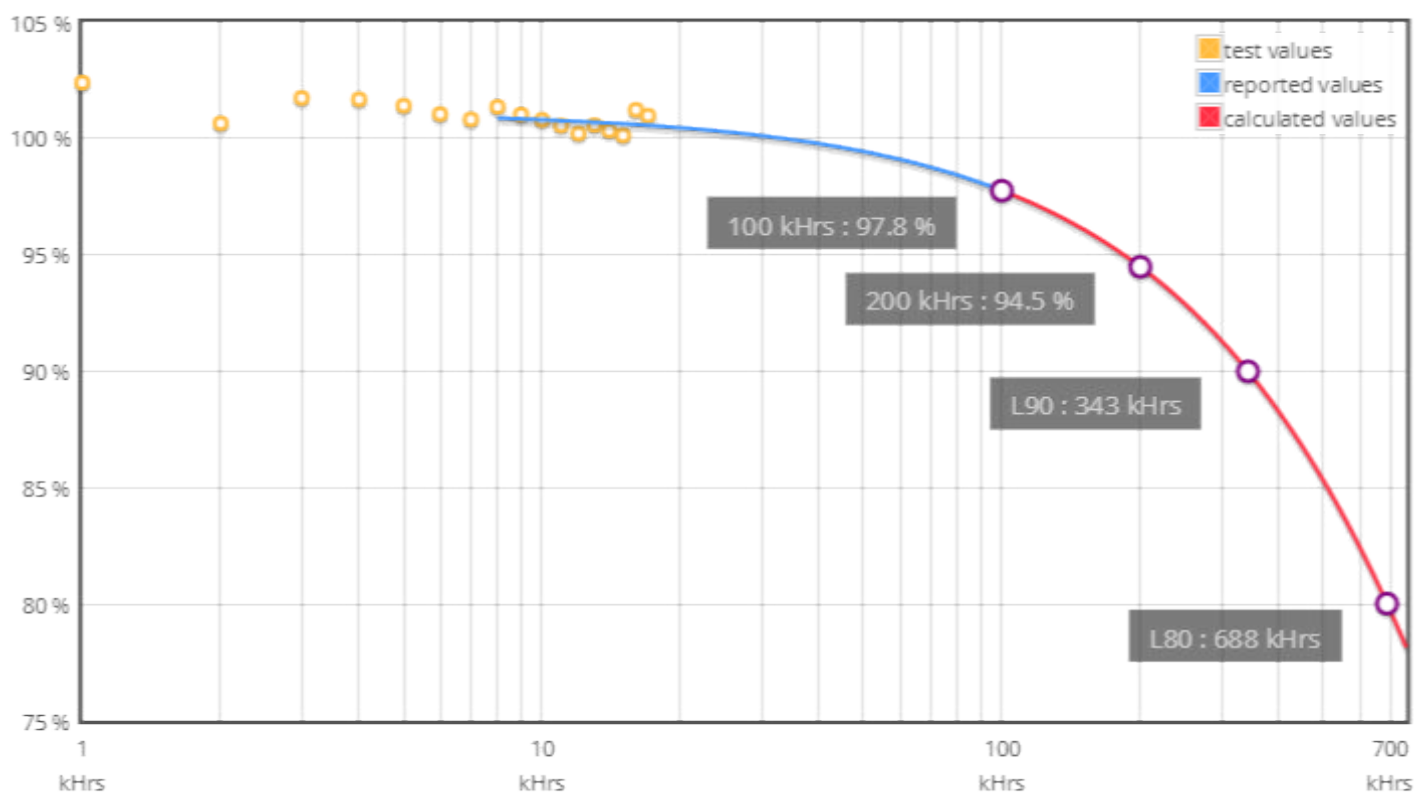
LED type 3535 Gen4
LED current 700 mA
Ts 55°C
Description lgit-14-044-02

Projection data

Test duration 17000 hrs **α** 3.406E-007
Time used for projection 8000 to 17000hrs **β** 1.012

L (%)	Time (kHrs)
80.0	689
90.0	343
94.5	200
97.8	100

Projection graphic



LxB50 results according to LM-80 and TM-21 procedures and norms.

LxBy results derived from LxB50 according to IEC 62717 Annex C.

DECLARAȚIE DE CONFORMITATE



SCHRÉDER ROMANIA S.R.L., cu sediul în Cluj - Napoca, str. Corneliu Coposu, nr. 167A, Jud. Cluj, România, înregistrată la Registrul Comerțului cu nr. J12/1759/1998, membră a SCHRÉDER GROUP, în calitate de furnizori de aparate de iluminat marca SCHRÉDER

Declarăm pe propria răspundere că aparatul de iluminat: **VOLTANA 2**

Versiune: 16 LED-uri

Clasă electrică: I sau II

Balast: electronic

Tensiune nominală: 230V / 50Hz

Caracteristici: Max. 1000mA

Etanșeitate compartiment optic: IP 66

Etanșeitate compartiment aparataj: IP 66

Cu condiția ca acesta să fie instalat, întreținut și utilizat în conformitate cu standardele de instalare și instrucțiunile producătorului. Este în conformitate cu următoarele directive sau standarde:

- EN 60598-1 (2015)
- EN 60598-2-1 (1979)
- EN 60598-2-3 (2003 + A1 2011)
- EN 61547 (2009)
- EN 61347 (2015)
- EN 55015 (2013)
- EN 61000-3-2 (2014) & 3-3 (2013)
- EN 62471 (2008)
- EN 62493 (2010)
- Directiva 2014/30/EU
- Directiva 2014/35/EU
- Directiva 2009/125/EC
- Directiva 2012/19/EU
- Directiva 2003/108/EC
- Directiva RoHS 2011/65/EU (RoHS 2)
- R.D. 1890/2008, 14 Noiembrie
- R.D. 154/1.995, 3 Februarie
- R.D. 842/2002, 2 August

SCHRÉDER ROMANIA S.R.L.
Director General,

Alexandru SIRCA

Eliberat,
Martie 2019, Cluj-Napoca

LED Flux measurement

FORM-L-41 ED1 REV 0

Date : **6/01/2015**

Operator : **FC**

Filename : **2015_1.xml**



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LEDs

NBN EN ISO/IEC 17025 : 2005

Trademark : **LG Innotek**

Entry number : **34R336**

Type : **3535 Gen4**

Power (Catalogue) : **1.00** W

BIN Description : **Unknown**

Flux : **160** lm/LED

Part number : **Unknown**

Color or CCT (Theoretical) : **NW**

Number of LEDs : **16**

Lenses

Trademark : **None**

Type : **None**

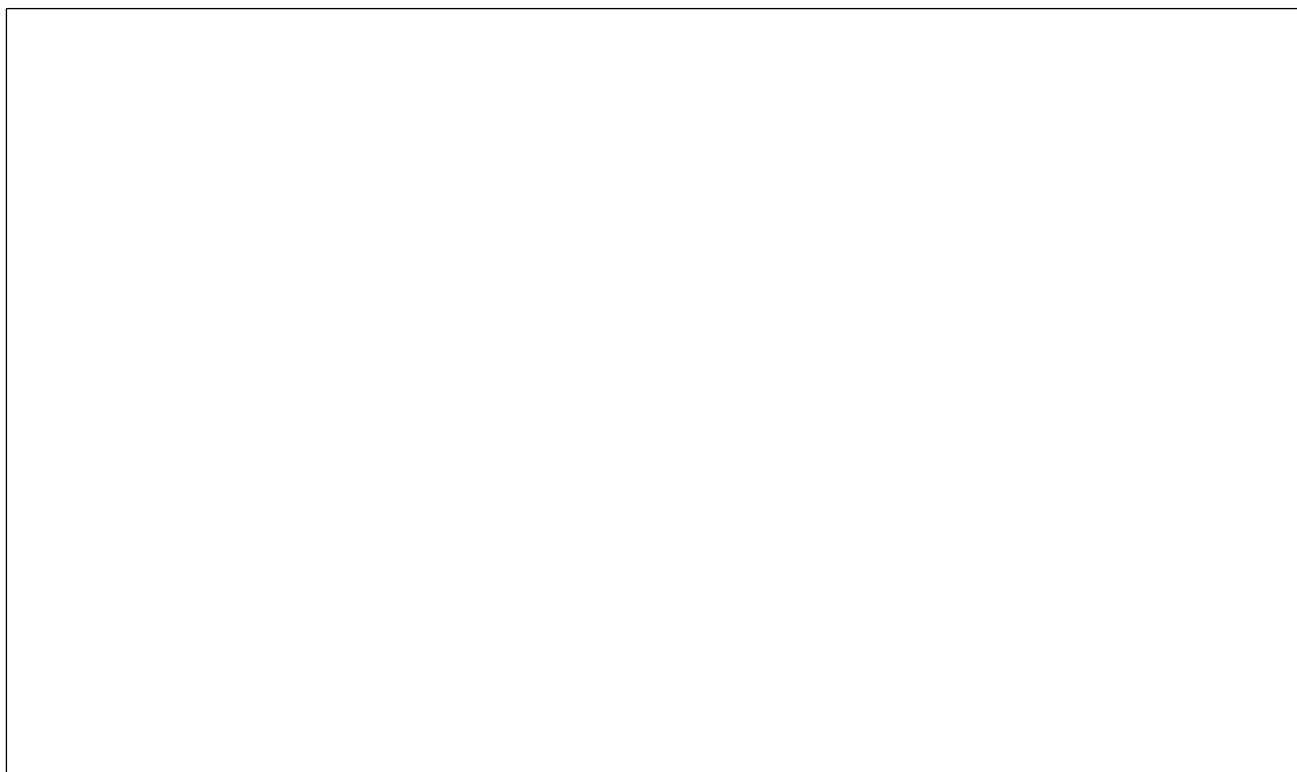
Power & Print

Type : **DELTA SM400-AR-4**

Print description : **00-07-909 Rev.A**

Active ☐

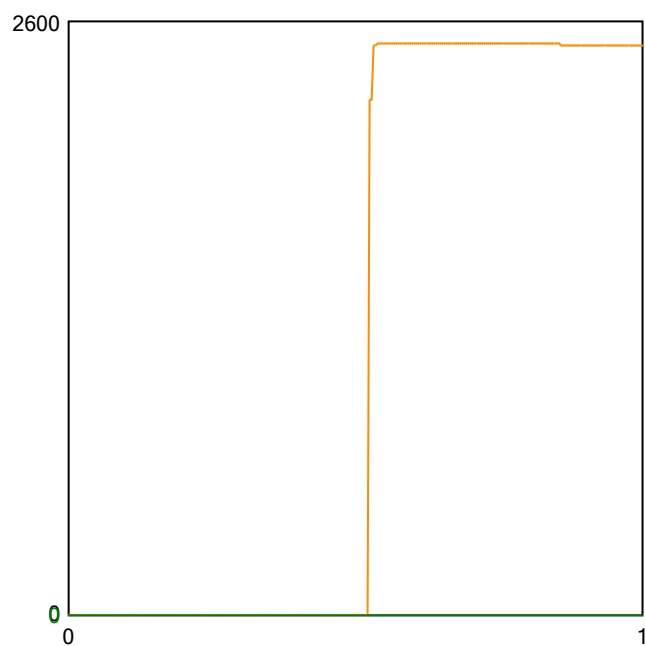
Picture



Sphere photometric measurement

Average flux : **1199** lumens

Maximum flux : **2508** lumens



Position in sphere :



Electrical measurement

● Secondary electrical measurement

Voltage : **46.56** V

Current : **0.350** A

Power : **16.30** Watt

→ LEDs light efficiency at thermal stabilization :

73.5 lm/W

74.9 lm/Led

→ LEDs light efficiency at 25° :

153.9 lm/W

156.8 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°/350mA 16 LG 3535 Gen4 - Voltana 2 - pcb N°1/12 CTR du 2014/1005

Comment :

FORM-L-41 ED1 REV 0



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NBN EN ISO/IEC 17025 : 2005

Approved by :

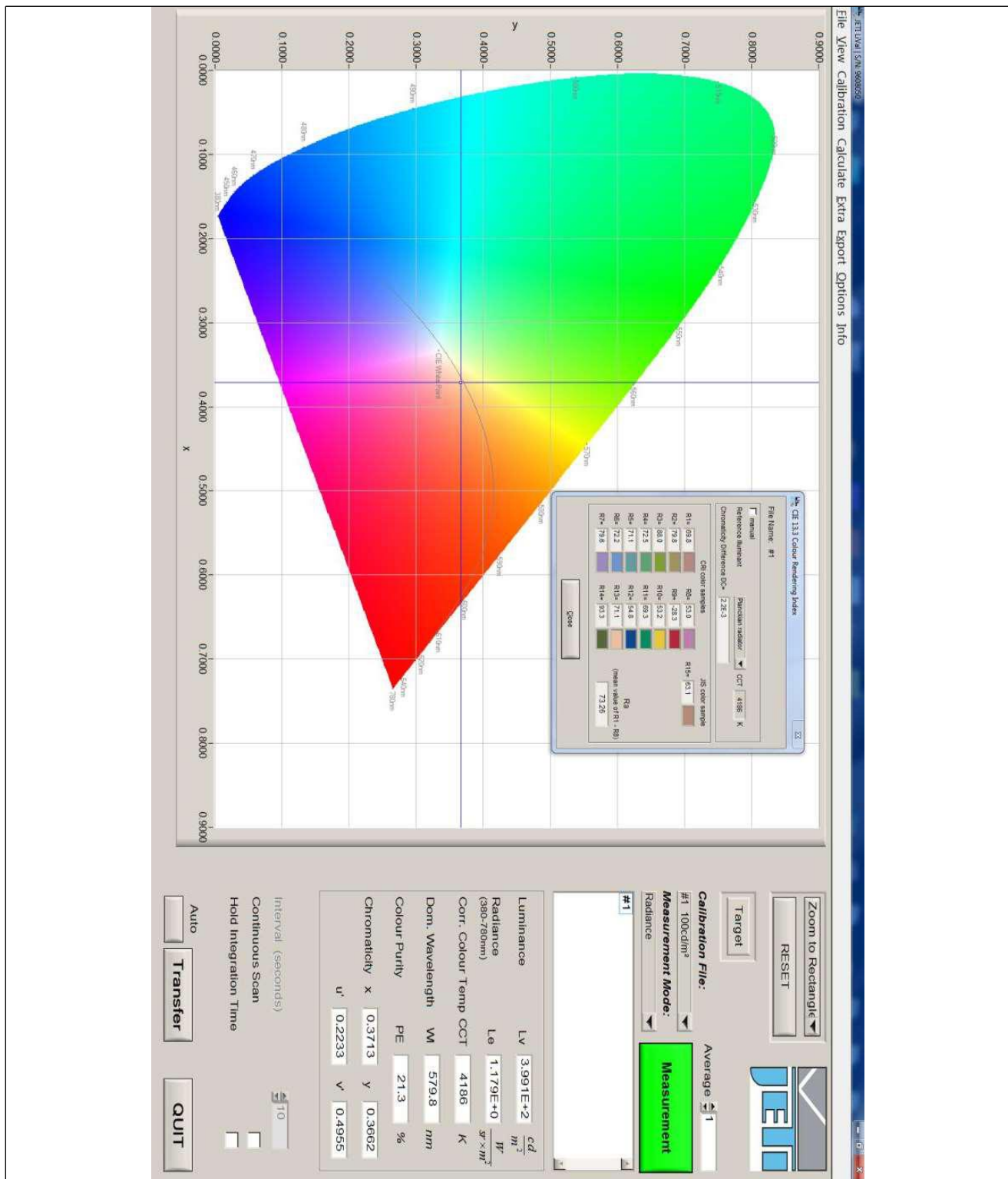
LED 2015/1 2/3



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NBN EN ISO/IEC 17025 : 2005

Colorimetry



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.

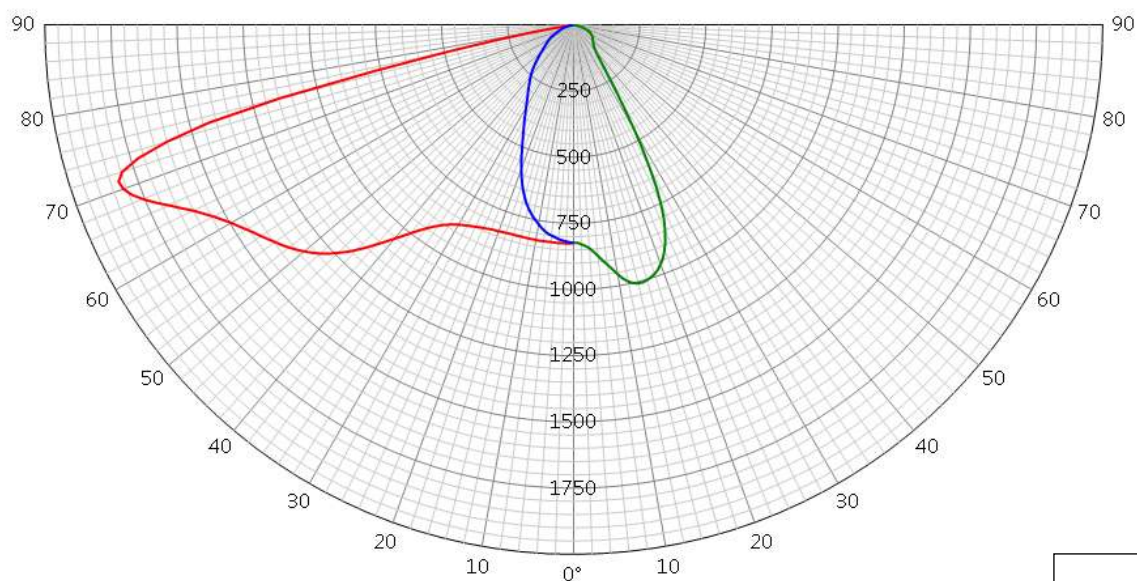
LED

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004	
Source							
Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136		
Master Reflector							
Led assembly Gaggione Narrow 0,0° No 5136							
Protector Refractor Lens							
Protector Lens	Glass Extra Clear Flat Smooth Gaggione 5136 PMMA						
Laboratory observation							
VOLTANA 2 (serie 0) equipped with 16 LG 3535 Gen4 . Used flux for efficiency matrix calculation = 2508 lm - CCT= 4186K - CRI= 73,26 measured @ 350mA/25°C (see sphere test report 2015/1 on appendix).							
Purpose DOC				Sample date 13/06/2014		Sample # 34R142	
Observation							
DOC VOLTANA 2 with lenses 5136							
flux coefficient multiplicator (only for efficiency matrix): From 350 to 500mA: 1,353 From 350 to 700mA: 1,777 From 350 to 1000mA: 2,333							
Fixture powered @350/500/700mA by driver LG LLP 40W 0.7A 38/77Vdc model:PISE A040D Fixture powered @1000mA by driver LG LLP 55W 1A 44/55Vdc model:PISE A055A							
Asked by LMA		Measured by FC		Approved by LMA		Appendix 1	
						226-TEST NBN EN ISO/IEC 17025 :2005	
35621							

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136
Reflector	Led assembly Gaggione Narrow 0,0°					No 5136
Matrices	356211 Φ 0-90° = 2154lm - 90-99° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA					
Observation	Matrix in total flux @350mA Light losses due to thermal stabilisation: 0,5 % Electrical measurement on LED (#1): Voltage = 46,11 V Current = 0,350 A Power = 16,15 W Electrical measurement on driver (#1): Voltage = 230,00 V Current = 0,100 A Power = 20,27 W PF = 0,844 Total luminaire power = 20,27 W : Lm/Watt = 106,25 lm/W Driver #1 : See observations for driver details 00-07-909 Rev.A					

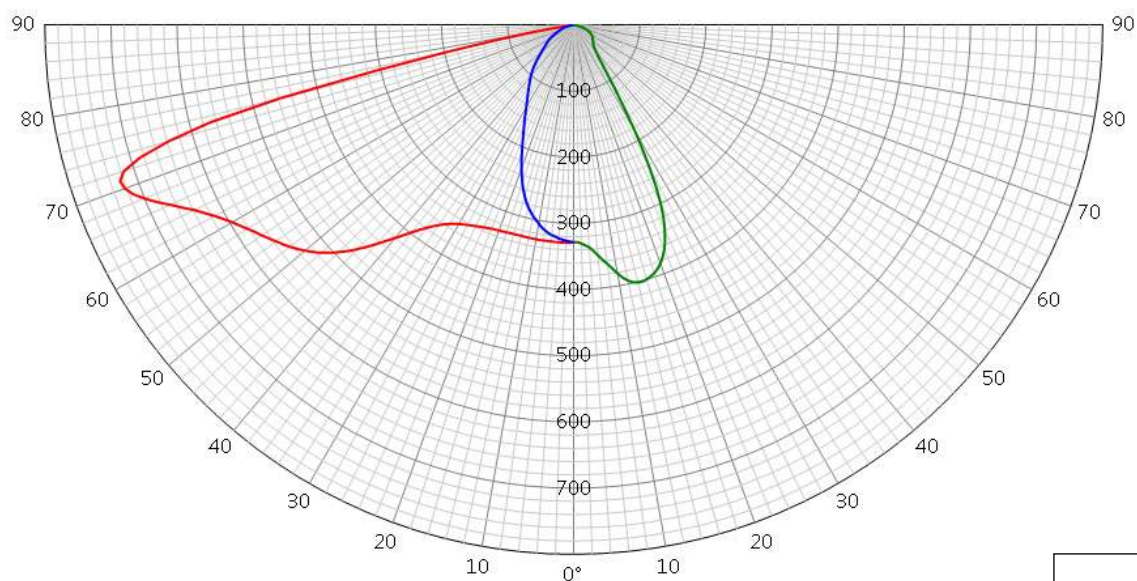
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	1820	71	G				
90	1007	15	D	823	25,0°	13/01/2015	
270	823	0	G				

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136
Reflector	Led assembly Gaggione Narrow 0,0°					No 5136
Matrices	356212 η 0-90° = 85,9% - 90-99° = 0,0%					Relative measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA					
Observation	Matrix in efficiency @350mA Light losses due to thermal stabilisation: 0,5 % Electrical measurement on LED (#1) : Voltage = 46,11 V Current = 0,350 A Power = 16,15 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,100 A Power = 20,27 W PF = 0,884 Total luminaire power = 20,27 W Driver #1 : See observations for driver details 00-07-909 Rev.A					

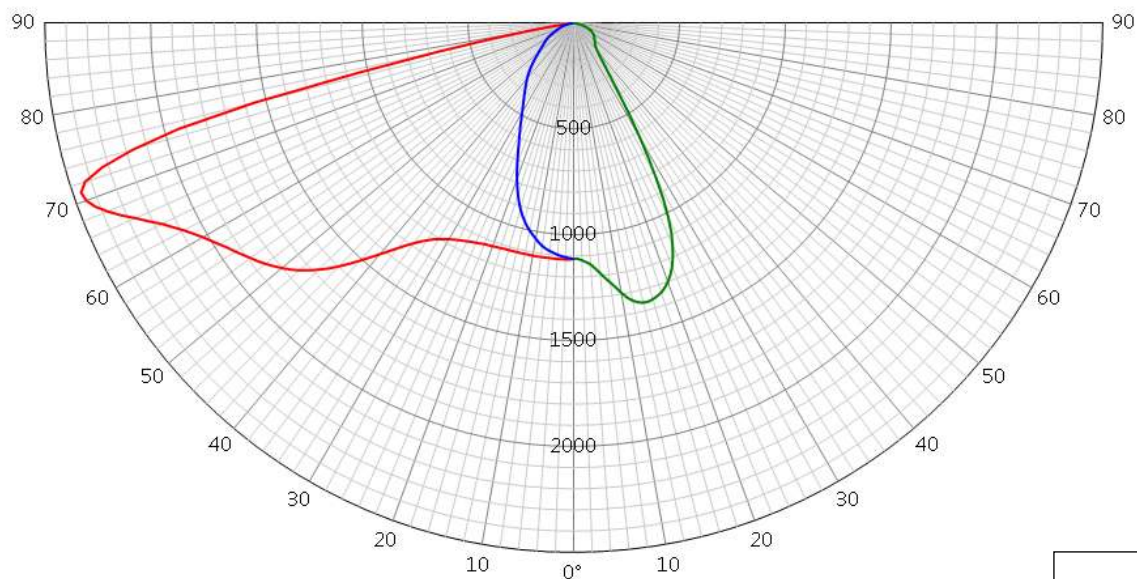
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	726	71	G				
90	401	15	D				
270	328	0	G	328	25,0°	13/01/2015	

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136
Reflector	Led assembly Gaggione Narrow 0,0°					No 5136
Matrices	356213 Φ 0-90° = 2914lm - 90-99° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA					
Observation	Matrix in total flux @500mA Light losses due to thermal stabilisation: 0,75 % Electrical measurement on LED (#1): Voltage = 47,14 V Current = 0,500 A Power = 23,56 W Electrical measurement on driver (#1): Voltage = 230,00 V Current = 0,131 A Power = 27,17 W PF = 0,935 Total luminaire power = 27,17 W : Lm/Watt = 107,24 lm/W Driver #1 : See observations for driver details 00-07-909 Rev.A					

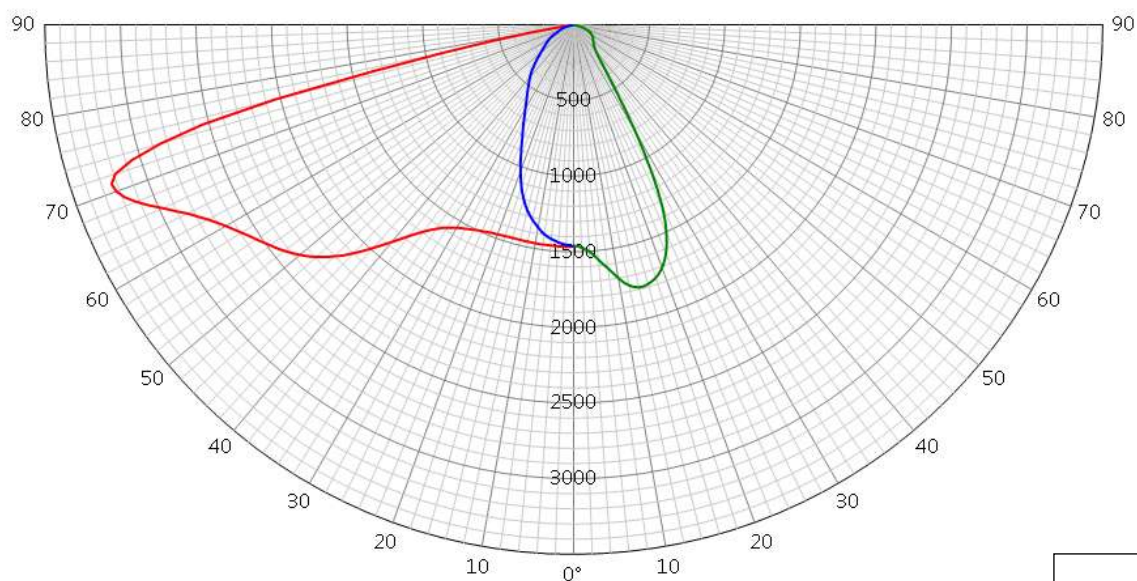
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	2463	71	G				
90	1362	15	D				
270	1114	0	G	1114	25,0°	13/01/2015	

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136
Reflector	Led assembly Gaggione Narrow 0,0°					No 5136
Matrices	356214 Φ 0-90° = 3827lm - 90-99° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA					
Observation	Matrix in total flux @700mA Light losses due to thermal stabilisation: 1,5 % Electrical measurement on LED (#1): Voltage = 48,38 V Current = 0,700 A Power = 33,85 W Electrical measurement on driver (#1): Voltage = 230,00 V Current = 0,177 A Power = 39,23 W PF = 0,965 Total luminaire power = 39,23 W : Lm/Watt = 97,55 lm/W Driver #1 : See observations for driver details 00-07-909 Rev.A					

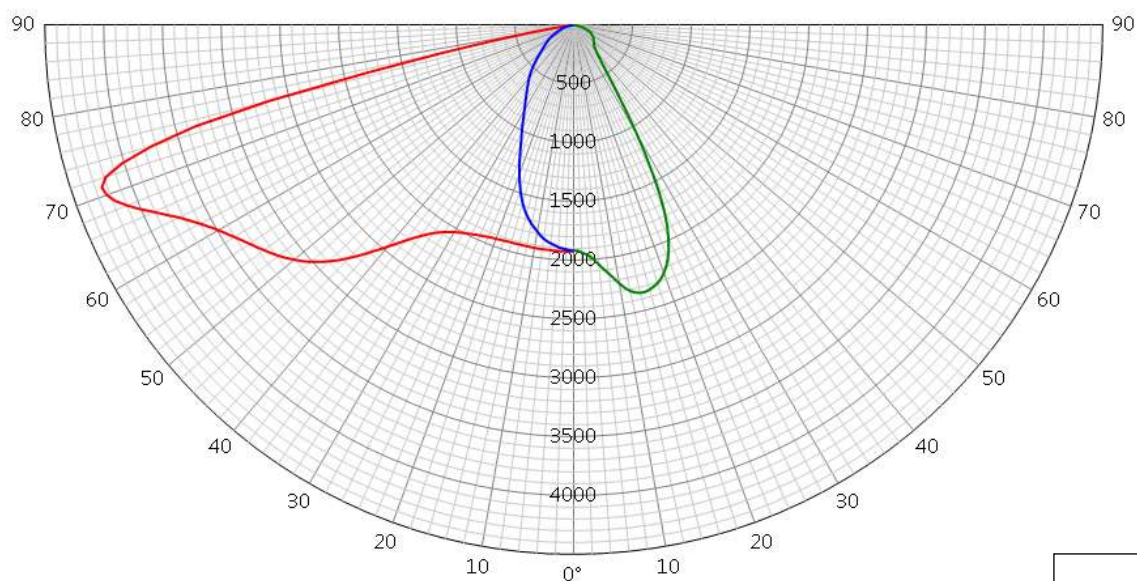
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	3235	71	G				
90	1789	15	D				
270	1463	0	G	1463	25,0°	13/01/2015	

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD35004
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 16	Reflector 5136
Reflector	Led assembly Gaggione Narrow 0,0°					No 5136
Matrices	356215 Φ 0-90° = 5024lm - 90-99° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA					
Observation	Matrix in total flux @1000mA Light losses due to thermal stabilisation: 2,5 % Electrical measurement on LED (#1) : Voltage = 50,13 V Current = 1,000 A Power = 50,11 W Electrical measurement on driver (#1) : Voltage = 230,00 V Current = 0,259 A Power = 57,56 W PF = 0,963 Total luminaire power = 57,56 W : Lm/Watt = 87,29 lm/W Driver #1 : See observations for driver details 00-07-909 Rev.A					

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
5 - 175	4247	71	G				
90	2349	15	D				
270	1921	0	G	1921	25,0°	13/01/2015	

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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 measurment, 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%

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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

Voltcraft K101 (Sphere IS2000)

LMT U1000 (Sphere LMT)

Gossen digem f96x48 CK/EK (gonio)

Calibration: traceable to PTB (Physikalisch-Technische Bundesanstalt)

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LICENCE

No. 21181 - Issue No 3

Issued to:
Applicant:
R-Tech
Rue de Mons, 3
4000 LIEGE
Belgium

Licensee:
Schreder S.A.
Rue de Lusambo, 67
1190 BRUXELLES
Belgium



Product : road, square, street, flood lighting
Trade name(s) : SCHREDER
Type(s)/model(s) : VOLTANA 0, VOLTANA 1, VOLTANA 2, VOLTANA 3,
VOLTANA 4

The product and any acceptable variation thereto is specified in the annex to this licence and the documents therein referred to.

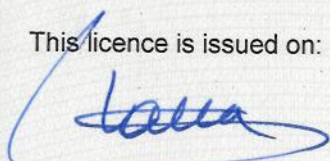
SGS CEBEC hereby declares that the above-mentioned product has been certified on the basis of:

- a type test according to the standard specified in annex
- an inspection of the production location
- a certification agreement with the number 1173

SGS CEBEC hereby grants the right to use the CEBEC certification mark

The ENEC/CEBEC certification mark may be applied to the product as specified in this licence for the duration of the ENEC/CEBEC certification agreement and under the conditions of the ENEC/CEBEC certification agreement.

This licence is issued on: 11/06/2019



ir. C. Lana,
Certification Manager

© Only integral publication of this certificate, including the annex, is allowed

This certificate is only valid combined with the publication on the following web address: www.sgs.com/ee



SPECIFICATION OF THE CERTIFIED PRODUCT

Product data

Product	:	road, square, street, flood lighting
Trade name(s)	:	SCHREDER
Type(s)/Model(s)	:	VOLTANA 0, VOLTANA 1, VOLTANA 2, VOLTANA 3, VOLTANA 4
description	:	Street lighting
rated voltage (Un)	:	200-240 V
rated frequency	:	50-60 Hz
rated secondary current (In SEC)	:	max. 1400 mA (LED)
class	:	class I
degree of protection	:	IP66
additional information	:	IK08

Additional information

The VOLTANA range is IK08 according to EN 62262:2002 / IEC TR 62696 :2011.

Product data - type VOLTANA 1

lamp(s)	:	8 LEDs (G4L, G4TOP, XP-G3, 351C, 351D)
rated ambient temperature (ta)	:	max. 55°C
rated power	:	max. 41 W

Product data - type VOLTANA 2

lamp(s)	:	16 LEDs (G4L, G4TOP, XP-G3, 351C, 351D)
rated ambient temperature (ta)	:	max. 45°C
rated power	:	max. 58 W

Product data - type VOLTANA 3

lamp(s)	:	24 LEDs (G4L, G4TOP, XP-G3, 351C, 351D)
rated ambient temperature (ta)	:	max 50°C
rated power	:	max. 80 W

Product data - type VOLTANA 4

lamp(s) : 32 LEDs (G4L, G4TOP, XP-G3, 351C, 351D)
rated ambient temperature (ta) : max. 55°C
rated power : max. 110 W

Product data - type VOLTANA 0

lamp(s) : 6, 8 LEDs (G4L, G4TOP, XP-G3, 351C, 351D)
rated ambient temperature (ta) : max. 55°C
rated power : max. 36 W

TESTS

Test requirements

EN 60598-1:2015
EN 60598-2-3:2003 + A1:2011

Test results

The test results are laid down in certification file ref. 618719/22.

Remarks

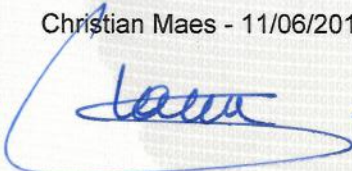
This certificate is based on test report No. P1540-44-lc.

Conclusion

The examination proved that all certification requirements were met.

Reviewed by, project leader : Christian Maes - 11/06/2019

Certification Manager :

 2019-06-11

FACTORY LOCATION(S)

Schreder TOV
Vul. Mykulynetska 46B
46000 TERNOPIL
Ukraine

Schreder (China) Lighting Industrial Co., Ltd
No.40 Xinye 2 Street, Tianjin Economic Technological Development Zone West Zone,
300462 Tianjin City, P.R.China
China

Socolec S.A.
Av. de Roanne, 66
Poligono Industrial "EL HENARES"
19180 MARCHAMALO (GUADALAJARA)
Spain

Schröder Iluminação S.A.
Rua da Fraternidade Operária, nº 3
2795-491 CARNAXIDE, OEIRAS
Portugal

Comatelec S.A.
Z.I.
18400 SAINT FLORENT S/CHER
France

Schröder Hungary Plc.
Tópart 2
2084 PILISSZENTIVAN
Hungary

VOLTANA 2

5136

Optic	5136
Protector	Flat glass
Source	16 LG Innotek 3535 Gen4
Matrix	356212



Characteristics

518	240	109	4.6	IP 66	IK 08	I EU, II EU	0.019
Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Tightness level*	Impact resistance*	Electrical class*	CxS (m²)

* According to IEC-EN60598 and IEC-EN62262

Features

Entry Level cost-effective luminaire family

- Cost-effective and efficient lighting solution for a fast return on investment
- LensoFlex@2 photometric engine with photometry adapted to various applications
- 5 sizes for flexibility
- Designed to incorporate Owllet control and sensor solutions
- ThermiX@: withstands high temperatures (Ta 50°C)
- Mounting : side entry (42-60 mm) with inclination steps -10° to +5°
- Surge protection 10kV (optional)

Types of application

- Square and park
- Bridge
- Park
- Roundabout
- Pedestrian crossing
- Car park
- Road and highway
- Residential road
- Bike path
- Urban road

Information for 1000 lm matrix

Efficacy (%)	85.9	G Class (EN 13201-2)	G3	Aperture 90-270°	8 - X
DLOR (%)	85.9	G* (EN 13201 2015)	G*3	I 70-80-90-95 (cd)	723 - 63 - X - X
ULOR (%)	0.0	Imax (cd)	726	CIE flux code N 1→5 (%)	49.6 - 78.1 - 97.5 - 100.0 - 85.9
ULR (%)	0.0	Aperture 0-180°	40 - 40		

Photometrical characteristics

LED count	Colour code	Current (mA)	Luminaire power (W)	Source flux (lm)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Peak (cd)	BUG Rating	Voltage (V)
			Ambient temp = 25°						
16	WW 830	350	20	2336	2006	100	1695	B1 U0 G1	230
16	WW 830	500	28	3154	2708	97	2289	B1 U0 G1	230
16	WW 830	700	39	4135	3550	91	3001	B1 U0 G1	230
16	WW 830	1000	56	5443	4673	83	3950	B2 U0 G1	230
16	NW 740	350	20	2560	2198	110	1858	B1 U0 G1	230
16	NW 740	500	28	3456	2967	106	2508	B1 U0 G1	230
16	NW 740	700	39	4531	3891	100	3289	B2 U0 G1	230
16	NW 740	1000	56	5965	5122	91	4329	B2 U0 G1	230

Tolerance on flux +- 7% - Tolerance on power +- 5%

Summary

CONCEPT

Family of 6 road LED luminaires

Recommended installation height: between 4.00 and 12.00m

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
- Colour: RAL 7038

INSTALLATION

- Luminaire can be fixed by side-entry with a clamp, suitable for 42-60mm diameter
- Built-in inclination steps: -10°, -5°, 0°, 5°
- Post-top adapter diameter 48-60mm or 76mm, tightened with 2 stainless steel screws
- Direct access to the driver compartment with screws for easy maintenance on-site

OPTICAL UNIT

- Protected against lens degradation by 5mm thick extra-clear hardened glass
- Flatbed PCB with acrylic lens overlay principle
- Various photometric distributions: from narrow road to motorway, medium and large area
- CRI > 70
- ULOR: 0%

LED lumen depreciation

- Lifetime residual flux @ Tq=25°C @ 100.000 hrs: 350mA & 500mA: 90%; 700mA: 80%; 1A: 70%

ELECTRICAL

- Class I or Class II
- Input voltage: 120-277V - 50-60Hz
- Power factor > 90% at full load
- Surge protection: 4kV minimum (10kV + 10kA optional)
- Thermal protection on LED PCBA (see Thermix concept)

STANDARDS & CERTIFICATIONS

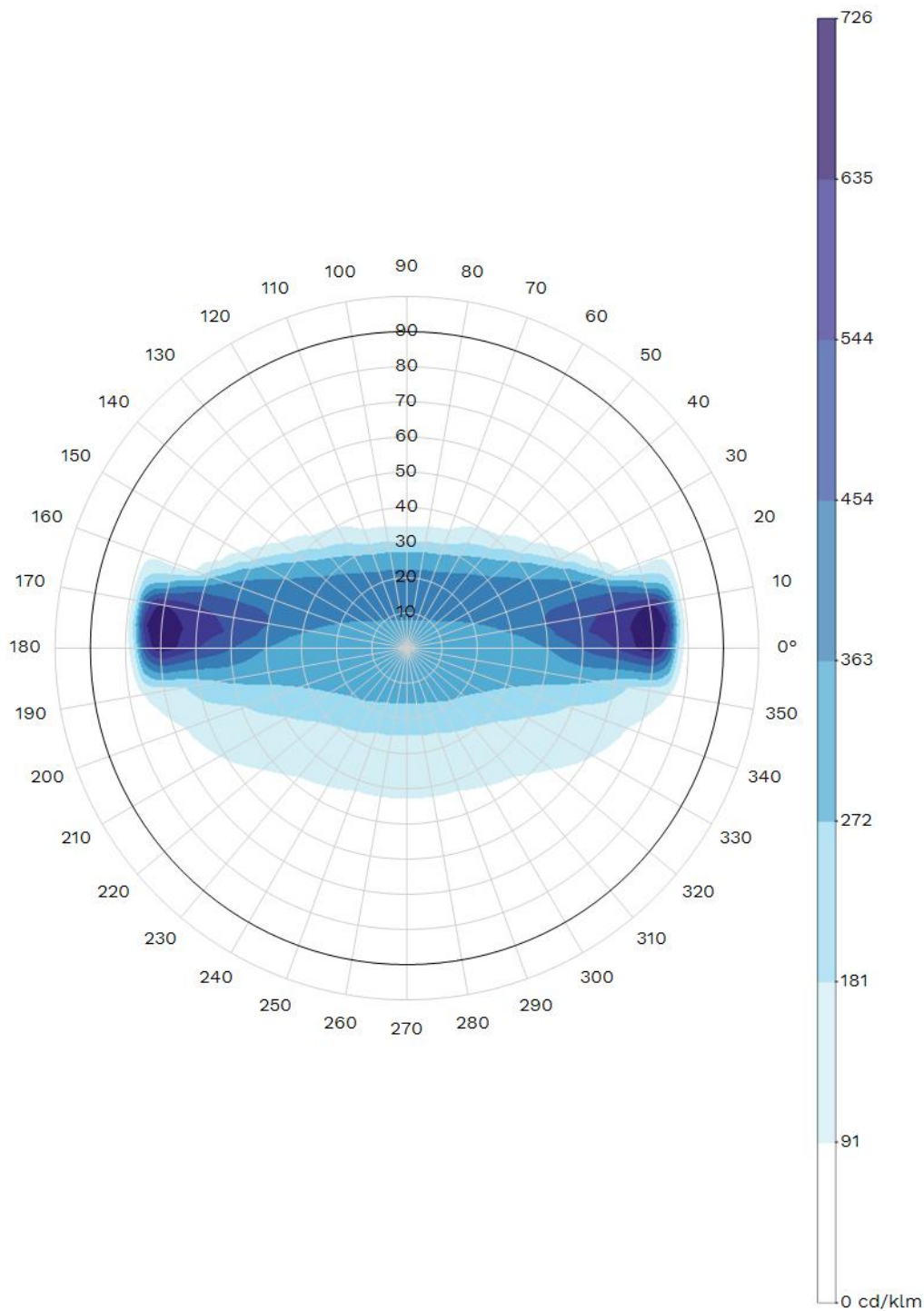
- CE
- ENEC
- LM79-80
- ROHS
- Certified for 3G vibration
- All measurements in ISO17025 accredited laboratory

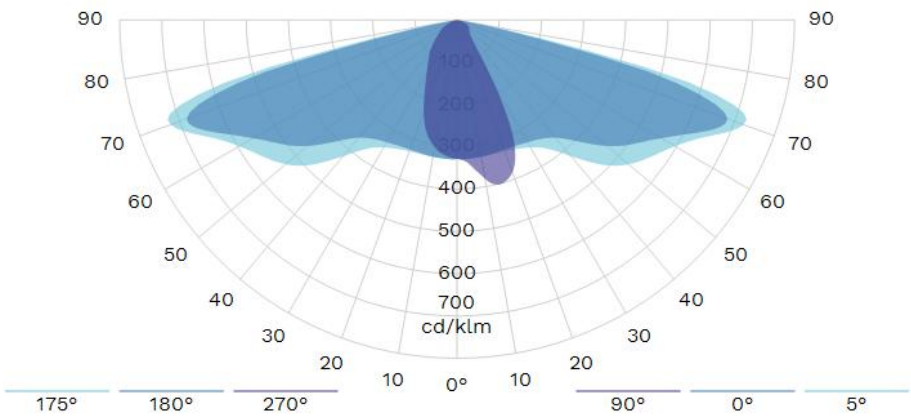
OPTIONS

- Other RAL or AKZO colours
- Back Light control system
- OWLET remote management
- Custom dimming profile

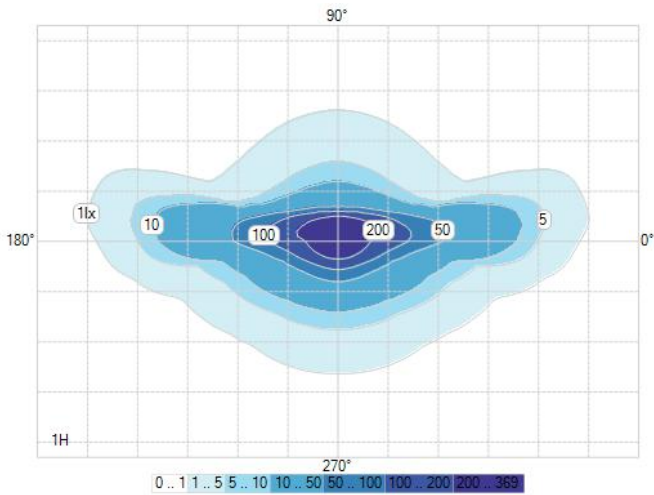
VOLTANA 2 - 5136 - 16 LG Innotek 3535 Gen4 - Flat glass - 356212

- Photocell

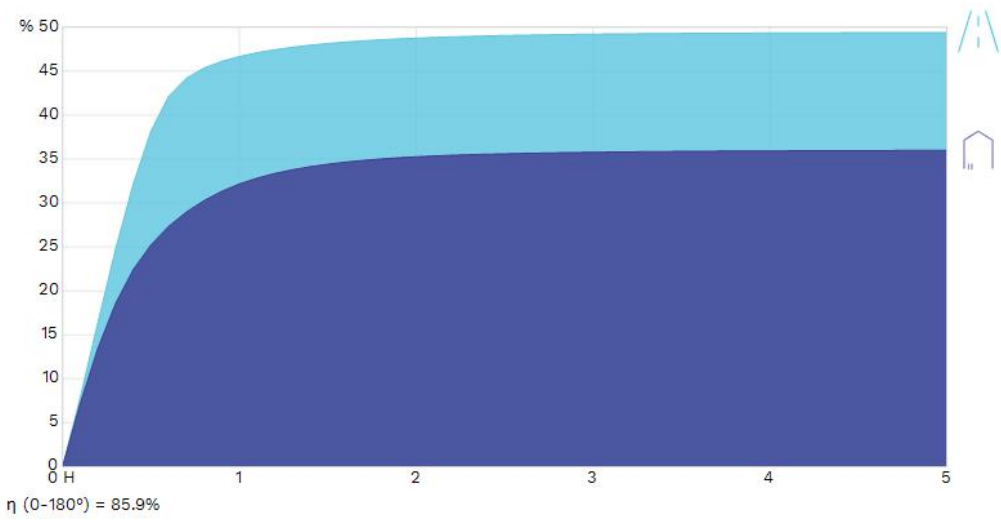




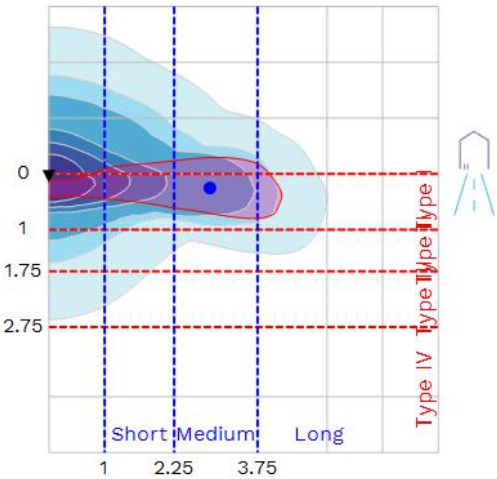
Isolux



K-Curve

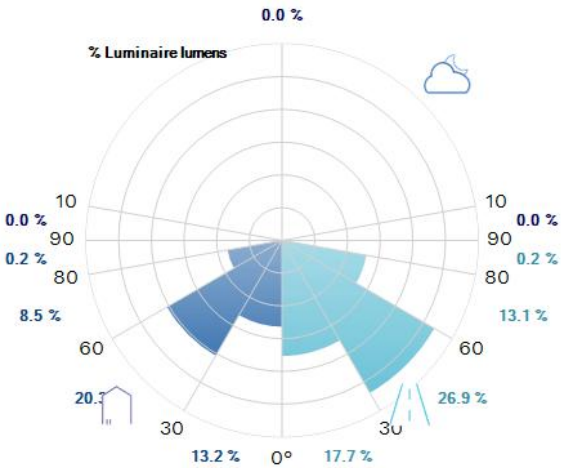


IES Roadway Classification / Nema Classification

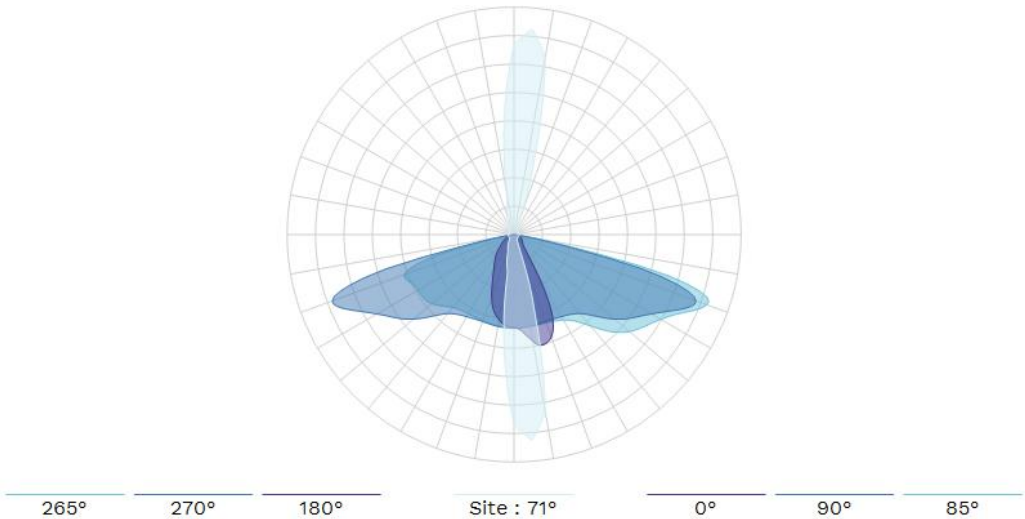


I - Medium

Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



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LICENCE

to use the ENEC+ Mark



ENEC+ Licence No.: 20281

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Schreder S.A.
Rue de Lusambo, 67
1190 BRUXELLES
Belgium

For the product:

Road and street lighting

Trade name(s):

SCHREDER

Type(s)/Model(s):

VOLTANA 1, VOLTANA 2, VOLTANA 3, VOLTANA 4, VOLTANA 5 ranges

Complying with the following European Standards for safety and the EPRS for performance:

EN 60598-1:2015, EN 60598-2-3:2003 + A1:2011

PD EPRS 003:2014-12 (application of IEC 62722-2-1:2014)

Based on test reports n° : P1540-3535-012017, P1541-3535-012017, P1542-3535-012017, P1543-3535-012017, P1544-3535-012017.

This licence is conditional to the validity of the ENEC Licence No.: ENEC 02 N° 20113 and 20114

Date: 2017-04-13

Signature:

Name: Calogero LANA

Position: Certification Manager

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: VOLTANA-2 16 Led's

Sample n°: P-E14361

Test purpose: Electrical measurements @ 1A

Remarks:

Test request n°: P-D14674

Folder n°: P-F14058

TEST CONDITIONS:

Operator: CLOSSET Frédéric

Driver: LG Innotek PISE-A055A, 1A driver

Load: 16 led's (Typical Vf: 3,18 V)

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: 87,0 %
- PF: 0,97
- THD: 8,6 %
- Harmonics distribution complies with the IEC/EN 61000-3-2 Standard.

Duplicate to: Mr M. Thijs

LAB 16/09/2014

J.P. Harchies

//P-14E674

A handwritten signature in blue ink, appearing to read "J.P. Harchies", with a stylized flourish at the end.

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: VOLTANA-2 16 led's @ 1A class I

Sample n°:

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

Remarks:

Test request n°: P-D14700

Folder n°: P-F14058

TEST CONDITIONS:

Operator: ULg - EMC

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. Impulse + @ 90° Impulse - @ 270° 20' between impulse Criteria B required	X	

Driver: LG Innotek PISE-A 055A – 55W 1A (Rev-04)

EMC Auxiliaries: Ferrite W-E 742 700 55

CONCLUSIONS:

VOLTANA-2 16 led's driven @ 1A by LG Innotek 55 W driver complies with the CISPR/EN 55015 and EN 61547 Standards.

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

Duplicate to: Mr M. Thijs
LAB 23/09/2014
J.P. Harchies

//P-14E700

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: VOLTANA-2 Extra Clear glass protectors

Sample n°: P-E15378

Test purpose: Fragmentation test following IEC/EN 60598-2-3 Standard

Remarks:

Test request n°: P-D15559

Folder n°: P-F14058

TEST CONDITIONS:

Operator: BOMBIL Patrick

3 samples under test
Glass thickness: 5 mm



Fragmentation test

- An adhesive sheet is scotched on the protector internal side to hold the particles after breakage.
- Impact with spring punch hammer
- Impact on the external side of protector
- Impact at 3 cm from the mid-point of the longest edge.
- Counting of the particles in the coarsest area in a 5 cm side square within 5 minutes after breakage.

Results:

Sample 1: 117 pieces

Sample 2: 116 pieces

Sample 3: 118 pieces

CONCLUSIONS:

VOLTANA-2 Extra Clear Glass protector complies with fragmentation test following IEC/EN 60598-2-3 Standard.

Duplicate to: Mr M. Thijs

LAB 21/08/2015

L. Maghe

A handwritten signature in blue ink, appearing to read "L. Maghe".

//P-15CR559

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: VOLTANA-2

Sample n°: P-E14362

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

Remarks:

Test request n°: P-D14698

Folder n°: P-F14058

TEST CONDITIONS:

Operator: BOMBIL Patrick

Smooth extra clear glass
Glass thickness: 5 mm

At pendulum hammer

5 impact points distributed on protector surface
One impact on each point

Test on 5 samples

Test

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

Result

OK for the 5 samples for all tested points

CONCLUSIONS:

VOLTANA-2 satisfies the IK08 test following IEC/EN 62262 Standard.

Duplicate to: Mr M. Thijs
LAB 23/09/2014
J.P. Harchies

//P-14E698

A handwritten signature in blue ink, appearing to read "J.P. Harchies", with a horizontal line drawn underneath it.

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: VOLTANA-2 16 led's @ 1A

Sample n°:

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

Remarks:

Test request n°: P-D14696

Folder n°: P-F14058

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:

VOLTANA-2 16 led's @ 1A satisfies the IP66 test following IEC/EN 60598-1 Standard.

Duplicate to: Mr M. Thijs
LAB 23/09/2014
J.P. Harchies

//P-14E696

A handwritten signature in blue ink, appearing to read "Harchies", with a horizontal line drawn underneath it.

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: VOLTANA-2 16 Led's

Sample n°: P-E14361

Test purpose: Thermal test evaluation @ 1A

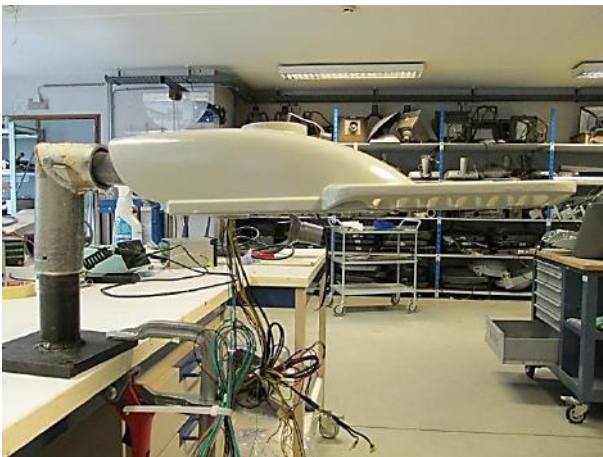
Remarks:

Test request n°: P-D14697

Folder n°: P-F14058

TEST CONDITIONS:

Operator: CLOSSET Frédéric



Load: 16 led's

Driver: LG Innotek LLP 55 W 1,0 A
PISE-A055A
Tc 80 °C

Measurement device:

Yokogawa TX10: thermal measurement

Yokogawa WT 210: primary EM

Fluke 87: secondary and led's EM

Junction Temperature measurement method

Junction temperature measurement by base temperature measurement and electrical measurement.

$$T^{\circ}_j = T^{\circ}_b + R_{jb} \times P_{led}$$

CONCLUSIONS:

According to "Led's Lumen Maintenance Criterion" LM80 extrapolation 6.000 hrs, we can state VOLTANA-2 16 led's driven @ 1A by LG Innotek driver LLP 55 W PISE-A055A driver satisfies:

Tq (CEI): 35 °C for led's with L80 – 100 Khrs target

Tq (CEI): 35 °C for lenses in Diakon material

Tq (CEI): 35 °C for driver PISE-A055A

Ta (CEI): 55 °C

Duplicate to: Mr M. Thijs

LAB 23/09/2014

J.P. Harchies

//P-14E697

A handwritten signature in blue ink, appearing to read "Harchies".

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: VOLTANA-2 – Side entry Configuration

Sample n°: P-E14365

Test purpose: Vibrations test: "Street Lighting Luminaires" testing protocol

Remarks:

Test request n°: P-D14801

Folder n°: P-F14058

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 : f0 (Qmax) 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:

VOLTANA-2 side entry configuration satisfies the Vibration tests following "Street Lighting Luminaires" testing protocol.

Duplicate to: Mr M. Thijs
LAB 21/10/2014
J.P. Harchies

//P-14E801

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: VOLTANA-2

Sample n°: P-E14363

Test purpose: Aerodynamic wind test

Remarks:

Test request n°: P-D14699

Folder n°: P-F14058

TEST CONDITIONS:

Operator: ULg – CAT Soufflerie

2 tests realized:

- 1) Aerodynamic Coefficient determination
- 2) Endurance test

1) Aerodynamic coefficient determination

	<u>Value (m²)</u>		
<u>Wind Direction</u>	<u>Cd.S (drag)</u>	<u>Cs.S (Side)</u>	<u>Cl.S (Lift)</u>
Front	0,004	-0,004	0,002
Side	0,019	0,019	0,019

2) Endurance test: wind qualification test

Wind direction: Side

Wind resistance: 10' at 180 km/h

Result: OK

CONCLUSIONS:

VOLTANA-2 satisfies the wind speed test 180 Km/h for 10 minutes.
See Aerodynamic coefficients here above.

Duplicate to: Mr M. Thijs
LAB 23/09/2014
J.P. Harchies

//P-14E699

A handwritten signature in blue ink, appearing to read "Harchies", with a horizontal line drawn underneath it.