

**ПОЯСНИТЕЛЬНАЯ ЗАПИСКА
К ТЕХНИЧЕСКОМУ ПРЕДЛОЖЕНИЮ (OFERTA TEHNICA)
Для выполнения**

**РЕКОНСТРУКЦИЯ И МОДЕРНИЗАЦИЯ УЛИЧНОГО ОСВЕЩЕНИЯ В СЕЛЕ
КАЗАКЛИЯ, ЧАДЫР-ЛУНГСКОГО РАЙОНА**

1. OBIECTUL CERERII DE OFERTE

Procedura aplicata pentru atribuirea contractului de achiziție publica este “**Cererea ofertelor de pret**” si se desfășoara in conformitate cu actele normative in vigoare.

2. ORGANIZATORUL PROCEDURII:

Denumirea autorității contractante : Примария с.Казаклия

Adresa: 6113, MOLDOVA, UTA Găgăuzia, s.Cazaclia, с.Казаклия, ул.Ленина,99

Nr. Telefon: 078316355

E-mail: primaria.cazaclia@mail.ru

3. CONDIȚII DE PARTICIPARE LA CONCURS:

3.1 Техническое предложение составлено в соответствии с техническим заданием, ситуациям 1и 2, приложением к тех. заданию .

4. OBIECTUL CONTRACTULUI

В ходе выполнения работ по Реконструкции и модернизации уличного освещения в селе Казаклия предусмотрено к выполнению:

Объемы работ представлены в смете (Formular 3; 5; 7)

4.1 Обоснование выбора светильников согласно дорожных ситуаций:

- Ситуация 1 - clasă de iluminat M6: тип светильника 1
- Ситуация 1 - clasă de iluminat M5: тип светильника 2

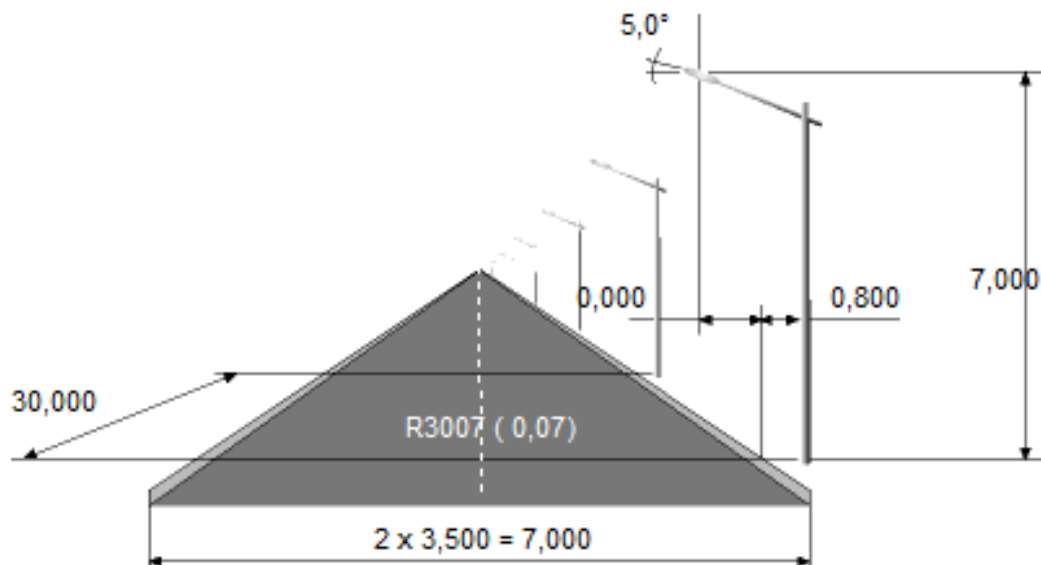
- Для ситуации 1 предлагаем светильник **VOLTANA 0 5206 6 LEDS 1050mA NW**
Тип 1

	Мощность - 22 W, Цветовая еумпература - 4000K, Степень защиты - IP66, Ударопрочность - IK08, Срок службы источника света – L70/B10 100000 часов
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- Для ситуации 2 предлагаем светильник **VOLTANA 2 5162 16 LEDS 700mA NW**
Тип 2

	Мощность - 38 W, Цветовая еумпература - 4000K, Степень защиты - IP66, Ударопрочность - IK08, Срок службы источника света – L80/B10 100000 часов
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Параметры установки светильников:



Ситуация 1 : Улицы 24 Августа, Первомайская, Лесная
clasă de iluminat M6:

- Расположение: одностороннее
- Шаг опор: 30 m
- Ширина проезжей части: 7 m
- Отступ опоры: 1 m
- Монтажная высота установки светильника: 7 m
- Длина кронштейна: 0,8 m
- Угол наклона светильника: 5°
- Фактор эксплуатации (коэф. Запаса): 0,8

Результаты светотехнических расчетов (вырезка из рапорта светотехнического расчета)

Результаты для полей оценки

Коэффициент эксплуатации: 0.80

Ситуация 1 ул. 24 Августа, Первомайская, Лесная (M6)

L _{cp} [cd/m ²] ≥ 0.30	U _o ≥ 0.35	U _I ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.31	✓ 0.41	✓ 0.73	✓ 14	✓ 0.30

Результаты для показателей энергоэффективности

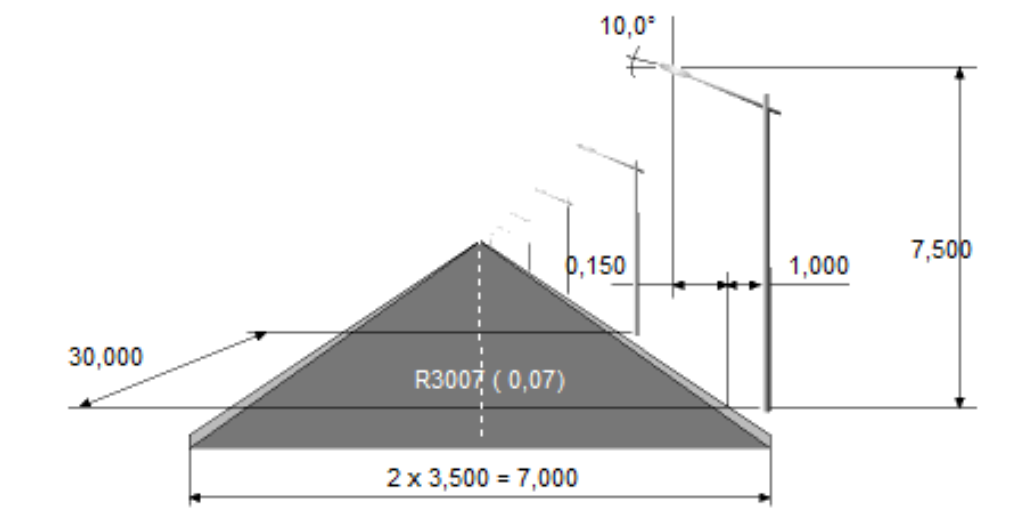
Индикатор плотности мощности (Dp)

0.022 W/lx·m²

Интенсивность потребления энергии

Расположение: VOLTANA 0 / 5206 / 6 LEDs 1000mA NW / 0.4 кВт·ч/м² год
 394212 (88.0 кВт·ч/год)

Для подтверждения файла светильника, VOLTANA 0 5206 6 LEDS 1050mA NW 22 W 394212 примененного в светотехнических расчетах, представлен рапорт фотометрических испытаний **Fotometric test raport 394212** и спецификация фотометрических показателей **VOLTANA 0_5206_6 LG Innotek 3535 Gen4_Integrated lenses_394212**.



Ситуация 2 : Улица Ленина

clasă de iluminat M5:

- Расположение: одностороннее
- Шаг опор: 30 m
- Ширина проезжей части: 7 m
- Отступ опоры: 1 m
- Монтажная высота установки светильника: 7,5 m
- Длина кронштейна: 0,8 m
- Угол наклона светильника: 5°
- Фактор эксплуатации (коэф. Запаса): 0,67

Результаты светотехнических расчетов (вырезка из рапорта светотехнического расчета)

Результаты для полей оценки
Коэффициент эксплуатации: 0.67

Ситуация 2 ул. Ленина (M5)

Lcp [cd/m ²] ≥ 0.50	Uo ≥ 0.35	UI ≥ 0.40	TI [%] ≤ 15	EIR ≥ 0.30
✓ 0.57	✓ 0.47	✓ 0.85	✓ 15	✓ 0.35

Результаты для показателей энергоэффективности

Индикатор плотности мощности (Dp) 0.022 W/lx·m²

Интенсивность потребления энергии

Расположение: VOLTANA 2 / 5162 / 16 LEDs 700mA NW / 0.7 кВт·ч/м² год
389092 (152.0 кВт·ч/год)

Для подтверждения файла светильника, VOLTANA 2 5162 16 LEDS 700mA NW 38 W 389092 примененного в светотехнических расчетах, представлен рапорт фотометрических испытаний **Fotometric test raport 389092** и спецификация фотометрических показателей **VOLTANA 2_5162_16 LG Innotek 3535 G4L_Flat glass_389092**.

4.2 Технические характеристики предлагаемых светильников в сравнении с минимальными требованиями.

VOLTANA 0 5206 6 LEDS 1050mA NW 22 W 394212



Наименование	Требования	Parametrii ofertati de furnizor
Номинальная мощность	<30W	22W
Рабочее напряжение	230V/50Hz	120-277V / 50Hz
Степень защиты оптического блока	min IP 65	IP 66 (подтвержденно тестом)
Степень защиты блока питания	min IP 65	IP 66 (подтвержденно тестом)
Ударопрочность	IK08	IK08 (подтвержденно тестом)
Корпус выполненный из	литого алюминиевого сплава	литой алюминиевый сплав
КСС	Для уличного освещения	5206
Срок службы	minim 100000 часов	100.000 часов
Световой поток	Не менее 70%	70%
Полярная диаграмма	Тип К	Program Dialux, 394212
КПД светильника	Minim 0,75	85.09%
Защита от поражения током	Clasa 1;2	Clasa 1
Цветовая температура	4000K - 5000K	4000K
Защита от перенапряжения	Minim 4kV	4kV
Рабочая температура	-30 и +40	-30 +50
Garantie	Min 60 luni	60 Luni

VOLTANA 2 5162 16 LEDS 700mA NW 38W 389092



Puterea luminoasă (flux nominal)	1,000 - 18,900lm
Nivelul de etanșeitate a compartimentului optic	IP 66 (*)
Nivelul de etanșeitate a compartimentului cu echipamentul de control	IP 66 (*)
Rezistența la impact (sticlă)	IK 08 (**)
Tensiunea nominală	120 - 277V - 50 - 60Hz
Clasa Electrică	I / II (*) - US Clasa 1

(*) conform standardului IEC - EN 60598
 (**) conform standardului IEC - EN 62262

Greutatea Voltana 1 4kg

Наименование	Требования	Parametrii ofertati de furnizor
Номинальная мощность	<50W	38W
Рабочее напряжение	230V/50Hz	120-277V / 50Hz
Степень защиты оптического блока	min IP 65	IP 66 (подтвержденно тестом)
Степень защиты блока питания	min IP 65	IP 66 (подтвержденно тестом)
Ударопрочность	IK08	IK08 (подтвержденно тестом)
Корпус выполненный из	литого алюминиевого сплава	литой алюминиевый сплав
КСС	Для уличного освещения	5162
Срок службы	minim 100000 часов	100.000 часов
Световой поток	Не менее 70%	80%
Полярная диаграмма	Тип К	Program Dialux, 389092
КПД светильника	Minim 0,75	82.49%
Защита от поражения током	Clasa 1;2	Clasa 1
Цветовая температура	4000K - 5000K	4000K
Защита от перенапряжения	Minim 4kV	4kV
Рабочая температура	-30 и +40	-30 +50
Garantie	Min 60 luni	60 Luni

4.3 Кронштейны

Для монтажа светильников предусмотрены типовые кронштейны KC-1.

5. Представленные документы для подтверждения характеристик светильников :

5.1 Рапорт светотехнических расчетов и файлы светильников

Рапорт светотехнических расчетов с подтверждением соответствия классам освещенности по ситуациям 1 и 2 в файле - Raport calcule Dialux Cazaclia

Подтверждение файлов светильников, Фотометрические испытания в файлах:

Для ситуации 1: Fotometric test raport 394212;

VOLTANA 0_5206_6 LG Innotek 3535 Gen4_Integrated lenses_394212

Для ситуации 2: Fotometric test raport 389092;

VOLTANA 2_5162_16 LG Innotek 3535 G4L_Flat glass_389092

5.2 Технические характеристики светильников:

Для ситуации 1 тип светильника 1 VOLTANA 0 5206 6 LEDS 1050mA NW 22W 394212

- Проспект в файле - voltana-romana-brochure-v3
- Сертификат соответствия в файле - VOLTANA 0 Class I ENEC Certificate
- Декларация соответствия CE от производителя в файле - Declaratie CE Voltana 0
- Гарантийный сертификат в файле - Certificat de garantie Voltana
- Тест IP в файле - VOLTANA 0 IP.
- Тест IK в файле - VOLTANA 0 IK.
- Тест EMC в файле - VOLTANA 0 EMC.
- Термический тест в файле VOLTANA 0 Thermal 6 led 1050 mA.
- Срок службы источника света в файле - 3535 Gen4_55deg_1000mA
- Цветовая температура в файле - 39421.appendix

Для ситуации 2 тип светильника 2 VOLTANA 2 5162 16 LEDS 700mA NW 38W 389092

- Проспект в файле - voltana-romana-brochure-v3
- Сертификат соответствия в файле - VOLTANA 1_5 ENEC Certificate class I_20497
- Декларация соответствия CE от производителя в файле - Declaratie CE Voltana 2
- Гарантийный сертификат в файле - Certificat de garantie Voltana
- Тест IP в файле – VOLTANA-2 IP.
- Тест IK в файле – VOLTANA-2 IK.
- Тест EMC в файле – VOLTANA-2 EMC.
- Термический тест в файле VOLTANA-2 Thermal.
- Срок службы источника света в файле - 3535 Gen4_55deg_700mA
- Цветовая температура в файле - 38909.appendix

6. Гарантии:

- Монтажные работы: 2 года;
- На светильники: 5 лет;

Prezentul Caiet de sarcini este parte integranta din contractul de achiziție publica.

7. Сравнительный энергетический расчет

NR.	Параметры	Базовые требования			Предложение		Экономия
		Тип 1	Тип 2		Тип 1	Тип 2	
1	Мощность светильников, Вт	30	50		22	38	
2	Количество светильников	730	35		730	35	
3	Установленная мощность kW	21,9	1,75		16,06	1,33	
4	Часы работы в год	4000	4000		4000	4000	
5	Годовое потребление kWh/год	87600	7000		64240	5320	
	Итого по системе kWh/год	94600			69560		25040
6	Тариф за kWh, лей	2			2		
7	Стоимость эксплуатации, лей в год	189200			139120		50080

Предложенное решение принесет годовую экономию электроэнергии в **25040 кВтч**, что составит экономию в **50080,00** лей годовых расходов.

ETICS-CoA-002-2018



European Testing Inspection and Certification System

CERTIFICATE OF ACCEPTANCE

SGS Belgium N.V. - Division SGS CEBEC

Bld. Internationalelaan, 55/D, Brussels Belgium

has been assessed and determined to fully comply with the requirements of EN-ISO/IEC 17065, PD ECS 050 and the Rules of Procedure relevant to the European Schemes for which the responsible CB is member.

SGS Belgium N.V. – Division SGS CEBEC

is therefore entitled to operate as Certification Body within the European Schemes ENEC, ENEC+, CCA, CCA EMC, HAR and KMK for the Scope (Product Category(ies) and Standard(s)) as listed in the relevant part of the ETICS Web Site at www.etics.org.

This certificate remains valid until 15th January 2021, at which time it will be reissued by the ETICS Secretary General upon successful completion of the normally scheduled 3-year Reassessment Programme administered by the ETICS.

Brussels, 15 January 2018

Giancarlo Zappa, Secretary General



Organisme belge d'Accréditation
Belgische Accreditatieinstelling
Belgische Akkreditierungsstelle
Belgian Accreditation Body

Signatory to EA, ILAC and IAF
Multilateral Agreements

Accreditation Certificate No. 226-TEST

In compliance with the provisions of the Royal Decree of 31 January 2006 setting up BELAC, the Accreditation Board hereby declares, that the test laboratory

LABORATOIRE DE PHOTOMETRIE DE R-TECH
Rue de Mons, 3
4000 LIEGE - Belgium

has the competence to perform the tests as described in the annex which is an integral part of the present certificate, in accordance with the requirements of the standard NBN EN ISO/IEC 17025:2005. The present accreditation is the subject of regular surveillance in order to confirm the compliance with the accreditation conditions.

The Chair of the Accreditation Board BELAC,

Nicole MEURÉE-VANLAETHEM

Issue date : 2016-05-19

Validity date : 2021-05-27

Original version of this certificate is in French.

CERTIFICAT DE GARANȚIE

Nr. 034/ 25.03.2019

Producător/ Furnizor: **SCHRÉDER ROMANIA S.R.L.**Beneficiar: **Primăria s.Cazaclia, UTA Gagauzia**Data livrării: pe perioada de valabilitate a: **“Realizarea sistemului de iluminat stradal din s.Cazaclia”**

Termen de garanție:

- ☐ Aparat de iluminat Schröder, tip **VOLTANA 2 5162 16 LED 700mA NW 38W 389092**: 5 ani, de la data livrării,
- ☐ Aparat de iluminat Schröder, tip **VOLTANA 2 5137 16 LED 750mA NW 39W 356052**: 5 ani, de la data livrării.
- ☐ Aparat de iluminat Schröder, tip **VOLTANA 0 5206 6 LED 1050mA NW 22W 394212**: 5 ani, de la data livrării.
- ☐ Aparat de iluminat Schröder, tip **VOLTANA 0 5205 6LED 1050mA NW 22W 394882**: 5 ani, de la data livrării.
- ☐ Aparat de iluminat Schröder, tip **VOLTANA 0 5206 6 LED 700mA NW 15W 394212**: 5 ani, de la data livrării.

Condiții de asigurare a garanției:

- **Se asigură garanție** pentru orice defecțiune a produsului generată de vicii ascunse care nu au putut fi detectate la momentul recepției de către Beneficiar.
- **Nu se asigură garanție** pentru viciile aparente după data recepției de către Beneficiar.
- Utilizarea necorespunzătoare a produsului și orice intervenție asupra sa **duce la pierderea garanției**.
- **Nu se asigură garanție** pentru materialele consumabile (varistori, fuzibili).
- **Nu se asigură garanție** dacă acest certificat nu este însoțit de originalul sau copia facturii de achiziție.

La livrare se predau Beneficiarului instrucțiuni de instalare, de punere în funcțiune, utilizare, întreținere, manipulare, depozitare și transport.

SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA



Eliberat,
martie 2019, Cluj-Napoca

Schröder Romania S.R.L.RO, Cluj-Napoca, 400228 | Str. Corneliu Coposu, Nr. 167A
T + 40 364.560.670 | F + 40 364.560.671

info.romania@schreder.com | www.schreder.com

CIF RO11210601 | RC J12/1759/1998

IBAN RO77FTSB6448000037001RON, BNP PARIBAS | Capital social 133.150 RON

Certificat MI

Membru în

Membru fondator



DECLARATIE DE CONFORMITATE - CE

Noi, 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 GIE, în calitate de producători de aparate de iluminat marca SCHRÉDER

Declarăm pe propria răspundere că aparatul de iluminat: **VOLTANA 0**

Echipare:

LED-uri de Mare Putere (High Power LED): 6 sau 8 LED-uri

Caracteristici principale:

Balast: Electronic

Etanșeitate compartiment optic: IP 66

Etanșeitate compartiment aparataj: IP 66

Tensiune nominală: 230 V – 50 Hz

Clasa electrică: I sau II

Tipul laboratorului de testare: SMT (Supervised Manufacturer's Testing)

este produs în conformitate cu următoarele standarde:

CEI EN 60598-1 – 2005/05 (CEI 34-21 VIII ed.)

CEI EN 60598-2-1 – 1997/10 (CEI 34-23 II ed.)

CEI EN 60598-2-3 – 2003/10 (CEI 34-33 II ed.)

De asemenea acesta este în conformitate și cu standardele:

CEI EN 55015 – 2008/04 (CEI 110-2 VI ed.)

CEI EN 61000-3-2 – 2007/04 (CEI 110-31 IV ed.)

CEI EN 61000-3-3/A1 – 2002/05 (CEI 110-28;V1)

CEI EN 61000-3-3 – 1997/06 (CEI 110-28 I ed.)

CEI EN 61547 – 1996/07 (CEI 34-75)

CEI EN 61547/A1 – 2001/08 (CEI 34-75;V1)

Data aplicării marcatului CE: 17

Produsul este realizat în conformitate cu directivele 2006/95/CE – Joasă Tensiune, 2002/95/CE - RoHS și 2002/96/CE – DEEE.

SCHRÉDER ROMANIA S.R.L.

Director Comercial,
Ovidiu GROZA



Eliberat,
Ianuarie 2019, Cluj-Napoca

Schröder Romania S.R.L.

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IBAN RO77FTSB6448000037001RON, BNP PARIBAS | Capital social 133.150 RON

Certificat MI

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Membru fondator



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Noi, 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 GIE, în calitate de producători de aparate de iluminat marca SCHRÉDER

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

Echipare:

LED-uri de Mare Putere (High Power LED): 16 LED-uri

Caracteristici principale:

Balast: Electronic

Etanșeitate compartiment optic: IP 66

Etanșeitate compartiment aparataj: IP 66

Tensiune nominală: 230 V – 50 Hz

Clasa electrică: I sau II

Tipul laboratorului de testare: SMT (Supervised Manufacturer's Testing)

este produs în conformitate cu următoarele standarde:

CEI EN 60598-1 – 2005/05 (CEI 34-21 VIII ed.)

CEI EN 60598-2-1 – 1997/10 (CEI 34-23 II ed.)

CEI EN 60598-2-3 – 2003/10 (CEI 34-33 II ed.)

De asemenea acesta este în conformitate și cu standardele:

CEI EN 55015 – 2008/04 (CEI 110-2 VI ed.)

CEI EN 61000-3-2 – 2007/04 (CEI 110-31 IV ed.)

CEI EN 61000-3-3/A1 – 2002/05 (CEI 110-28;V1)

CEI EN 61000-3-3 – 1997/06 (CEI 110-28 I ed.)

CEI EN 61547 – 1996/07 (CEI 34-75)

CEI EN 61547/A1 – 2001/08 (CEI 34-75;V1)

Data aplicării marcatului CE: 17

Produsul este realizat în conformitate cu directivele 2006/95/CE – Joasă Tensiune, 2002/95/CE - RoHS și 2002/96/CE – DEEE.

SCHRÉDER ROMANIA S.R.L.

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IBAN RO77FTSB6448000037001RON, BNP PARIBAS | Capital social 133.150 RON

Certificat MI

Membru în

Membru fondator





CERTIFICAT

Schröder



BS OHSAS 18001:2007

DEKRA Certification GmbH certifică prin aceasta că

Schröder Romania S.R.L.

Domeniul de certificare:

Proiectare luminoasă și de sisteme de iluminat; comercializare echipamente electrice de iluminat

Locația certificată:

Str. Corneliu Coposu Nr.167A, RO-400228 Cluj-Napoca

a implementat și menține un sistem de management al sănătății și securității ocupaționale, conform standardului mai sus menționat și aplică acest sistem în mod eficace. Dovada a fost prezentată în cadrul auditului de certificare prin raportul nr. 314R1517.

Certificatul este valabil din 18.05.2017 până în 19.04.2018

Nr. înregistrare certificat: 270415022

Lothar Weinhofen



Lothar Weinhofen
DEKRA Certification GmbH Stuttgart, 18.05.2017



Deutsche
Akkreditierungsstelle
D-ZM-16029-01-01

Заказчик:
Примария с.Казаклия

Оператор:
Schreder Groop

Адрес проекта:
6113, MOLDOVA, UTA
Găgăuzia, s.Cazaclia,
с.Казаклия, ул.Ленина,99

Дата:
25.03.2019

6113, MOLDOVA, UTA
Găgăuzia, s.Cazaclia,
с.Казаклия, ул.Ленина,99

078316355
primaria.cazaclia@mail.ru

Уличное освещение с. Казаклия

Реконструкция и модернизация уличного освещения в селе Казаклия, Чадыр-Лунгского района



Оглавление

Уличное освещение с. Казаклия

Уличное освещение с. Казаклия

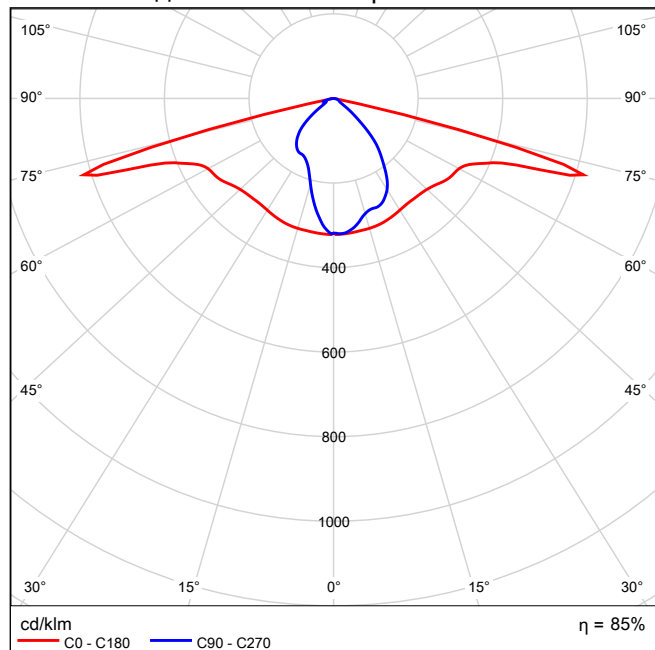
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Schröder VOLTANA 0 / 5206 / 6 LEDs 1000mA NW / 394212 1x6 LEDs 1000mA NW



Коэффициент полезного действия: 85.09%
 Световой поток ламп: 2257 lm
 Световой поток от светильников: 1920 lm
 Мощность: 22.0 W
 Классификация светильников по DIN: A40
 Классификация светильников по BZ: BZ 5
 Классификация светильников по UTE: 0.85E
 Классификация светильников по CIE: 100
 CIE Flux Code: 46 79 97 100 85

Место выхода света 1 / Полярные LVK



CONCEPT

Family of 6 road LED luminaires

Recommended installation height: between 4m and 12m
 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

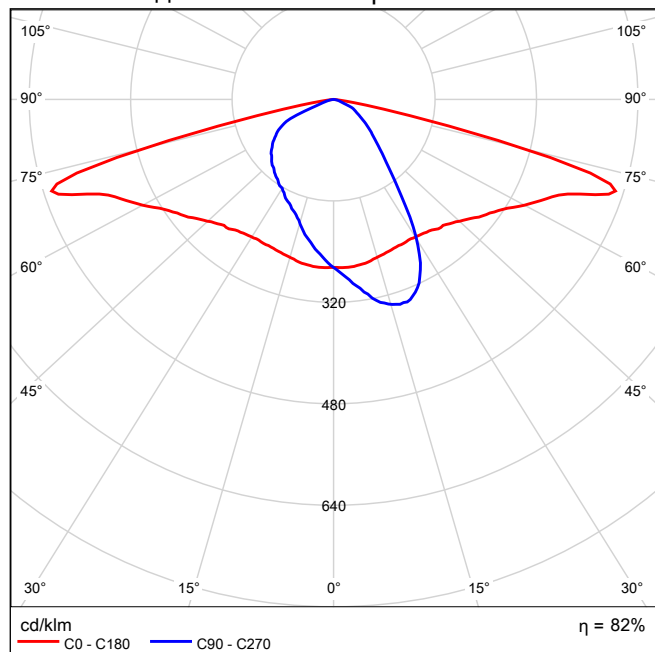
- Other RAL or AKZO colours
- Back Light control system
- OWLET remote management
- Custom dimming profile
- Photocell

Schröder VOLTANA 2 / 5162 / 16 LEDs 700mA NW / 389092 1x16 LEDs 700mA NW



Коэффициент полезного действия: 82.49%
 Световой поток ламп: 5356 lm
 Световой поток от светильников: 4418 lm
 Мощность: 38.0 W
 Классификация светильников по DIN: A40
 Классификация светильников по BZ: BZ 6/1.00/BZ 5
 Классификация светильников по UTE: 0.82E
 Классификация светильников по CIE: 100
 CIE Flux Code: 44 74 96 100 82

Место выхода света 1 / Полярные LVK



CONCEPT

Family of 6 road LED luminaires

Recommended installation height: between 4m and 12mm
 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 @ $T_q=25^\circ\text{C}$ @ 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

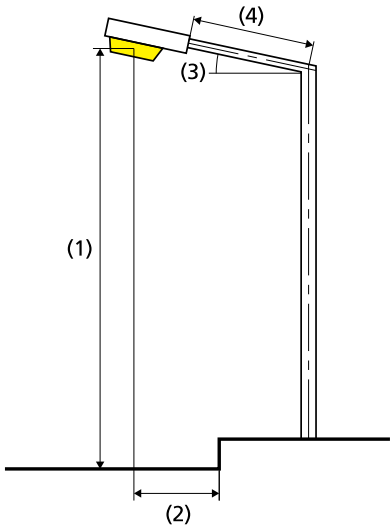
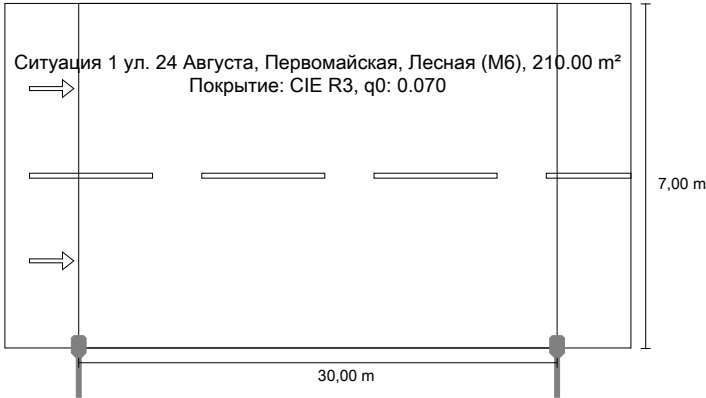
- CE
- ENEC
- LM79-80
- ROHS
- Certified for 3G vibration
- All measurements in ISO17025 accredited laboratory

OPTIONS

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

Ситуация 1 ул. 24 Августа, Первомайская, Лесная по EN 13201:2015

Schröder VOLTANA 0 / 5206 / 6 LEDs 1000mA NW / 394212



Результаты для полей оценки
Коэффициент эксплуатации: 0.80

Ситуация 1 ул. 24 Августа, Первомайская, Лесная (М6)

L _{cp} [cd/m²] ≥ 0.30	U _o ≥ 0.35	U _i ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.31	✓ 0.41	✓ 0.73	✓ 14	✓ 0.30

Результаты для показателей энергоэффективности

Индикатор плотности мощности (D_p) 0.022 W/lx·m²
Интенсивность потребления энергии
Расположение: VOLTANA 0 / 5206 / 6 LEDs 1000mA NW / 394212 (88.0 кВт·ч/год) 0.4 кВт·ч/м² год

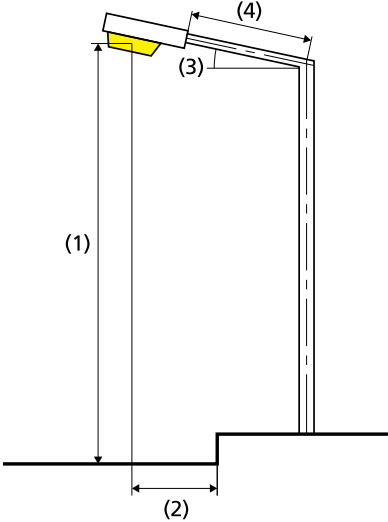
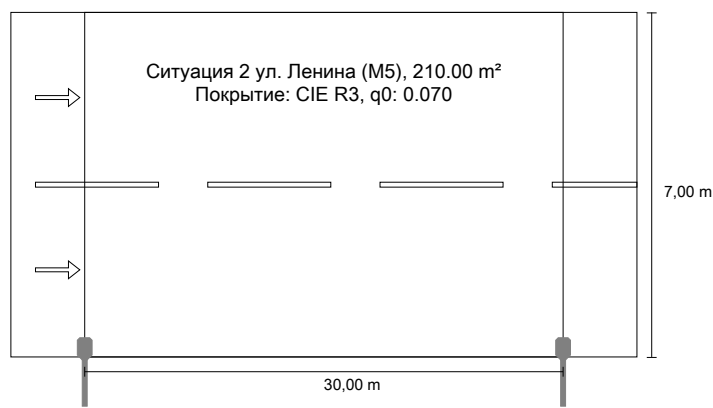
Лампа: 1x6 LEDs 1000mA NW
Световой поток (светильник): 1920.43 lm
Световой поток (лампа): 2257.00 lm
Рабочие часы
4000 h: 100.0 %, 22.0 W
W/km: 726.0
Расположение: односторонне вниз
Расстояние между мачтами: 30.000 m
Наклон консоли (3): 5.0°
Длина консоли (4): 0.801 m
Высота световых точек (1): 7.000 m
Свес световой точки (2): 0.000 m

ULR: 0.00
ULOR: 0.00
Наибольшие значения силы света
при 70°: 712 cd/klm
при 80°: 291 cd/klm
при 90°: 1.21 cd/klm
Класс интенсивности света: /

В во всех направлениях, которые образуют указанный угол с нижней вертикалью в установленных и готовых к работе светильниках.
Компоновка отвечает классу индекса ослепления D.5

Ситуация 2 ул. Ленина по EN 13201:2015

Schröder VOLTANA 2 / 5162 / 16 LEDs 700mA NW / 389092



Результаты для полей оценки
Коэффициент эксплуатации: 0.67

Ситуация 2 ул. Ленина (M5)

Lcp [cd/m²] ≥ 0.50	Uo ≥ 0.35	Ui ≥ 0.40	TI [%] ≤ 15	EIR ≥ 0.30
✓ 0.57	✓ 0.47	✓ 0.85	✓ 15	✓ 0.35

Результаты для показателей энергоэффективности

Индикатор плотности мощности (Dp) 0.022 W/lxm²

Интенсивность потребления энергии

Расположение: VOLTANA 2 / 5162 / 16 LEDs 700mA NW / 389092 (152.0 кВт-ч/год) 0.7 кВт-ч/м² год

Лампа:	1x16 LEDs 700mA NW
Световой поток (светильник):	4417.96 lm
Световой поток (лампа):	5356.00 lm
Рабочие часы	
4000 h:	100.0 %, 38.0 W
W/km:	1254.0
Расположение:	односторонне внизу
Расстояние между мачтами:	30.000 m
Наклон консоли (3):	10.0°
Длина консоли (4):	0.800 m
Высота световых точек (1):	7.500 m
Свес световой точки (2):	0.141 m

ULR:	0.00
ULOR:	0.00

Наибольшие значения силы света

при 70°:	881 cd/klm
при 80°:	333 cd/klm
при 90°:	5.71 cd/klm

Класс интенсивности света: /

В во всех направлениях, которые образуют указанный угол с нижней вертикалью в установленных и готовых к работе светильниках.

Компоновка отвечает классу индекса ослепления D.0

SUPERVISED MANUFACTURER'S TESTING

Report nr. CEBEC-002B

SGS Belgium NV

Division SGS CEBEC

Business Riverside Park
Bld Internationalelaan, 55 Build. D
B-1070 Brussels - Belgium

Acting as national Certification Body participation in the Certification Bodies Scheme (CB Scheme) and the European Certification System (ECS) has recognized the following laboratory as

SMT laboratory nr. CEBEC-002

Operating in the framework of the IECEE CB-scheme and ECS certification system (CCA and ENEC).

Approved laboratory, name and address:

Service Laboratoire
R-TECH S.A.
Rue de Mons, 3
BE-4000 LIEGE

Manufacturing factories:

European Factories
Belonging to the
Schröder Group G.I.E.

Products covered by the contract:

<u>Category</u>	<u>Standards</u>	<u>Products</u>
LITE	IEC/EN 60598-1 IEC/EN 60598-2-1 IEC/EN 60598-2-3 IEC/EN 60598-2-5 IEC/EN 60598-2-13	Luminaires Fixed general purpose luminaires Luminaires for road and street lighting Floodlights Ground recessed luminaires

Brussels, 2013-02-01


ir. C. Lana,
Certification Manager



SGS Belgium NV

Division SGS CEBEC Bld Internationalelaan, 55 Build. D B-1070 Bruxelles/Brussel tel. +32 (0) 556 00 20 fax: +32 (0) 556 00 36 www.cebex.sgs.com
Siège Social/Maatschappelijke Zetel: SGS House Noorderlaan 87 B-2030 Antwerpen

Member of the SGS Group (Société Générale de Surveillance)

RPM/RPR Anvers/Antwerpen TVA/BTW BE 404.882.750 Dexia 550-3560000-93

**ПОЯСНИТЕЛЬНАЯ ЗАПИСКА
К ТЕХНИЧЕСКОМУ ПРЕДЛОЖЕНИЮ (OFERTA TEHNICA)
Для выполнения**

**РЕКОНСТРУКЦИЯ И МОДЕРНИЗАЦИЯ УЛИЧНОГО ОСВЕЩЕНИЯ В СЕЛЕ
КАЗАКЛИЯ, ЧАДЫР-ЛУНГСКОГО РАЙОНА**

1. OBIECTUL CERERII DE OFERTE

Procedura aplicata pentru atribuirea contractului de achiziție publica este “**Cererea ofertelor de pret**” si se desfășoara in conformitate cu actele normative in vigoare.

2. ORGANIZATORUL PROCEDURII:

Denumirea autorității contractante : Примария с.Казаклия

Adresa: 6113, MOLDOVA, UTA Găgăuzia, s.Cazaclia, с.Казаклия, ул.Ленина,99

Nr. Telefon: 078316355

E-mail: primaria.cazaclia@mail.ru

3. CONDIȚII DE PARTICIPARE LA CONCURS:

3.1 Техническое предложение составлено в соответствии с техническим заданием, ситуациям 1 и 2, приложением к тех. заданию .

4. OBIECTUL CONTRACTULUI

В ходе выполнения работ по Реконструкции и модернизации уличного освещения в селе Казаклия предусмотрено к выполнению:

Объемы работ представлены в смете (Formular 3; 5; 7)

4.1 Обоснование выбора светильников согласно дорожных ситуаций:

- Ситуация 1 - clasă de iluminat M6: тип светильника 1
- Ситуация 1 - clasă de iluminat M5: тип светильника 2

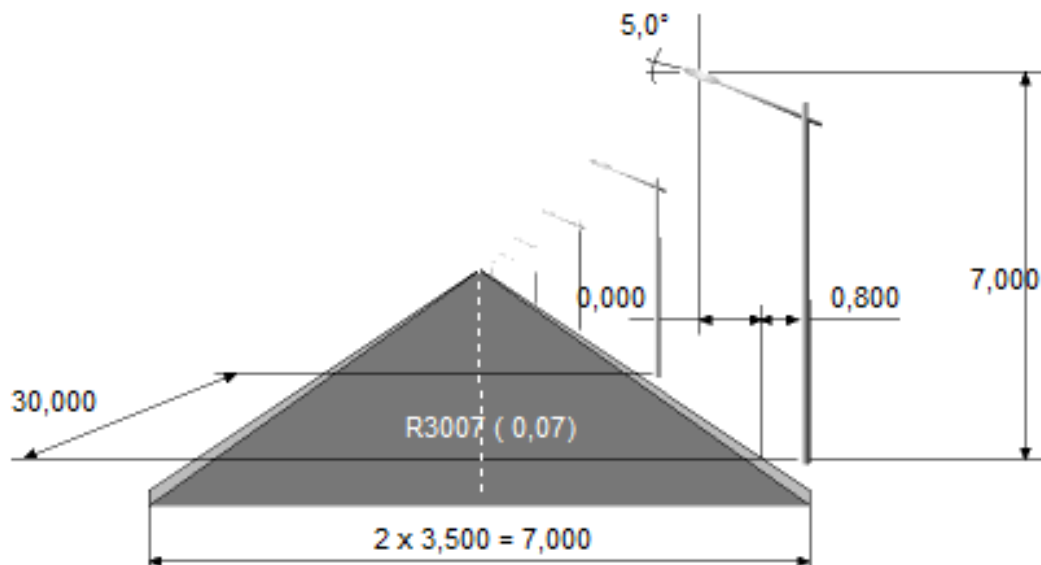
- Для ситуации 1 предлагаем светильник **VOLTANA 0 5206 6 LEDS 1050mA NW**
Тип 1

	Мощность - 22 W, Цветовая еумпература - 4000K, Степень защиты - IP66, Ударопрочность - IK08, Срок службы источника света – L70/B10 100000 часов
---	--

- Для ситуации 2 предлагаем светильник **VOLTANA 2 5162 16 LEDS 700mA NW**
Тип 2

	Мощность - 38 W, Цветовая еумпература - 4000K, Степень защиты - IP66, Ударопрочность - IK08, Срок службы источника света – L80/B10 100000 часов
---	--

Параметры установки светильников:



Ситуация 1 : Улицы 24 Августа, Первомайская, Лесная
clasă de iluminat M6:

- Расположение: одностороннее
- Шаг опор: 30 m
- Ширина проезжей части: 7 m
- Отступ опоры: 1 m
- Монтажная высота установки светильника: 7 m
- Длина кронштейна: 0,8 m
- Угол наклона светильника: 5°
- Фактор эксплуатации (коэф. Запаса): 0,8

Результаты светотехнических расчетов (вырезка из рапорта светотехнического расчета)

Результаты для полей оценки

Коэффициент эксплуатации: 0.80

Ситуация 1 ул. 24 Августа, Первомайская, Лесная (M6)

L _{cp} [cd/m ²] ≥ 0.30	U _o ≥ 0.35	U _I ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.31	✓ 0.41	✓ 0.73	✓ 14	✓ 0.30

Результаты для показателей энергоэффективности

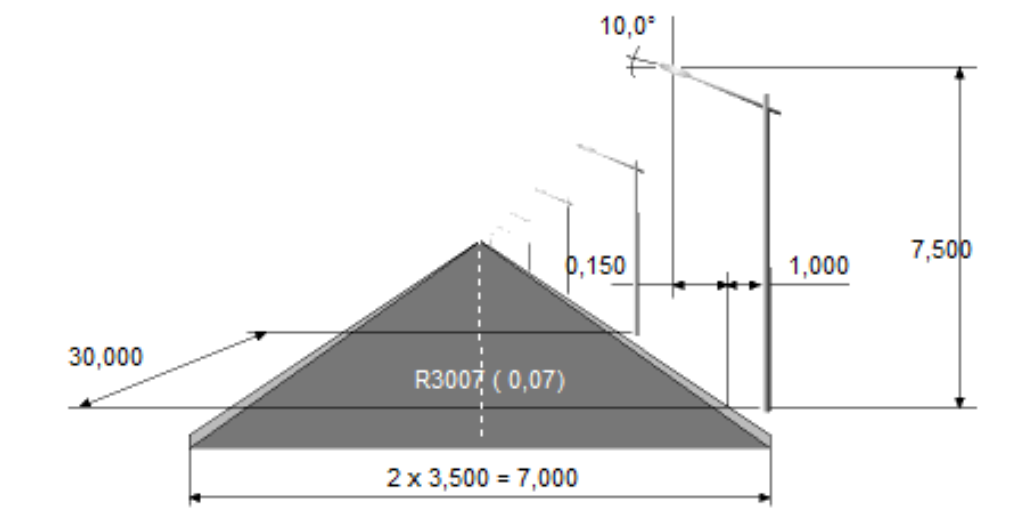
Индикатор плотности мощности (Dp)

0.022 W/lx·m²

Интенсивность потребления энергии

Расположение: VOLTANA 0 / 5206 / 6 LEDs 1000mA NW / 0.4 кВт·ч/м² год
 394212 (88.0 кВт·ч/год)

Для подтверждения файла светильника, VOLTANA 0 5206 6 LEDS 1050mA NW 22 W 394212 примененного в светотехнических расчетах, представлен рапорт фотометрических испытаний **Fotometric test raport 394212** и спецификация фотометрических показателей **VOLTANA 0_5206_6 LG Innotek 3535 Gen4_Integrated lenses_394212**.



Ситуация 2 : Улица Ленина

clasă de iluminat M5:

- Расположение: одностороннее
- Шаг опор: 30 m
- Ширина проезжей части: 7 m
- Отступ опоры: 1 m
- Монтажная высота установки светильника: 7,5 m
- Длина кронштейна: 0,8 m
- Угол наклона светильника: 5°
- Фактор эксплуатации (коэф. Запаса): 0,67

Результаты светотехнических расчетов (вырезка из рапорта светотехнического расчета)

Результаты для полей оценки
Коэффициент эксплуатации: 0.67

Ситуация 2 ул. Ленина (M5)

Lcp [cd/m ²] ≥ 0.50	Uo ≥ 0.35	UI ≥ 0.40	TI [%] ≤ 15	EIR ≥ 0.30
✓ 0.57	✓ 0.47	✓ 0.85	✓ 15	✓ 0.35

Результаты для показателей энергоэффективности

Индикатор плотности мощности (Dp) 0.022 W/lx·m²

Интенсивность потребления энергии

Расположение: VOLTANA 2 / 5162 / 16 LEDs 700mA NW / 0.7 кВт·ч/м² год
389092 (152.0 кВт·ч/год)

Для подтверждения файла светильника, VOLTANA 2 5162 16 LEDS 700mA NW 38 W 389092 примененного в светотехнических расчетах, представлен рапорт фотометрических испытаний **Fotometric test raport 389092** и спецификация фотометрических показателей **VOLTANA 2_5162_16 LG Innotek 3535 G4L_Flat glass_389092**.

4.2 Технические характеристики предлагаемых светильников в сравнении с минимальными требованиями.

VOLTANA 0 5206 6 LEDS 1050mA NW 22 W 394212



Наименование	Требования	Parametrii ofertati de furnizor
Номинальная мощность	<30W	22W
Рабочее напряжение	230V/50Hz	120-277V / 50Hz
Степень защиты оптического блока	min IP 65	IP 66 (подтвержденно тестом)
Степень защиты блока питания	min IP 65	IP 66 (подтвержденно тестом)
Ударопрочность	IK08	IK08 (подтвержденно тестом)
Корпус выполненный из	литого алюминиевого сплава	литой алюминиевый сплав
КСС	Для уличного освещения	5206
Срок службы	minim 100000 часов	100.000 часов
Световой поток	Не менее 70%	70%
Полярная диаграмма	Тип К	Program Dialux, 394212
КПД светильника	Minim 0,75	85.09%
Защита от поражения током	Clasa 1;2	Clasa 1
Цветовая температура	4000K - 5000K	4000K
Защита от перенапряжения	Minim 4kV	4kV
Рабочая температура	-30 и +40	-30 +50
Garantie	Min 60 luni	60 Luni

VOLTANA 2 5162 16 LEDS 700mA NW 38W 389092



Puterea luminoasă (flux nominal)	1,000 - 18,900lm
Nivelul de etanșeitate a compartimentului optic	IP 66 (*)
Nivelul de etanșeitate a compartimentului cu echipamentul de control	IP 66 (*)
Rezistența la impact (sticlă)	IK 08 (**)
Tensiunea nominală	120 - 277V - 50 - 60Hz
Clasa Electrică	I / II (*) - US Clasa 1

(*) conform standardului IEC - EN 60598
 (**) conform standardului IEC - EN 62262

Greutatea Voltana 1 4kg

Наименование	Требования	Parametrii ofertati de furnizor
Номинальная мощность	<50W	38W
Рабочее напряжение	230V/50Hz	120-277V / 50Hz
Степень защиты оптического блока	min IP 65	IP 66 (подтвержденно тестом)
Степень защиты блока питания	min IP 65	IP 66 (подтвержденно тестом)
Ударопрочность	IK08	IK08 (подтвержденно тестом)
Корпус выполненный из	литого алюминиевого сплава	литой алюминиевый сплав
КСС	Для уличного освещения	5162
Срок службы	minim 100000 часов	100.000 часов
Световой поток	Не менее 70%	80%
Полярная диаграмма	Тип К	Program Dialux, 389092
КПД светильника	Minim 0,75	82.49%
Защита от поражения током	Clasa 1;2	Clasa 1
Цветовая температура	4000K - 5000K	4000K
Защита от перенапряжения	Minim 4kV	4kV
Рабочая температура	-30 и +40	-30 +50
Garantie	Min 60 luni	60 Luni

4.3 Кронштейны

Для монтажа светильников предусмотрены типовые кронштейны KC-1.

5. Представленные документы для подтверждения характеристик светильников :

5.1 Рапорт светотехнических расчетов и файлы светильников

Рапорт светотехнических расчетов с подтверждением соответствия классам освещенности по ситуациям 1 и 2 в файле - Raport calcule Dialux Cazaclia

Подтверждение файлов светильников, Фотометрические испытания в файлах:

Для ситуации 1: Fotometric test raport 394212;

VOLTANA 0_5206_6 LG Innotek 3535 Gen4_Integrated lenses_394212

Для ситуации 2: Fotometric test raport 389092;

VOLTANA 2_5162_16 LG Innotek 3535 G4L_Flat glass_389092

5.2 Технические характеристики светильников:

Для ситуации 1 тип светильника 1 VOLTANA 0 5206 6 LEDS 1050mA NW 22W 394212

- Проспект в файле - voltana-romana-brochure-v3
- Сертификат соответствия в файле - VOLTANA 0 Class I ENEC Certificate
- Декларация соответствия CE от производителя в файле - Declaratie CE Voltana 0
- Гарантийный сертификат в файле - Certificat de garantie Voltana
- Тест IP в файле - VOLTANA 0 IP.
- Тест IK в файле - VOLTANA 0 IK.
- Тест EMC в файле - VOLTANA 0 EMC.
- Термический тест в файле VOLTANA 0 Thermal 6 led 1050 mA.
- Срок службы источника света в файле - 3535 Gen4_55deg_1000mA
- Цветовая температура в файле - 39421.appendix

Для ситуации 2 тип светильника 2 VOLTANA 2 5162 16 LEDS 700mA NW 38W 389092

- Проспект в файле - voltana-romana-brochure-v3
- Сертификат соответствия в файле - VOLTANA 1_5 ENEC Certificate class I_20497
- Декларация соответствия CE от производителя в файле - Declaratie CE Voltana 2
- Гарантийный сертификат в файле - Certificat de garantie Voltana
- Тест IP в файле – VOLTANA-2 IP.
- Тест IK в файле – VOLTANA-2 IK.
- Тест EMC в файле – VOLTANA-2 EMC.
- Термический тест в файле VOLTANA-2 Thermal.
- Срок службы источника света в файле - 3535 Gen4_55deg_700mA
- Цветовая температура в файле - 38909.appendix

6. Гарантии:

- Монтажные работы: 2 года;
- На светильники: 5 лет;

Prezentul Caiet de sarcini este parte integranta din contractul de achiziție publica.

7. Сравнительный энергетический расчет

NR.	Параметры	Базовые требования			Предложение		Экономия
		Тип 1	Тип 2		Тип 1	Тип 2	
1	Мощность светильников, Вт	30	50		22	38	
2	Количество светильников	730	35		730	35	
3	Установленная мощность kW	21,9	1,75		16,06	1,33	
4	Часы работы в год	4000	4000		4000	4000	
5	Годовое потребление kWh/год	87600	7000		64240	5320	
	Итого по системе kWh/год	94600			69560		25040
6	Тариф за kWh, лей	2			2		
7	Стоимость эксплуатации, лей в год	189200			139120		50080

Предложенное решение принесет годовую экономию электроэнергии в **25040 кВтч**, что составит экономию в **50080,00** лей годовых расходов.

Lumen maintenance report

LED information

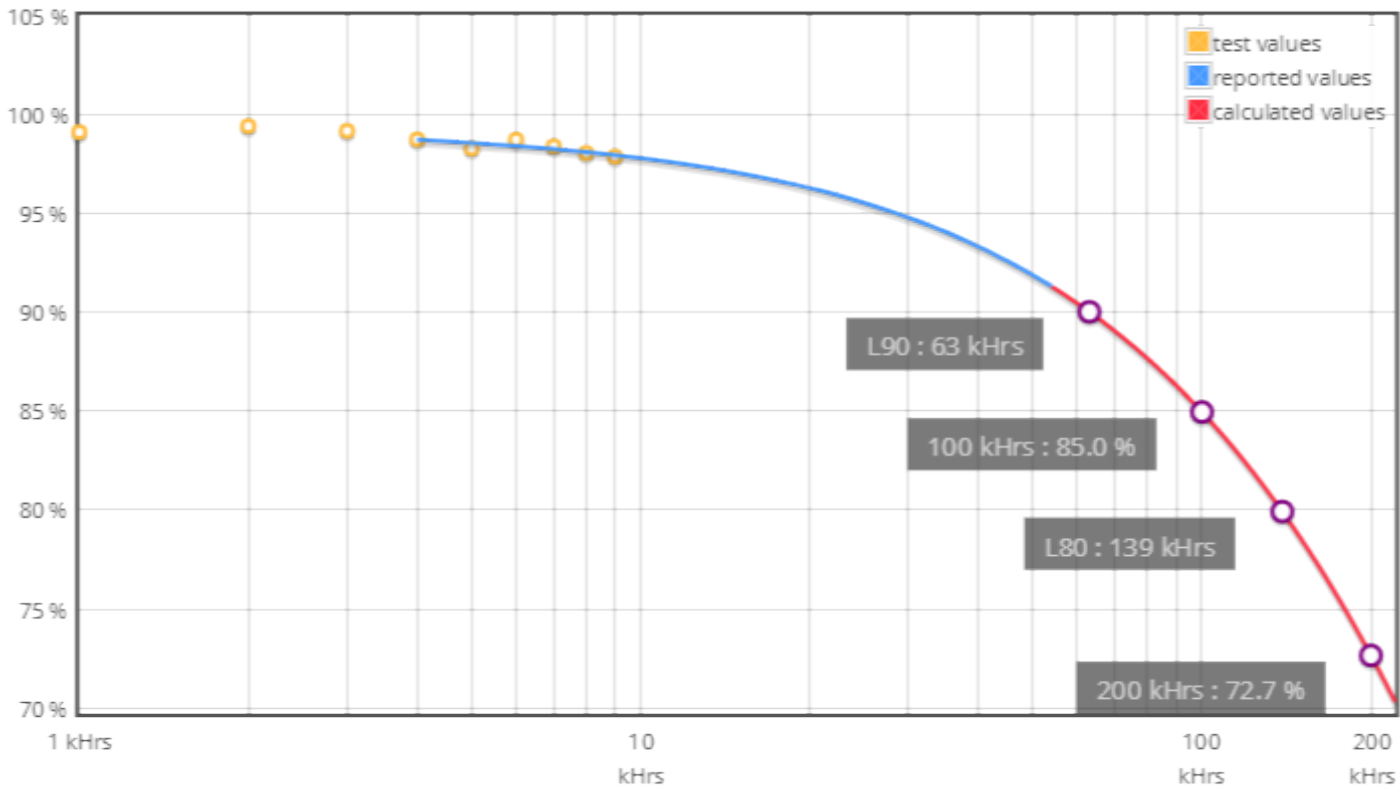
LED type	3535 Gen4
LED current	1000 mA
Ts	55°C
Description	KILT1401-U00009-24

Projection data

Test duration	9000 hrs	α	1.564E-006
Time used for projection	4000 to 9000hrs	β	0.993

L (%)	Time (kHrs)
72.7	200
80.0	138
85.0	100
90.0	63

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.

LED Flux measurement

FORM-L-41 ED1 REV 0

Date : **1/06/2016**

Operator : **FCE**

Filename : **2016_314.xml**



226 - TEST

NBN EN ISO/IEC 17025 : 2005

LEDs

Trademark : **LG Innotek**

Entry number : **36R138-1**

Type : **3535 Gen4**

Power (Catalogue) : **1.00** W

BIN Description : **Unknown NW**

Flux : **0** lm/LED

Part number : **Unknown**

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

Number of LEDs : **6**

Lenses

Trademark : **None**

Type : **None**

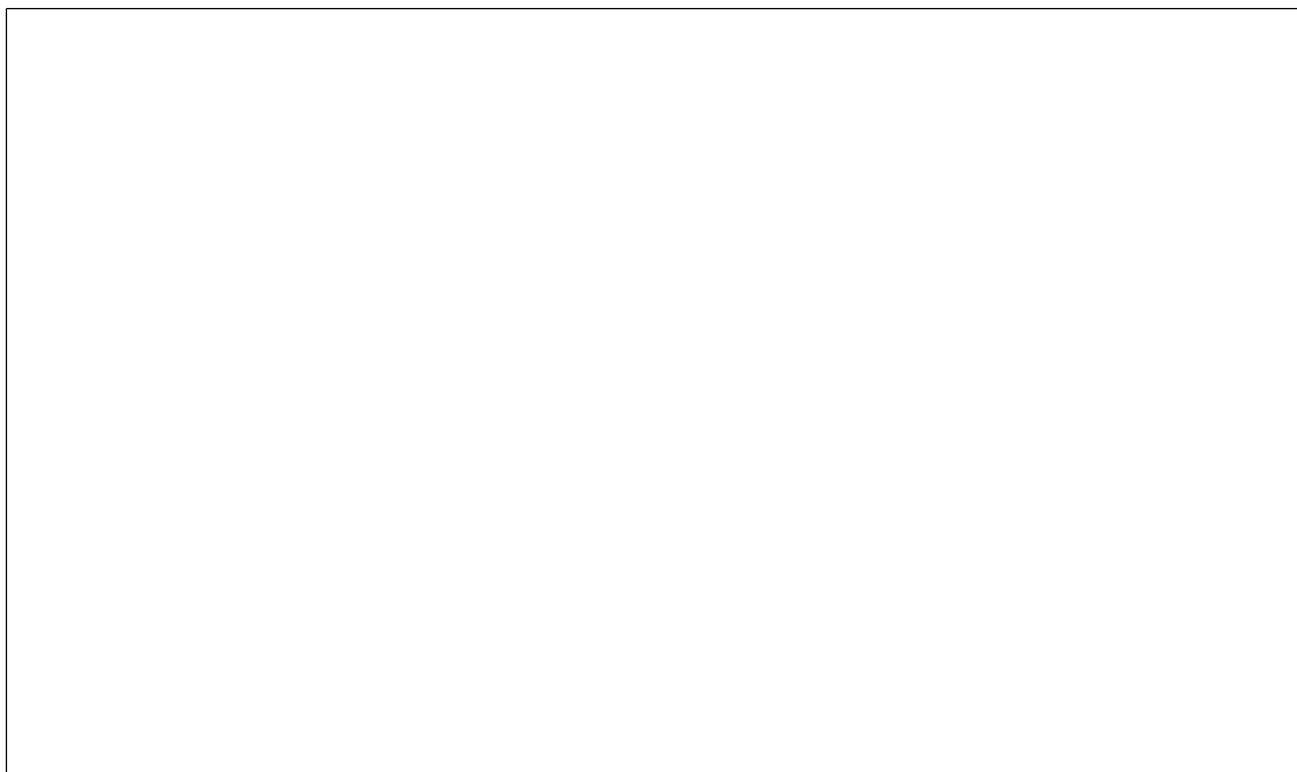
Power & Print

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

Print description : **skido**

Active ☐

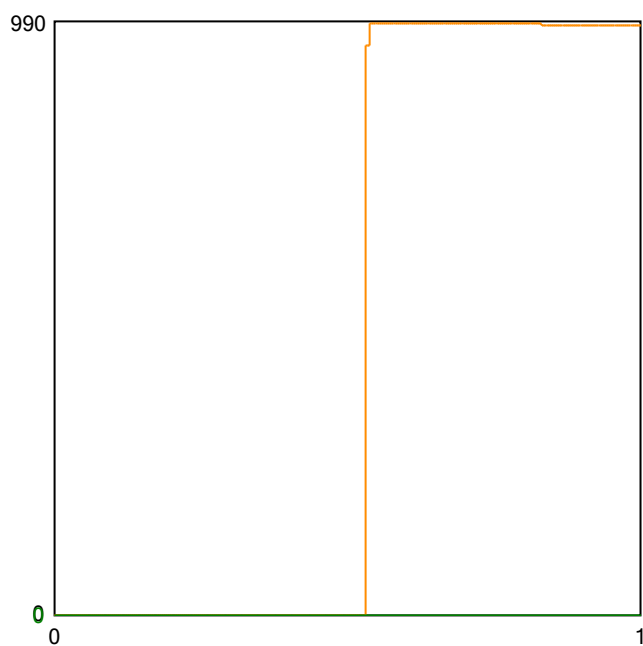
Picture



Sphere photometric measurement

Average flux : **466** lumens

Maximum flux : **990** lumens



Position in sphere :



Electrical measurement

● Secondary electrical measurement

Voltage : **17.36** V

Current : **0.350** A

Power : **6.07** Watt

→ LEDs light efficiency at thermal stabilization :

76.8 lm/W

77.7 lm/Led

→ LEDs light efficiency at 25° :

163.0 lm/W

164.9 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°/350mA - pcb with 6 LG 3535 Gen 4 TOP - pcb N°1

Comment :

FORM-L-41 ED1 REV 0



226 - TEST

NBN EN ISO/IEC 17025 : 2005

Approved by :

LED 2016/314 2/3

Colorimetry



226 - TEST

NBN EN ISO/IEC 17025 : 2005

File Preset Options Extra Calibration Info

Preset: CRI

Log Scale | Average | Compare | Show/Hide Legend | Zoom to Range: 100 | 0.0000

Wavelength (nm) | Spectral Radiance (W/nm.m²) | Spectral Power (W) | Spectral Irradiance (W/m².nm)

Auto: ref. illuminant - Planckian radiator CCT= 4120 K

View: ☐ R1..R14 ☒ R1..R15

Values: Ra=73

CRI

Auto: ref. illuminant - Planckian radiator CCT= 4120 K

Chromaticity difference DC= 3.3E-3

JIS color sample

CRI color samples

R1= 69.9 R8= 50.6 R15= 61.8

R2= 79.7 R9= -33.6

R3= 88.8 R10= 53.9

R4= 73.0 R11= 71.2

R5= 71.6 R12= 58.4

R6= 73.3 R13= 71.1

R7= 78.2 R14= 93.7

Ra (mean value of R1 - R8) 73.13

CRI

Auto: ref. illuminant - Planckian radiator CCT= 4120 K

Bar chart showing R1 to R15 and Ra values.

Target

Calibration File: #1 no accessory

Measurement Mode: Radiance

Transfer of data to table: ☐ Auto transfer

Average 1

Measurement

Luminance L_v 1.702E+2 cd/m^2

Radiance L_e 5.022E-1 $W/(sr.m^2)$

Corr. Color Temp CCT 4121 K

Chromaticity x 0.3733 y 0.3657

X 173.8 Y 170.2 Z 121.5

Customize

Continuous scan, interval 0 s.

Hold Integration Time

QUIT

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.

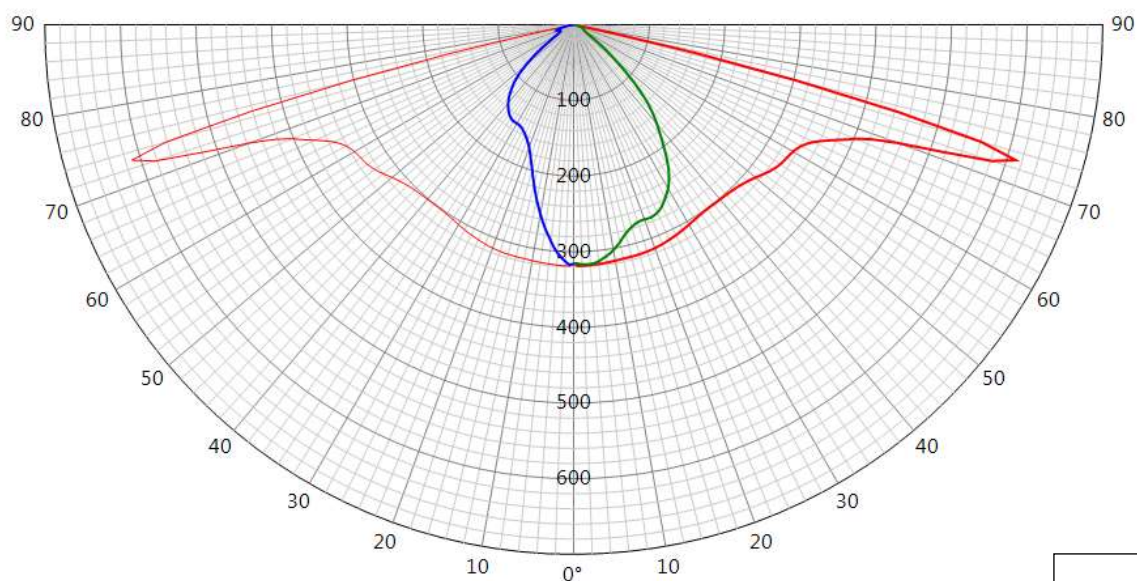
LED

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source							
Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206		
Master Reflector							
Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°				No		5206	
Protector Refractor Lens							
Protector integrated lenses Lens DKI 5206 PC							
Laboratory observation							
VOLTANA 0 with 6 LG 3535 GEN4 and the integrated lenses PC protector 5206. Used flux for efficiency matrix calculation = 990lm - CCT = 4121K - CRI = 73,1 (see sphere test report 2016/314 on appendix).							
Purpose DOC				Sample date 19/10/2016		Sample # 36R255	
Observation							
DOC Flux coefficient multiplicator (only for efficiency matrix): From 350 to 500 mA : 1,359 From 350 to 700 mA : 1,792 From 350 to 1000mA: 2,351							
Asked by LME		Measured by AUL		Approved by LME		Appendix 1	
				 226-TEST NBN EN ISO/IEC 17025 : 2005		39421	

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5206
Matrices	394211 Φ 0-90° = 842lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5206 PC						
Observation	Matrix in total flux @350 mA Light losses due to thermal stabilisation : 1% Electrical measurement on LED (#1) : Voltage = 17.15 V Current = 0.350 A Power = 6.00 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.038 A Power = 8.21 W PF = 0.936 Total luminaire power = 8.21 W : Lm/Watt = 102.62 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
0	612	73	S				
90	317	3	D				
270	317	1	G	316	25.0°	15/11/2016	

**39421**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5206
Matrices	394212 η 0-90° = 85.1% - 90-99° = 0.0%					Relative measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5206 PC						
Observation	Matrix in efficiency @350 mA Light losses due to thermal stabilisation : 1% Electrical measurement on LED (#1) : Voltage = 17.15 V Current = 0.350 A Power = 6.00 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.038 A Power = 8.21 W PF = 0.936 Total luminaire power = 8.21 W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

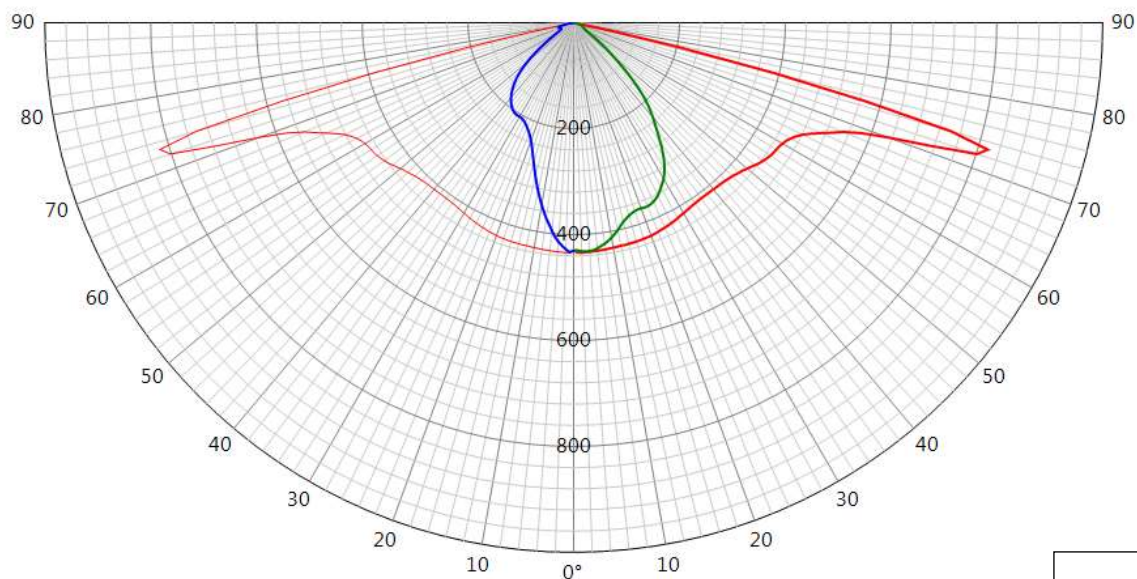
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
0	618	73	S	319	25.0°	15/11/2016	
90	320	3	D				
270	321	1	G				

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsrám-Schröder Plc. Hungary		Production Tungsrám-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206	
Reflector	Tungsrám-Schröder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5206
Matrices	394213 Φ 0-90° = 1145lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5206 PC						
Observation	Matrix in total flux @500 mA Light losses due to thermal stabilisation : 1.5% Electrical measurement on LED (#1) : Voltage = 17.48 V Current = 0.500 A Power = 8.72 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.050 A Power = 11.12 W PF = 0.961 Total luminaire power = 11.12 W : Lm/Watt = 102.98 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

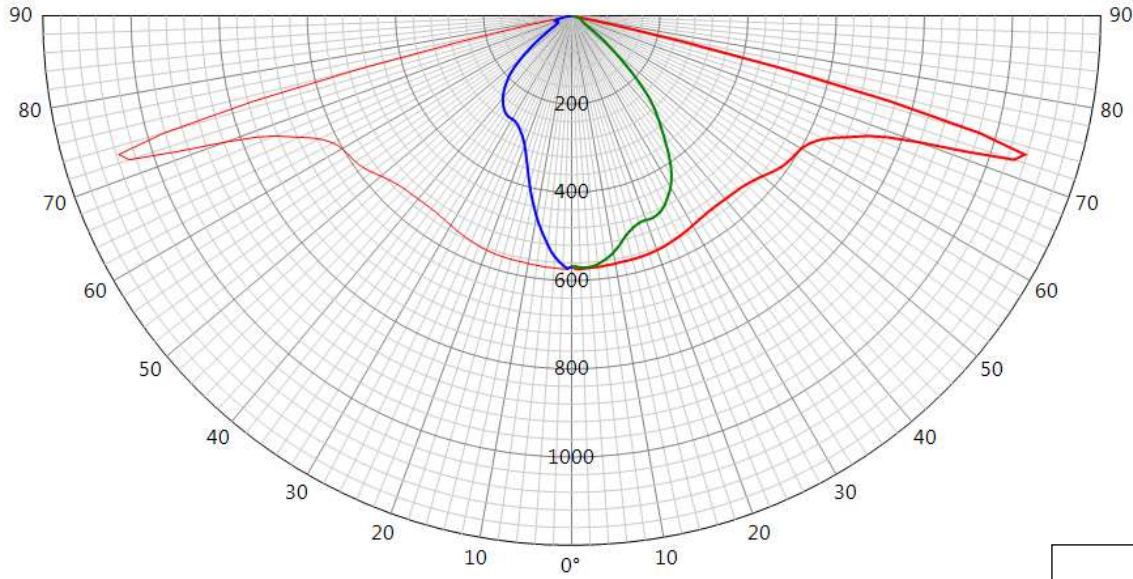
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
0	818	73	S				
90	432	3	D				
270	433	1	G	430	25.0°	15/11/2016	

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5206
Matrices	394214 Φ 0-90° = 1510lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5206 PC						
Observation	Matrix in total flux @700 mA Light losses due to thermal stabilisation : 3% Electrical measurement on LED (#1) : Voltage = 17.88 V Current = 0.700 A Power = 12.49 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.068 A Power = 15.33 W PF = 0.977 Total luminaire power = 15.33 W : Lm/Watt = 98.47 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
0	1075	73	S	568	25.0°	15/11/2016	
90	571	3	D				
270	573	1	G				

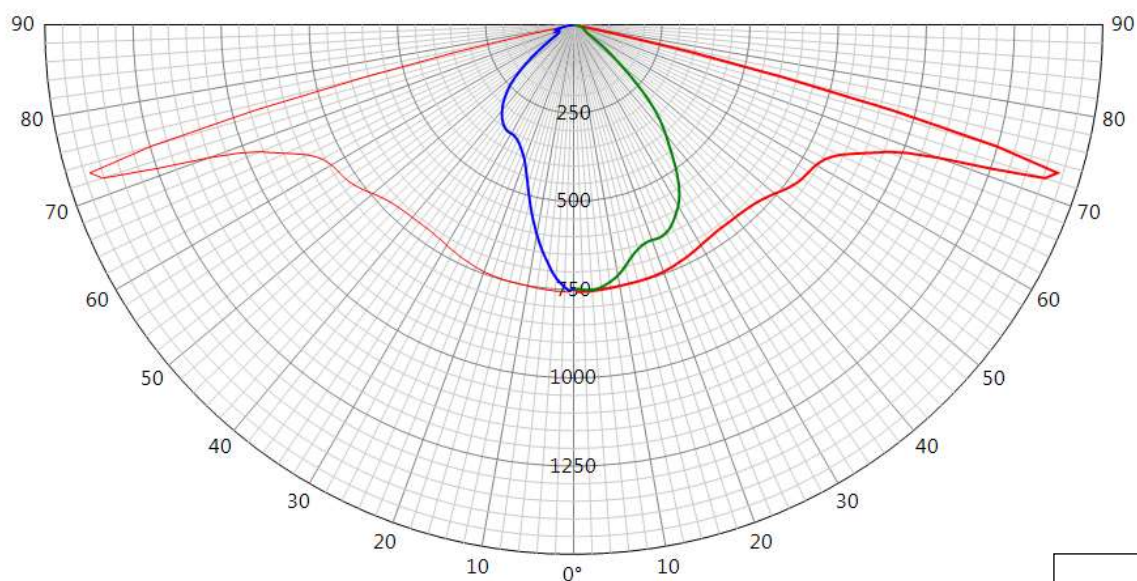


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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 0		Request # FD36148	
Source	Type LED	BIN Unknown NW	Trademark LG Innotek	Reference 3535 Gen4	# LEDs 6	Reflector 5206	
Reflector	Tungsram-Schreder Plc. Hungary Led assembly Road lighting Assembled 0.0°					No	5206
Matrices	394215 Φ 0-90° = 1981lm - 90-99° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector integrated lenses Lens 6 x DK1 5206 PC						
Observation	Matrix in total flux @1000 mA Light losses due to thermal stabilisation : 5.5% Electrical measurement on LED (#1) : Voltage = 18.31 V Current = 1.000 A Power = 18.31 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.097 A Power = 22.10 W PF = 0.987 Total luminaire power = 22.10 W : Lm/Watt = 89.62 lm/W Driver #1 : Philips Xitanium FP 22W 0.3-1.0 SNLDAE 230V S175 sxt						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
0	1435	73	S				
90	753	3	D	749	25.0°	16/11/2016	
270	753	1	G				

**39421**

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. 20254 replaces No.20142

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) : VOLTANA0 6 LED xx, VOLTANA0 8 LED xx

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

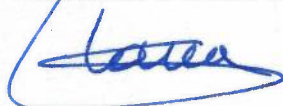
SGS CEBEC hereby declares that the above-mentioned product has been certified on the basis of:

- 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: 15/03/2017



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)	:	VOLTANA0 6 LED xx, VOLTANA0 8 LED xx
description	:	Street lighting
rated voltage (Un)	:	200-240 V
rated frequency	:	50-60 Hz
class	:	class I
degree of protection	:	IP66
additional information	:	IK08
rated output current (In out)	:	max. 1050 mA

Additional information

xx = Color Temperature can be :
NW neutral white
CW cool white
WW warm white

Product data - type VOLTANA0 6 LED xx

rated power	:	8-10-15-23 W
lamp(s)	:	6 LED
temperature class	:	Ta max. 50°C

Product data - type VOLTANA0 8 LED xx

rated power	:	11-14-20-31 W
lamp(s)	:	8 LED
temperature class	:	Ta max. 40°C

TESTS

Test requirements

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

Test results

The test results are laid down in test report(s) ref. P-1560-Ia

Remarks

This certificate is based on test reports Nos. P1560-Ia

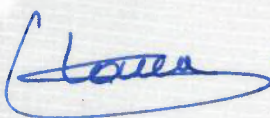
Conclusion

The examination proved that all test requirements were met.

Checked by, project leader : Christian Maes - 15/03/2017

Department Manager,
Product Certification

Certification Manager

 2017-03-15

FACTORY LOCATION(S)

Schröder do Brasil Iluminação Ltda.
Rua Iracema Lucas, 415
Distrito Industrial Vinhedo
13280-000 SAO PAULO
Brazil

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

Tungsram-Schröder Világítási Berendezések Zrt
Tópart 2
2084 PILISSZENTIVAN
Hungary

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-0 / 6 led's / Moons PU025H105AQ 0-10V driver

Sample n°: P-E16371, P-E16375

Test purpose: Electrical measurements @ 1.05A

Remarks:

Test request n°: P-D16542

Folder n°: P-F16041

TEST CONDITIONS:

Operator: CLOSSET Frédéric

Load: 6 Led's
Typical Vf: 3,1 V

Driver: Moon's PU025H105AQ_0-10V Series

Power supply: Elgar ET3500 230V 50Hz

Measurement device: Fluke Norma 4000 HF power meter

CONCLUSIONS:

PF: 0.97

Efficiency: 82.1 %

THD: 9.1 %

Harmonics we are under the 25W => no measurements



Duplicate to: Mr M. Thijs
LAB 05/10/2016
L. Maghe

//P-16CR542

A handwritten signature in blue ink, appearing to read "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: VOLTANA-0 8 led's class II PHILIPS driver 40 W

Sample n°: P-E17149

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

Remarks:

Test request n°: P-D17187

Folder n°: P-F16041

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	
EN 61000-3-2	Class C a)	X	

Immunity

Standard	Limit / Level	Result	
		PASS	FAIL
EN 61000-4-2	4 kV at contact 2, 4 & 8 kV in the air Criteria B required	X	
EN 61000-4-3	3 V/m 80 MHz – 1 GHz AM 80 % 1 kHz Criteria A required	X	
EN 61000-4-4	1 kV 5 kHz Criteria B required	X	
EN 61000-4-5	0.5 & 1 kV MD Criteria C required	X	
EN 61000-4-5	Complementary levels 2, 4, 8 & 10 in MD Criteria C required	X	
EN 61000-4-6	3 V 150 kHz – 80 MHz AM 80 % 1 kHz Criteria A required	X	
EN 61000-4-11	0% U 0.5 period 70% U 10 periods Criteria B/C required	X	

VOLTANA-0 8 led's class II PHILIPS driver 40 W

Driver: Philips FP 40W 0.3-1A

EMC Auxiliaries: Varistors

CONCLUSIONS:



VOLTANA 0 8 led's driven by PHILIPS FP 40 W driver complies with the CISPR/EN 55015 and EN 61547 Standards.

Remark: Surge protection tested OK up to 10 KV for Differential mode for the equipment with eventual Fuse replacement.

Duplicate to: Mr Ph. Verbeeck
LAB 24/04/2014
G. Cheuvart

//P-17CR187



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-0 equipped with 5205 & 5206 lenses

Sample n°: P-E16393, P-E16460

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

Remarks:

Test request n°: P-D16655

Folder n°: P-F16041

TEST CONDITIONS:

Operator: BOMBIL Patrick

VOLTANA-0 equipped with 6 led's

At pendulum hammer

5+2 impact points distributed on lens protector surface

One impact on each point

Test on 5 samples

Test

Result

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

OK for all tested samples

CONCLUSIONS:



VOLTANA 0 equipped with 5205 & 5206 lenses complies with IK08 test following IEC/EN 62262 Standard.

Duplicate to: Mr M. Thijs
LAB 23/11/2016
L. Maghe

//P-16CR655

A handwritten signature in blue ink, appearing to read "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: VOLTANA 0 – 8 led's – Flat glass protector

Sample n°: P-E16377, P-E16394

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

Remarks:

Test request n°: P-D16575

Folder n°: P-F16041

TEST CONDITIONS:

Operator: BOMBIL Patrick

VOLTANA-0 8 led's with flat glass protector

Pre-conditioning: endurance test

Test	Result
<u>IP6X</u> : -Luminaire switched ON until stable T° -Talcum in suspension (blowing ON) -After 1', luminaire OFF -Talcum for 3 hours	OK
<u>IPX6</u> : - 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-0 8 led's with flat glass protector complies with IP66 test following IEC/EN 60598-1 Standard.

Duplicate to: Mr M. Thijs
LAB 21/11/2016
L. Maghe

//P-16CR575

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-0 / 6 led's / Moons PU025H105AQ 0-10V driver

Sample n°: P-E16371, P-E16375

Test purpose: Thermal test @ 1050 mA following IEC/EN 60598-1 Standard

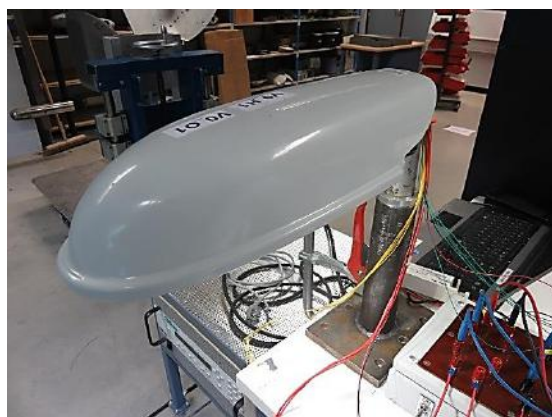
Remarks:

Test request n°: P-D16541

Folder n°: P-F16041

TEST CONDITIONS:

Operator: CLOSSET Frédéric



Load: 6 Led's

Driver: Moon's PU025H105AQ_0-10V Series

Tc: 90°C

Working temperature: -40 ~ +60°C according
To datasheet.

Measurement device:

Yokogawa TX10: thermal measurement

Yokogawa WT 210: primary EM

Fluke 87: 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:

Ta (IEC): 55 °C limited by Driver

Tq (IEC): 35 °C limited by Driver

Tq given for 100 khrs of lifetime

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

Duplicate to: Mr M. Thijs

LAB 06/10/2016

L. Maghe

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

//P-16CR541

VOLTANA 0

5206

Optic	5206
Protector	Integrated lenses
Source	6 LG Innotek 3535 Gen4
Matrix	394212



Characteristics

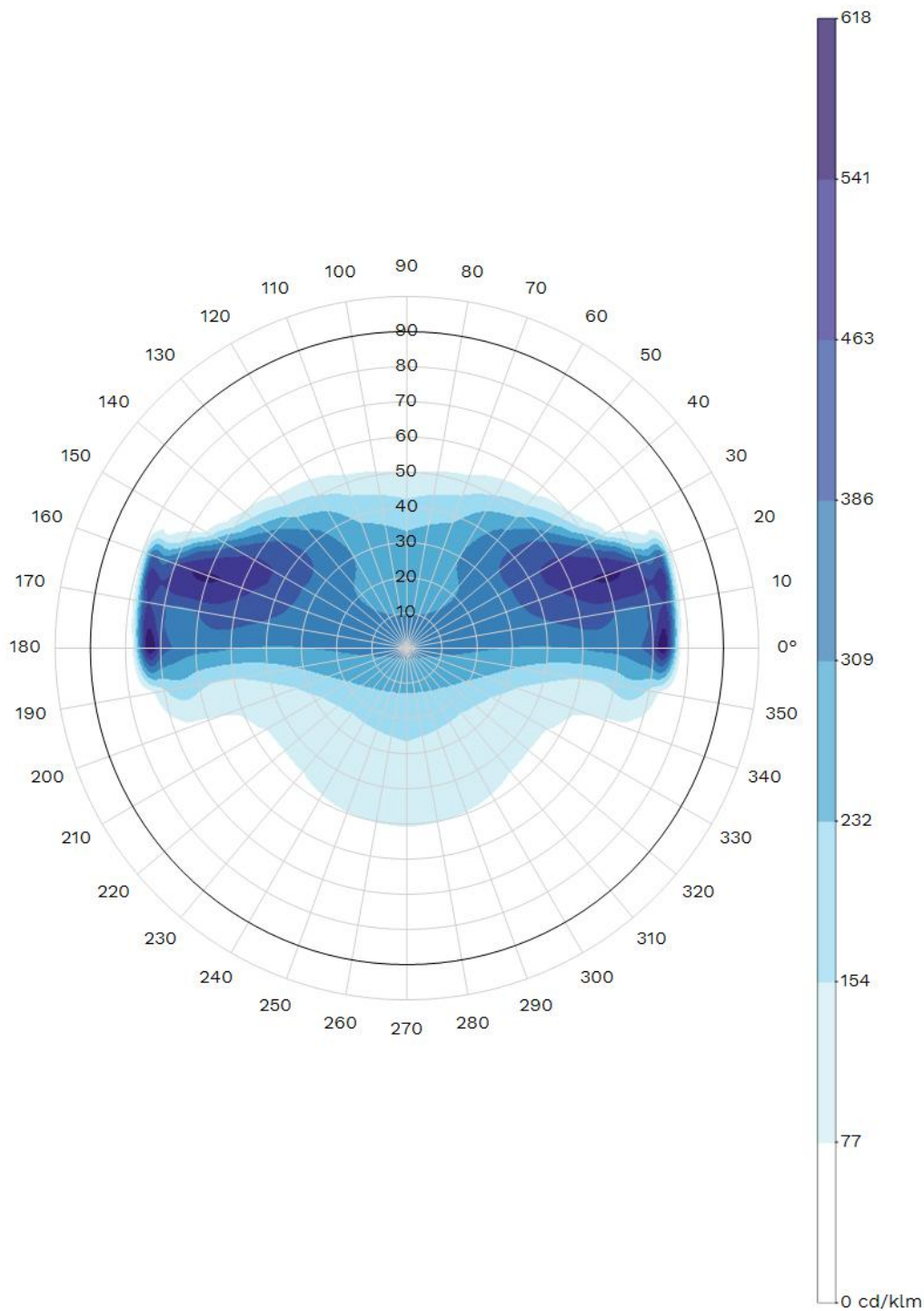
416	156	91	2.6	IP 66	IK 08	I EU	0.012
Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Tightness level*	Impact resistance*	Electrical class*	CxS (m²)

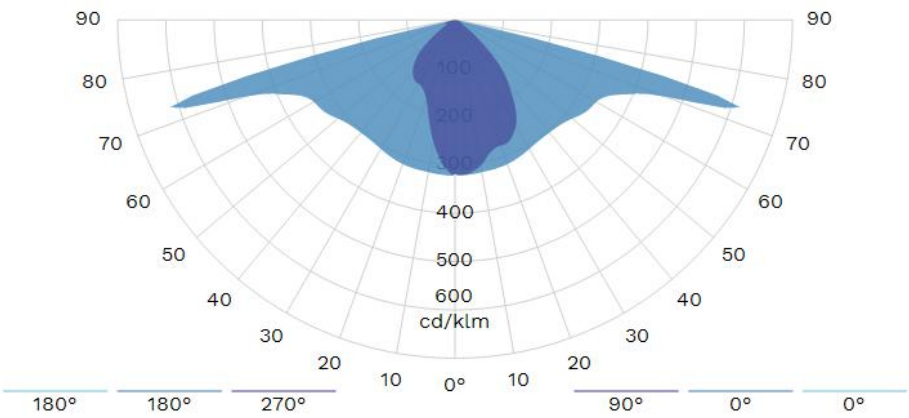
* According to IEC-EN60598 and IEC-EN62262

Features

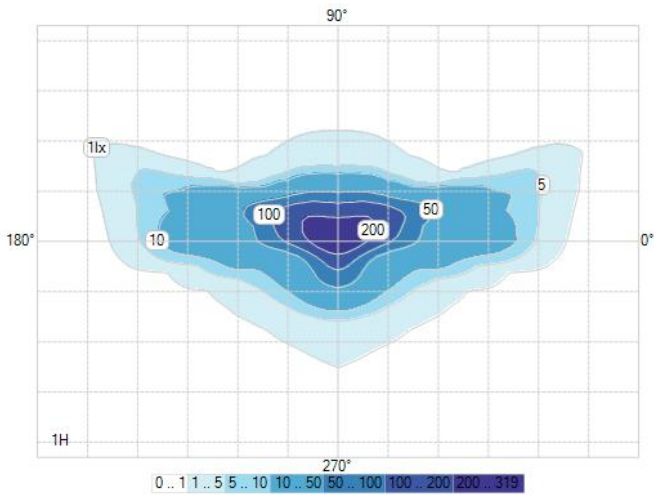
Entry Level cost-effective luminaire family

- 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)

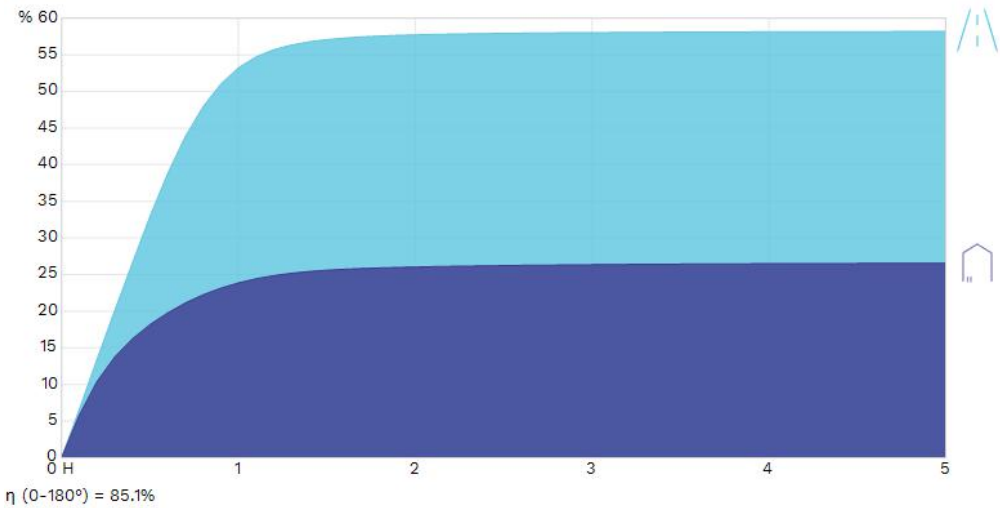




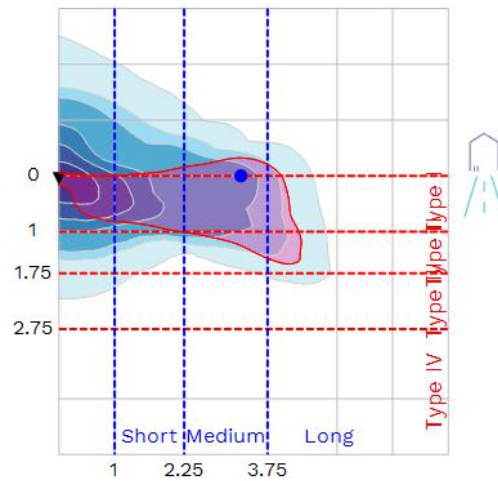
Isolux



K-Curve

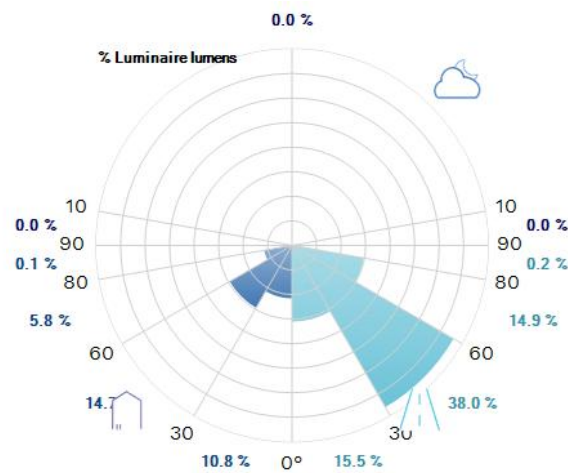


IES Roadway Classification / Nema Classification

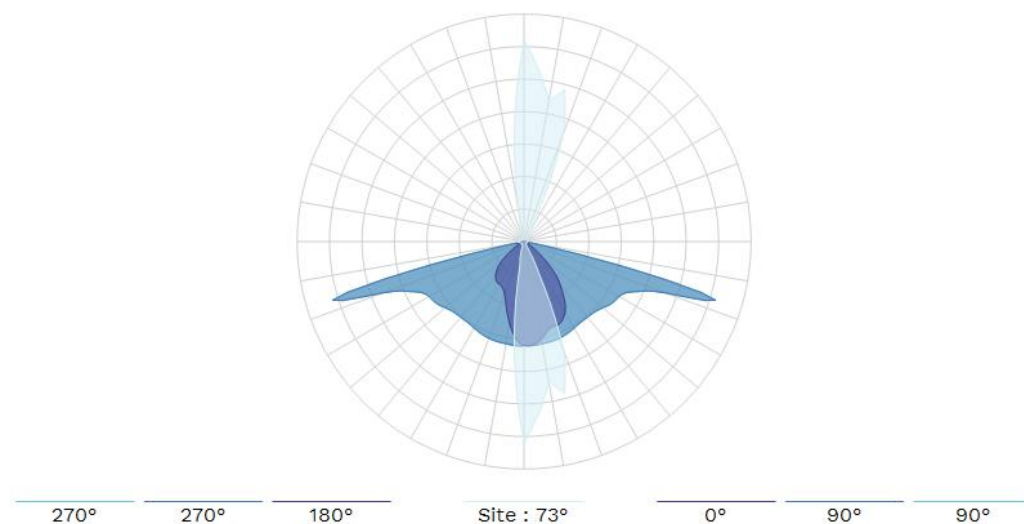


II - Medium

Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



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<http://www.schreder.com>

VOLTANA

ILUMINAT CU LEDURI,
POTRIVIT ORICUI



EFICIENTIZAREA COSTURILOR

PERFORMANȚĂ RIDICATĂ

BENEFICII REMARCABILE

NU NECESITĂ ÎNTREȚINERE

Schröder



VOLTANA



CEA MAI NOUĂ, RENTABILĂ ȘI PERFORMANTĂ GAMĂ DE APARATE DE ILUMINAT, CARE ÎȘI ACOPERĂ INVESTIȚIA ÎN TIMP

POSSIBILITATEA DE A RECUPERA INVESTIȚIA RAPID, PENTRU ILUMINAREA ORICĂRUI TIP DE PEISAJ URBAN SAU RURAL, A STAT LA BAZA DEZVOLTĂRII GAMEI VOLTANA. DEVIZA NOASTRĂ ESTE: „ILUMINATUL CU LED ESTE PENTRU ORICINE”.

CALITATE FĂRĂ COMPROMISURI

Bazate pe modulul LED LensoFlex®2, aparatele de iluminat Voltana furnizează soluții de iluminat durabile, care scad semnificativ consumul de energie și îmbunătățesc nivelul de iluminat.

INVESTIȚII MINIME

Disponibil în 5 dimensiuni, cu flux luminos cuprins între 900 de lumeni și 23.900 lumeni, având numeroase distribuții luminoase de înaltă eficiență și diverse opțiuni pentru control, gama Voltana întâmpină toate nevoile de iluminat urban și rutier, cu investiții minime.

RECUPERARE RAPIDĂ, ECONOMII DE DURATĂ

Cu o durată de viață de 100.000 de ore, Voltana permite evitarea a 4, până la 6 schimbări ale lămpilor, comparativ cu sursele de iluminat convenționale. În perioada în care, pentru aparatele cu lămpi, ar fi necesară înlocuirea aparatului de iluminat, Voltana câștigă deja bătălia pentru scăderea costurilor totale, față de soluțiile HID. În primul rând, Voltana recuperează investiția, apoi continuă să ofere beneficii substanțiale, pentru o lungă perioadă de timp.



ZONE PIETONALE

Străzi, alei și piste
de biciclete



STRADAL

Străzi rezidențiale



Spații comune, zone
comerciale din mediul
urban



CĂI DE CIRCULAȚIE

Căi de circulație
din mediul rural



Căi de circulație
din mediul urban



substituit HID

20/50W

70W

100W

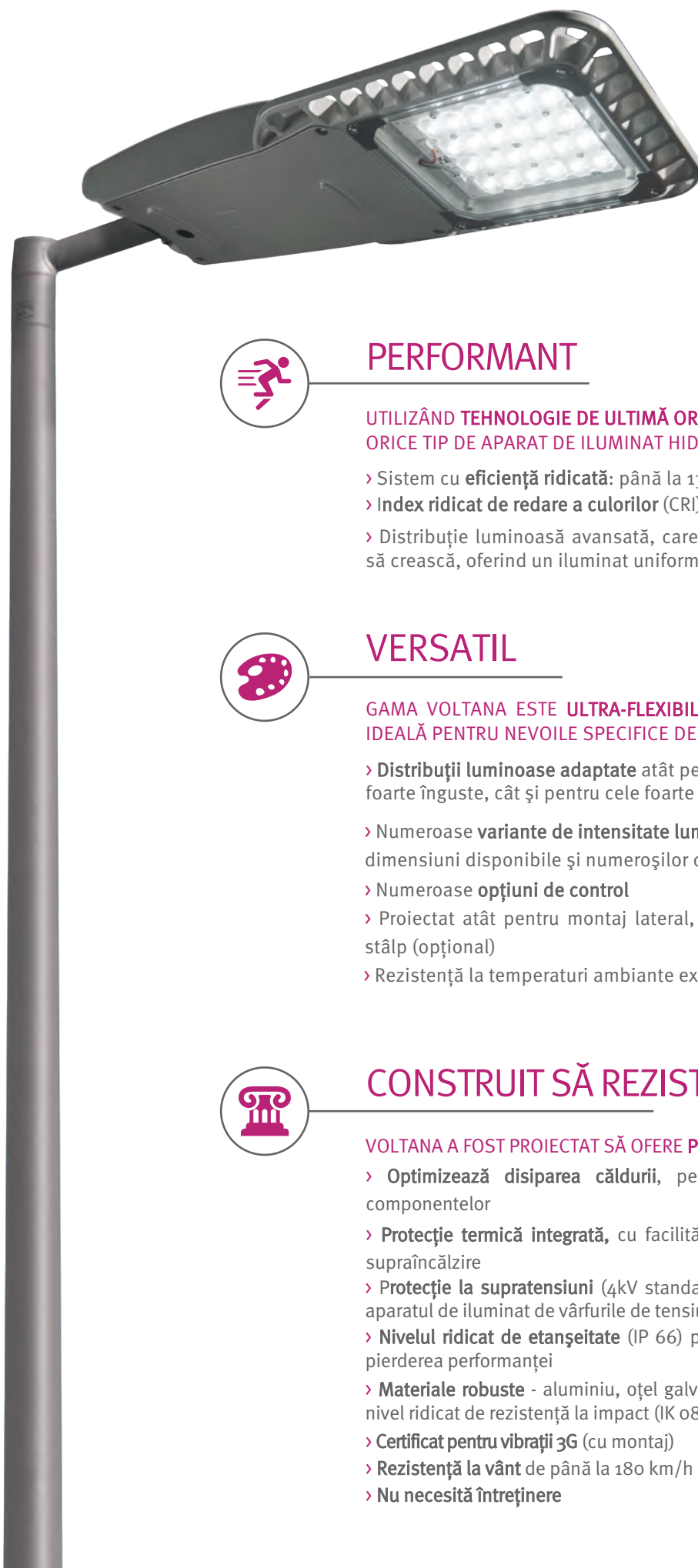
150W

250W



ALTE MEDII ÎN CARE **VOLTANA** OFERĂ BENEFICII-CHEIE PENTRU CLIENT





PERFORMANT

UTILIZÂND **TEHNOLOGIE DE ULTIMĂ ORĂ**, VOLTANA SURCLASEAZĂ ORICE TIP DE APARAT DE ILUMINAT HID:

- › Sistem cu **eficiență ridicată**: până la 130 lm/ W
- › **Index ridicat de redare a culorilor (CRI) > 70**
- › Distribuție luminoasă avansată, care permite ca spațiul dintre stâlpi să crească, oferind un iluminat uniform



VERSATIL

GAMA VOLTANA ESTE **ULTRA-FLEXIBILĂ**, ASTFEL CĂ OFERĂ SOLUȚIA IDEALĂ PENTRU NEVOILE SPECIFICE DE ILUMINAT:

- › **Distribuții luminoase adaptate** atât pentru zonele și căile de circulație foarte înguste, cât și pentru cele foarte largi
- › Numeroase **variante de intensitate luminoasă**, mulțumită celor 6 dimensiuni disponibile și numeroșilor curenți conductori
- › Numeroase **opțiuni de control**
- › Proiectat atât pentru montaj lateral, cât și pentru fixarea în vârf de stâlp (opțional)
- › Rezistență la temperaturi ambiante extreme, de până la 55°C



CONSTRUIT SĂ REZISTE

VOLTANA A FOST PROIECTAT SĂ OFERE **PERFORMANȚĂ PE TERMEN LUNG**

- › **Optimizează disiparea căldurii**, pentru a crește durata de viață a componentelor
- › **Protecție termică integrată**, cu facilități de reducere a fluxului, în caz de supraîncălzire
- › **Protecție la supratensiuni** (4kV standard, 10 kV opțional) pentru a proteja aparatul de iluminat de vârfurile de tensiune
- › **Nivelul ridicat de etanșeitate** (IP 66) previne distrugerea componentelor & pierderea performanței
- › **Materiale robuste** - aluminiu, oțel galvanizat și sticlă securizată, pentru un nivel ridicat de rezistență la impact (IK 08)
- › **Certificat pentru vibrații 3G** (cu montaj)
- › **Rezistență la vânt** de până la 180 km/h
- › **Nu necesită întreținere**



CONFORM

GAMA VOLTANA A FOST **CERTIFICATĂ** DE CELE MAI PRETENȚIOASE ORGANISME EUROPENE ȘI AMERICANE:

- › ENEC
- › ETL / UL
- › date despre iluminatul cu LEDuri



DEZVOLTARE DURABILĂ

DE LA ÎNCEPUT, APARATUL VOLTANA A FOST DEZVOLTAT PENTRU A **PROTEJA MEDIUL**

- › **Materiale reciclabile** (aluminu, oțel și sticlă)
- › **Profil destinat protecției mediului** (PEP) pentru scăderea ampretei ecologice
- › **Emisii de CO₂ reduse** (economie și întreținere)
- › Fără poluare luminoasă (**ULOR 0%**), mulțumită distribuției luminoase precise



SOCIAL

VOLTANA ADUCE NUMEROASE **BENEFICII COLECTIVE**

- › Vizibilitate îmbunătățită, cu lumină albă, care oferă **contrast ridicat**
- › **Siguranță ridicată**, pentru pietoni și pentru conducătorii auto
- › Opțional, iluminat la cerere, pentru a oferi lumină atunci când și acolo unde este cu adevărat necesară
- › **Mai puține interferențe în trafic**, datorită faptului că nu este necesară întreținerea și datorită posibilității de monitorizare
- › Contribuie la **administrarea eficientă a finanțelor** și la consumul responsabil de energie



PRECIS

CU 6 DIMENSIUNI DISPONIBILE, VOLTANA RĂSPUNDE EXACT **NEVOILOR SPECIFICE**

- › **Investiție optimizată**, cu minimum de resurse
- › **Adaptare precisă** la nevoile reale
- › **Design uniform** pentru întregul proiect
- › **Ușor de utilizat** pentru instalator (opțional, poate fi furnizat pre-cablat)



INTELIGENT

CU NUMEROASE **OPȚIUNI DE CONTROL**, VOLTANA OFERĂ OPORTUNITĂȚI PENTRU CREAREA DE SCENARII DE ILUMINAT NELIMITATE ȘI PENTRU **ÎMBUNĂTĂȚIREA MANAGEMENTULUI OPERAȚIONAL**

- › Disponibil cu profil **DALI 1-10 V** sau **profil de reducere personalizat**
- › **Flux Luminos Constant (CLO)**, pentru compensarea automată a deprecierei fluxului
- › Poate funcționa într-o **rețea independentă** limitată sau în **rețeaua unui oraș**, prin comunicație fără fir. Scenariile pot fi îmbunătățite prin **senzori externi**.*
- › Disponibil cu **fotocelulă** sau **priză NEMA P7**, pentru a opera în noua platformă Owlet IoT

CARACTERISTICI - CHEIE

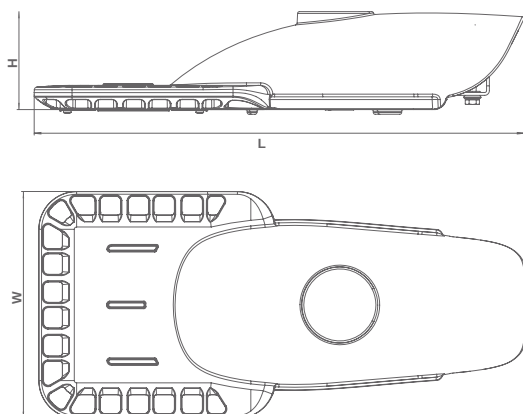
	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
Flux luminos standard (gamă) ^(*)	700 - 2,500lm	800 - 3,000lm	1,800 - 6,100lm	2,700 - 9,200lm	3,700 - 12,700lm	7,500 - 25,200lm
Consum de energie (W) ^(*)	8 - 30W	10 - 31W	20 - 56W	28 - 82W	36 - 110W	70 - 215W
Flux rezidual pe durata de viață @ tq 25°C	Curent până la 700mA: up to 95% Curent de la 701mA până la 1A: până la 90%					@100,000h
Temperatură de culoare	alb cald sau neutru					
Etanș. compartiment optic						IP 66 ^(**)
Etanș. placă echip. control						IP 66 ^(**)
Rezistență la impact (sticlă)						IK 08 ^(***)
Putere nominală	120 - 277V - 50 - 60Hz					
Clasă electrică	EU I sau II ^(**)					
Înălțimea de instalare	4 - 12m					
Materiale						
Corp	Aluminiu turnat sub presiune					
Difuzor	Sticlă (polycarbonat pentru unele variante ale Voltana 0)					
Culoare	RAL 7038 Orice altă culoare din paletarul RAL, la cerere					

^(*) Fluxul inițial și consumul de curent al aparatului sunt valori orientative, pentru temperatură ambientală de 25°C. Fluxul real depinde de condițiile de mediu (de exemplu, temperatură) și poate varia, în anumite configurații. Valorile comunicate sunt supuse modificărilor, conform evoluției tehnologice. Pentru a verifica dacă acest document cuprinde ultimele informații disponibile, vă rugăm să vizitați www.schreder.com

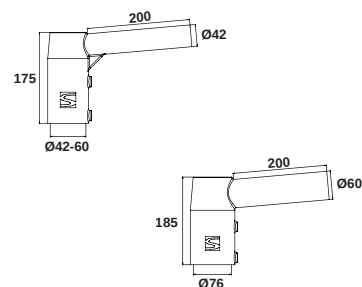
^(**) conform standardului IEC - EN 60598 (doar Voltana 0 este disponibil cu Clasa I) – ^(***) conform standardului IEC - EN 62262

DIMENSIUNI | GREUTATE

	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
L	416mm	501mm	518mm	641mm	555mm	705mm
W	156mm	181mm	240mm	240mm	380mm	480mm
H	91mm	87mm	108mm	111mm	112mm	109mm
 KG	2.6kg	4kg	5kg	6kg	8kg	12kg

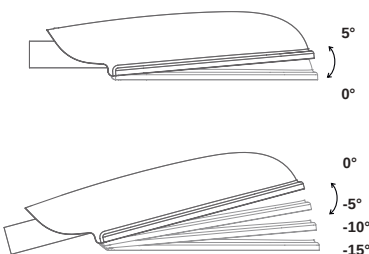


ADAPTOR VÂRF DE STÂLP

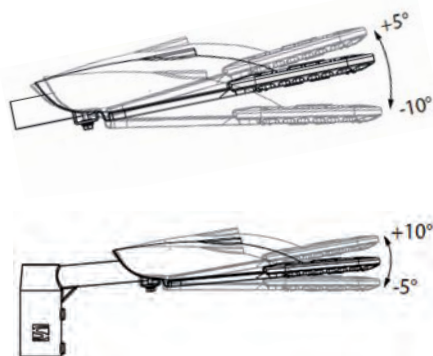


REGLAJE UNGHI ÎNCLINARE

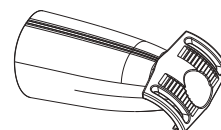
VOLTANA 0



VOLTANA 1 - 5



MONTAJ UNIVERSAL (OPȚIONAL PENTRU VOLTANA 0-1-2-3-4)



Ø 32 - 48mm
Ø 42 - 60mm
Ø 76mm

ÎNLOCUIȚI-VĂ ACTUALUL SISTEM DE ILUMINAT ȘI FACEȚI ECONOMII IMEDIAT, CU VOLTANA!

Prin simpla înlocuire a aparatelor de iluminat cu lămpi pe bază de sodiu cu aparatele Voltana, economiile de energie devin impresionante. În varianta plug-and-play, opțiunile de control - care nu sunt disponibile sau sunt foarte limitate în cazul aparatelor HPS - nu sunt incluse. În funcție de diferite scenarii, aceste opțiuni pot crește semnificativ economiile de energie, oferind, în același timp, siguranță și confort pentru toți utilizatorii și îmbunătățind managementul operațional al întregului sistem.

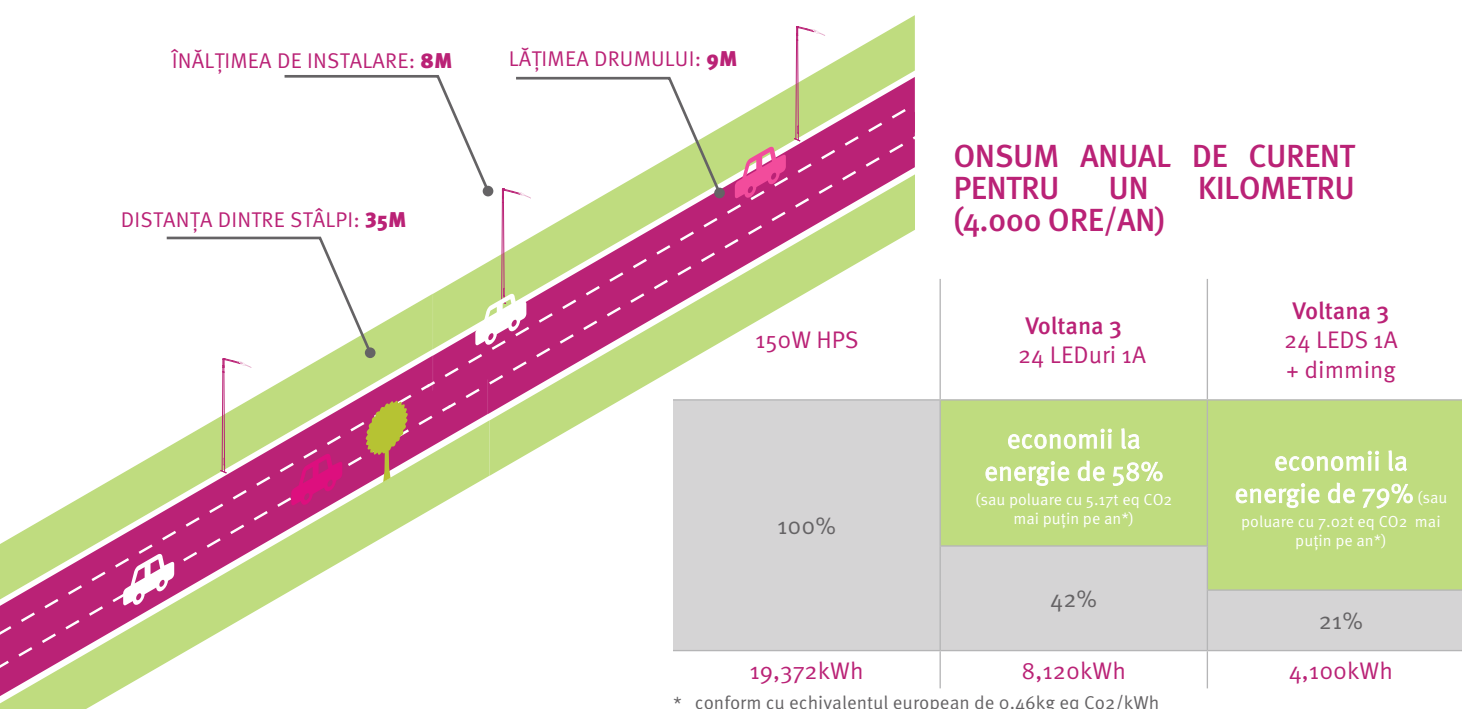
zone pietonale P5-P2		zone pietonale P1		căi de circulație clasificate M6-M5		căi de circulație clasificate M4		căi de circulație clasificate M3		căi de circulație clasificate M2	
aparat HPS 70W	Voltana 1	aparat HPS 100W	Voltana 2	aparat HPS 100W	Voltana 2	aparat HPS 150W	Voltana 3	aparat HPS 150W	Voltana 4	aparat HPS 250W	Voltana 5
	economii de 67%		economii de 56%		economii de 56%		economii de 58%		economii de 45%		economii de 35%
78W ^(*)		110W ^(*)		110W ^(*)		167W ^(*)		167W ^(*)		280W ^(*)	
26W ^(*)		48W ^(*)		48W ^(*)		70W ^(*)		92W ^(*)		180W ^(*)	

(*) Consum de energie total al sistemului

STUDIU DE CAZ

FLEXIBILITATEA DE CARE AVEȚI NEVOIE, PENTRU SCĂDEREA CHELTUIELILOR DE 5 ORI

Cu o investiție minimă (24 de LEDuri, versiunea 1A), Voltana 3 oferă o soluție extrem de competitivă - comparativ cu aparatele de iluminat de 150W, cu lămpi pe bază de sodiu- pentru a ilumina o cale de circulație clasificată M3 (conform standardului CIE 115), cu o recuperare a investiției în mai puțin de 4 ani și economii de energie de până la 79%.





SIGURANȚĂ



STARE DE BINE



DEZVOLTARE DURABILĂ



ECONOMII



SOLUȚII



Drepturi de autor © Schréder S.A. 2017 - Editor Executiv: Stéphanie Halleux - RTech, S.A. - Rue de Mons 3 - B-4000, Liège (Belgia) - Informațiile prezente au caracter pur orientativ. Mulțumită dezvoltării continue, am putea fi nevoiți să modificăm caracteristicile produselor noastre, fără notificare. Cum acestea pot prezenta caracteristici diferite, în funcție de cerințele fiecărei țări, vă invităm să ne consultați.



Lumen maintenance report

LED information

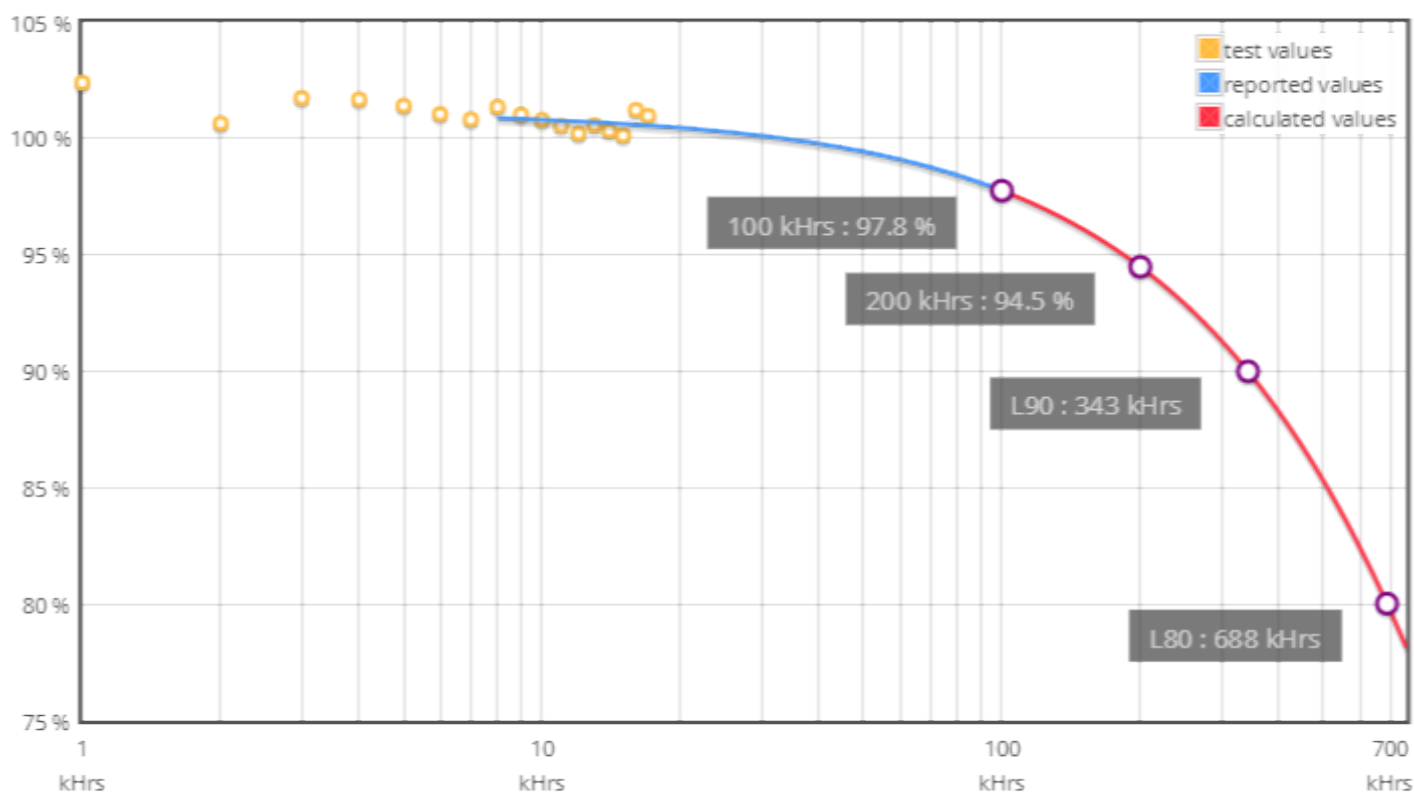
LED type 3535 Gen4
LED current 700 mA
Ts 55°C
Description lgit-14-044-02

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.

LED Flux measurement

FORM-L-41 ED1 REV 0

Date : **29/06/2016**

Operator : **FCE**

Filename : **2016_374.xml**



226 - TEST

LEDs

NBN EN ISO/IEC 17025 : 2005

Trademark : **LG Innotek**

Entry number : **36R162-5**

Type : **3535 G4L**

Power (Catalogue) : **0.78** W

BIN Description : **Unknown**

Flux : **170** lm/LED

Part number : **Unknown**

Color or CCT (Theoretical) : **Neutral White**

Number of LEDs : **16**

Lenses

Trademark : **None**

Type : **None**

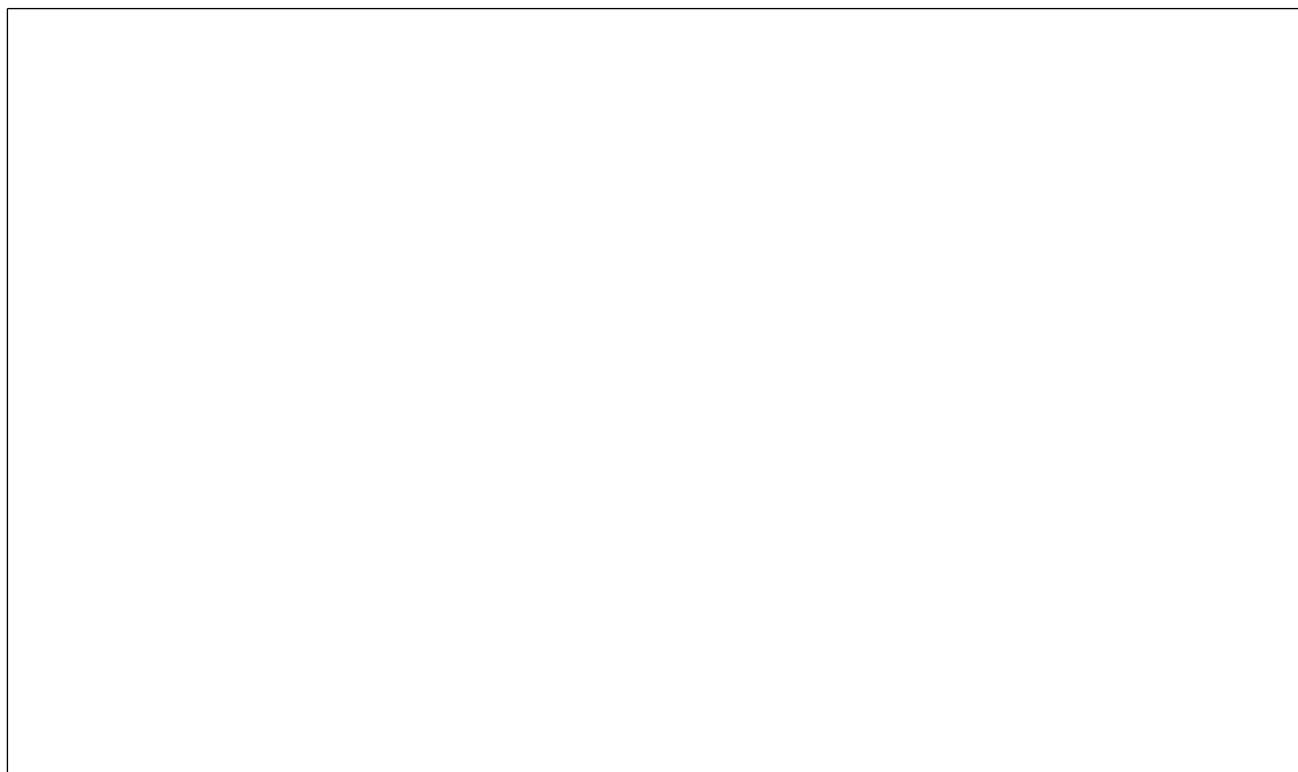
Power & Print

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

Print description : **voltana 2**

Active ☐

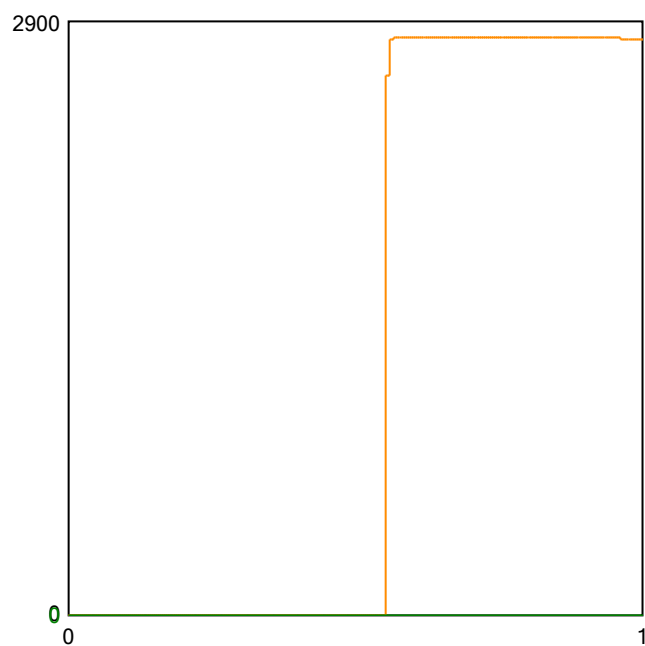
Picture



Sphere photometric measurement

Average flux : **1270** lumens

Maximum flux : **2825** lumens



Position in sphere :



Electrical measurement

● Secondary electrical measurement

Voltage : **44.57** V

Current : **0.350** A

Power : **15.60** Watt

→ LEDs light efficiency at thermal stabilization :

81.4 lm/W

79.4 lm/Led

→ LEDs light efficiency at 25° :

181.1 lm/W

176.6 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 - pcb Voltana 2 - 16 LG G4-L - pcb N°5

Comment :

FORM-L-41 ED1 REV 0



226 - TEST

NBN EN ISO/IEC 17025 : 2005

Approved by :

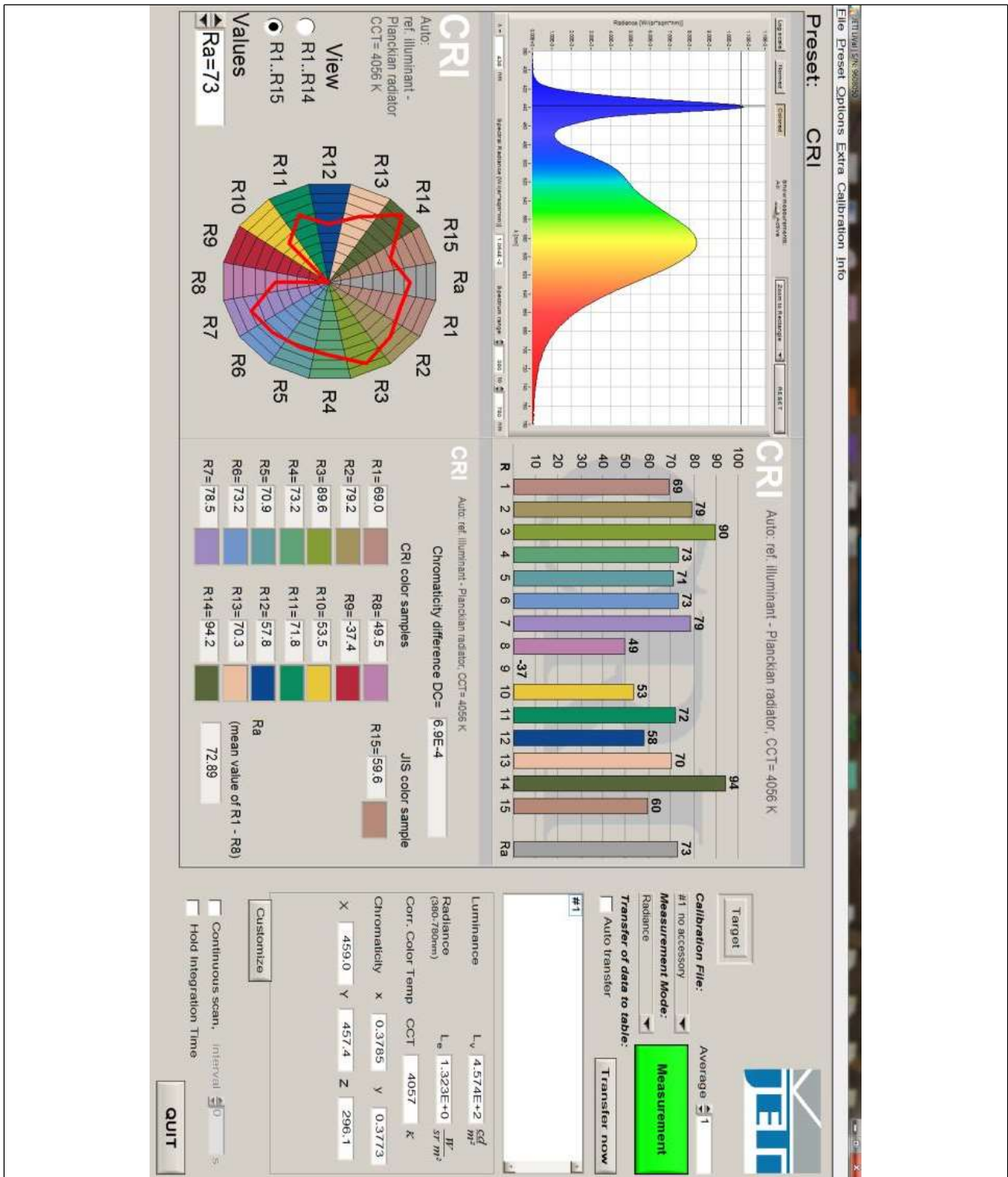
LED 2016/374 2/3



226 - TEST

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.

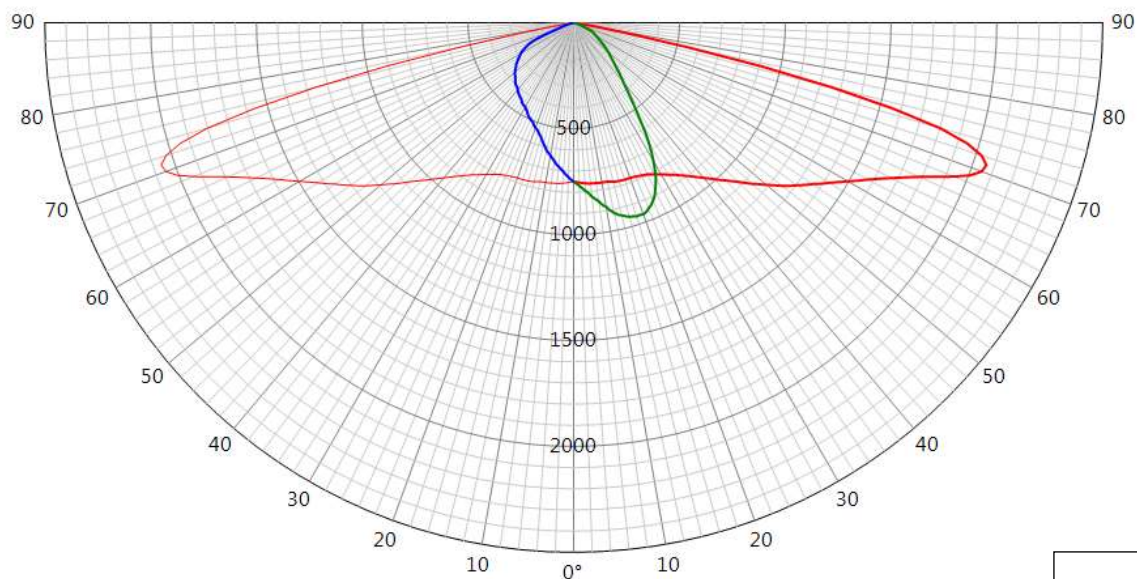
LED

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102	
Source							
Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162		
Master		Reflector				No 5162	
Gaggione Led assembly Road lighting Assembled 0.0°							
Protector Refractor Lens							
Protector Glass Extra Clear Flat Smooth Lens Gaggione 5162 MS1002							
Laboratory observation							
VOLTANA 2 with 16 LG 3535 G4-L Used flux for efficiency matrix calculation = 2825 lm - CCT = 4057 K - CRI = 72.89 (see sphere test report 2016/374 on appendix).							
Purpose DOC				Sample date 13/06/2014		Sample # 34R142	
Observation							
DOC VOLTANA 2 with lenses 5162 MS1002							
Flux coefficient multiplicator (only for efficiency matrix): From 350 to 500 mA : 1,386 From 350 to 700 mA : 1,869 From 350 to 1000 mA : 2,535 From 350 to 1200mA : 2,944 From 350 to 1400mA : 3.322							
Fixture powered @350/500/700mA with 1 driver LG INNOTEK LLP 40W PISE A040D (dali) Fixture powered @1000mA with 1 driver LG INNOTEK LLP 55W 1A PISE A055A Fixture powered @1200/1400mA with DC powersupply Delta Electronica							
Asked by LME		Measured by FCE		Approved by LME		Appendix 1	
				 226-TEST NBN EN ISO/IEC 17025 : 2005		38909	

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No 5162
Matrices	389091 Φ 0-90° = 2334lm - 90-180° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002					
Observation	Matrix in total flux @350 mA Light losses due to thermal stabilisation : 0.6 % Electrical measurement on LED (#1) : Voltage = 44.35 V Current = 0.350 A Power = 15.58 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.097 A Power = 19.60 W PF = 0.872 Total luminaire power = 19.60 W : Lm/Watt = 119.09 lm/W Driver #1 : See observations for driver details -					

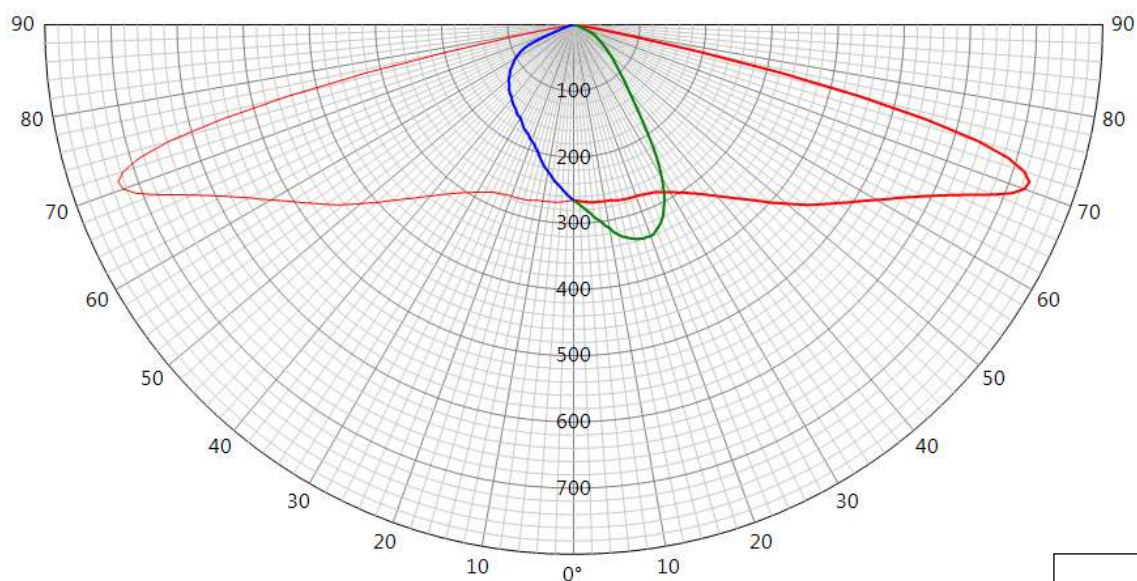
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	2063	71	S				
90	962	20	D	750	25.0°	15/07/2016	
270	750	0	G				

**38909**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102	
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162	
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No	5162
Matrices	389092 η 0-90° = 82.5% - 90-180° = 0.0%					Relative measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002						
Observation	Matrix in efficiency @350 mA Light losses due to thermal stabilisation : 0.6 % Electrical measurement on LED (#1) : Voltage = 44.35 V Current = 0.350 A Power = 15.58 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.097 A Power = 19.60 W PF = 0.872 Total luminaire power = 19.60 W Driver #1 : See observations for driver details -						

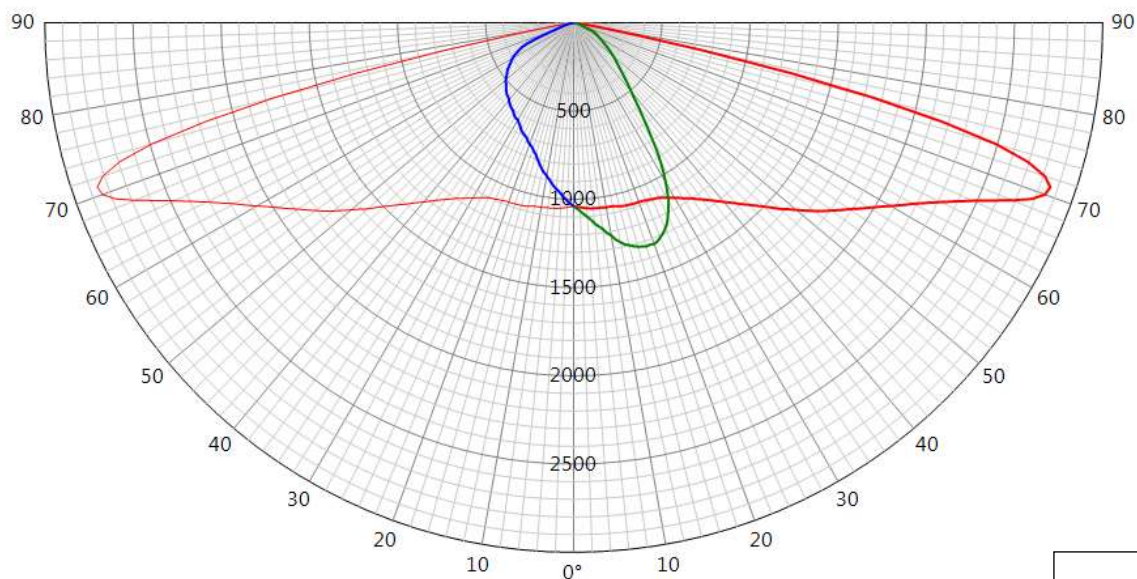
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	729	71	S				
90	340	20	D	265	25.0°	15/07/2016	
270	265	0	G				

**38909**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No 5162
Matrices	389093 Φ 0-90° = 3235lm - 90-180° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002					
Observation	Matrix in total flux @500 mA Light losses due to thermal stabilisation : 0.9 % Electrical measurement on LED (#1) : Voltage = 44.89 V Current = 0.500 A Power = 22.44 W Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.126 A Power = 26.90 W PF = 0.928 Total luminaire power = 26.90 W : Lm/Watt = 120.27 lm/W Driver #1 : See observations for driver details -					

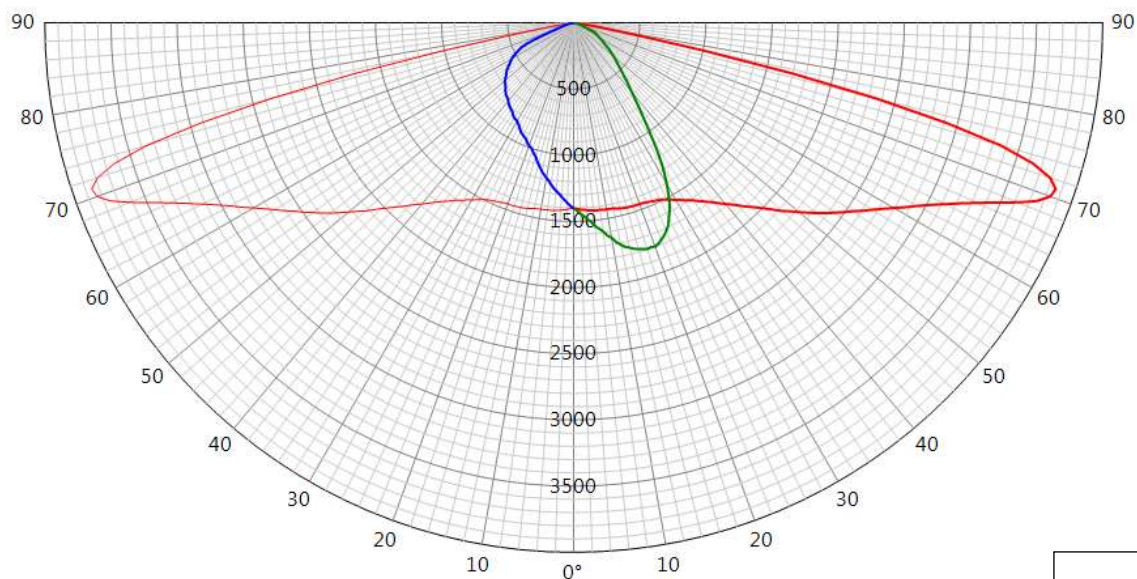
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	2859	71	S				
90	1333	20	D	1039	25.0°	15/07/2016	
270	1039	0	G				

**38909**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No 5162
Matrices	389094 Φ 0-90° = 4363lm - 90-180° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002					
Observation	Matrix in total flux @700 mA Light losses due to thermal stabilisation : 1.4 % Electrical measurement on LED (#1): Voltage = 45.68 V Current = 0.700 A Power = 31.98 W Electrical measurement on driver (#1): Voltage = 230.00 V Current = 0.168 A Power = 37.30 W PF = 0.961 Total luminaire power = 37.30 W : Lm/Watt = 116.96 lm/W Driver #1 : See observations for driver details -					

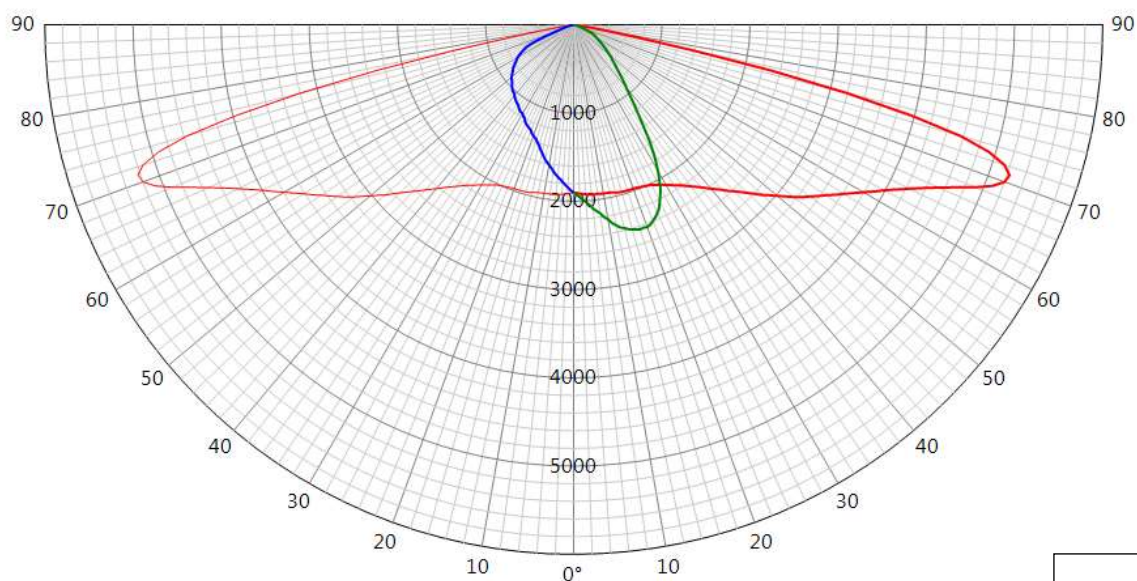
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	3855	71	S				
90	1797	20	D	1401	25.0°	15/07/2016	
270	1401	0	G				

**38909**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No 5162
Matrices	389095 Φ 0-90° = 5917lm - 90-180° = 0lm					Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002					
Observation	Matrix in total flux @1000 mA Light losses due to thermal stabilisation : 2 % Electrical measurement on LED (#1): Voltage = 46.37 V Current = 1.000 A Power = 46.51 W Electrical measurement on driver (#1): Voltage = 230.00 V Current = 0.241 A Power = 53.40 W PF = 0.962 Total luminaire power = 53.40 W : Lm/Watt = 110.81 lm/W Driver #1 : See observations for driver details -					

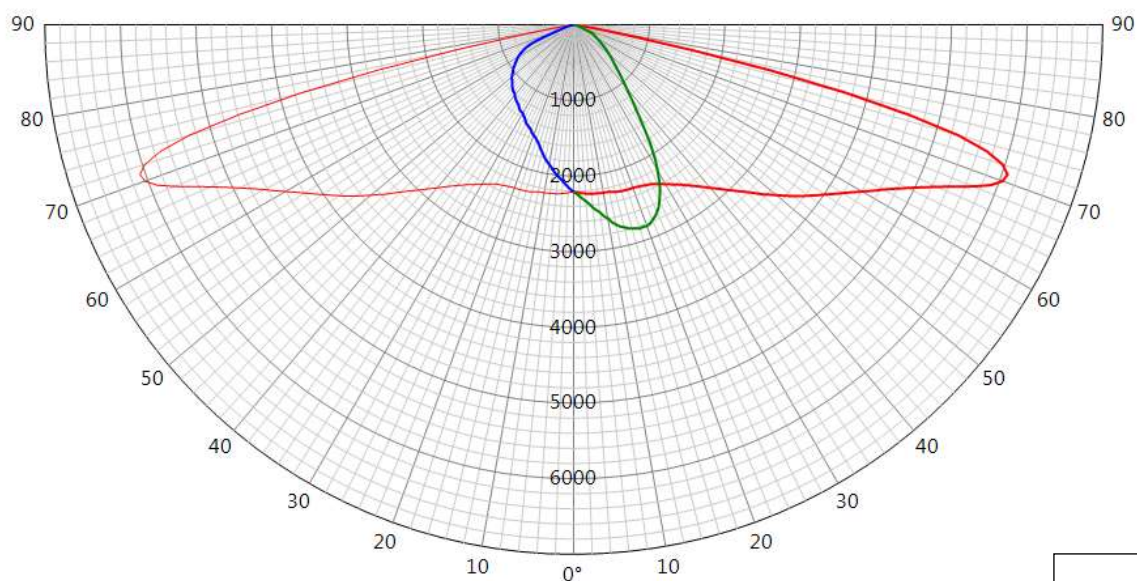
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	5229	71	S				
90	2438	20	D	1900	25.0°	20/07/2016	
270	1900	0	G				

**38909**

LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102	
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162	
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No	5162
Matrices	389096 Φ 0-90° = 6872lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002						
Observation	Matrix in total flux @1200 mA Light losses due to thermal stabilisation : 3.4 % Electrical measurement on LED (#1) : Voltage = 47.43 V Current = 1.200 A Power = 56.95 W Driver #1 : See observations for driver details -						

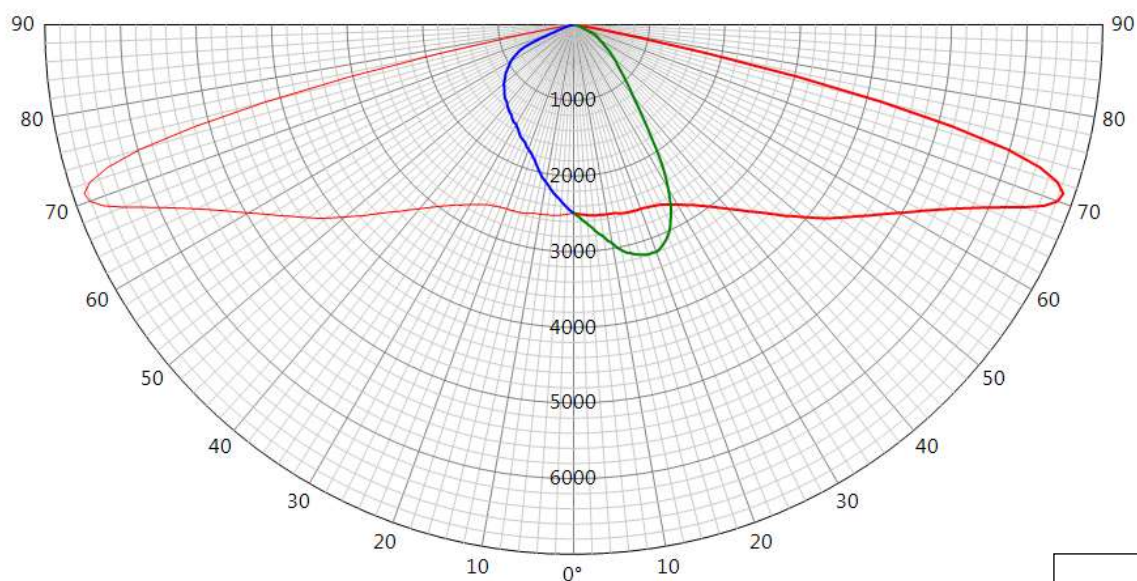
Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	6072	71	S				
90	2831	20	D	2207	25.0°	20/07/2016	
270	2207	0	G				

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LUMINOUS INTENSITY DIAGRAM

Origin Tungsram-Schröder Plc. Hungary		Production Tungsram-Schröder Plc. Hungary		Luminaire VOLTANA 2		Request # FD36102	
Source	Type LED	BIN Unknown	Trademark LG Innotek	Reference 3535 G4L	# LEDs 16	Reflector 5162	
Reflector	Gaggione Led assembly Road lighting Assembled 0.0°					No	5162
Matrices	389097 Φ 0-90° = 7754lm - 90-180° = 0lm					Absolute measurement	
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5162 MS1002						
Observation	Matrix in total flux @1400 mA Light losses due to thermal stabilisation : 4.5 % Electrical measurement on LED (#1) : Voltage = 48.09 V Current = 1.400 A Power = 67.34 W Driver #1 : See observations for driver details -						

Plane	I Peak	Peak position	Index	I zero	Laboratory ambient t°	Measurement date	
10 - 170	6852	71	S				
90	3195	20	D	2490	25.0°	20/07/2016	
270	2490	0	G				

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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%

38909

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)

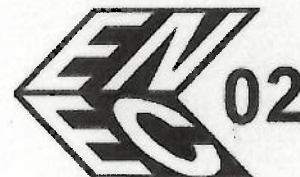
38909

LICENCE

No. 20497 replaces No.20458

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

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

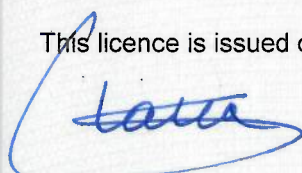
SGS CEBEC hereby declares that the above-mentioned product has been certified on the basis of:

- 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: 09/10/2017


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



SGS Belgium NV-Division SGS CEBEC
Business Riverside Park
Bld Internationalelaan 55 Build. D
B-1070 Brussels
Tel.+32(0)2 556 00 20 Fax.+32(0)2 556 00 36

This certificate is issued by the company under its General Conditions for Certification Services accessible at http://www.sgs.com/terms_and_conditions.htm. Attention is drawn to the limitations of liability defined therein and in the Test Report herein mentioned which findings are reflected in this Certificate. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SPECIFICATION OF THE CERTIFIED PRODUCT

Product data

Product	:	road, square, street, flood lighting
Trade name(s)	:	SCHREDER
Type(s)/Model(s)	:	VOLTANA 1, VOLTANA 2, VOLTANA 3, VOLTANA 4, VOLTANA 5
description	:	Street lighting
rated voltage (Un)	:	120-240 V
rated frequency	:	50-60 Hz
rated secondary current (In SEC)	:	350, 500, 700, 1000 mA (LED)
class	:	class I
degree of protection	:	IP66
additional information	:	IK08

Product data - type VOLTANA 1

lamp(s)	:	8 LED's
rated ambient temperature (ta)	:	max. 55°C

Product data - type VOLTANA 2

lamp(s)	:	16 LED's
rated ambient temperature (ta)	:	max. 55°C

Product data - type VOLTANA 3

lamp(s)	:	24 LED's
rated ambient temperature (ta)	:	max. 55°C

Product data - type VOLTANA 4

lamp(s)	:	32 LED's
rated ambient temperature (ta)	:	max. 55°C

Product data - type VOLTANA 5

lamp(s)	:	64 LED's
rated ambient temperature (ta)	:	max. 55°C

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 618719/12.

Remarks

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

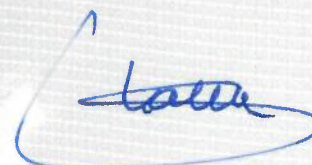
Conclusion

The examination proved that all test requirements were met.

Checked by, project leader : Christian Maes - 09/10/2017

Department Manager, :
Product Certification :

Certification Manager :

 2017-10-09

FACTORY LOCATION(S)

Schröder do Brasil Iluminação Ltda.
Rua Iracema Lucas, 415
Distrito Industrial Vinhedo
13280-000 SAO PAULO
Brazil

Schreder TOV
Vul. Mykulynetska 46B
46000 TERNOPII
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

Socelec 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

Tungsram-Schröder Világítási Berendezések Zrt
Tópart 2
2084 PILISSZENTIVAN
Hungary

VOLTANA 2

5162

Optic	5162
Protector	Flat glass
Source	16 LG Innotek 3535 G4L
Matrix	389092



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
- Car park
- Road and highway
- Residential road
- Bike path
- Urban road

Information for 1000 lm matrix

Efficacy (%)	82.5	G Class (EN 13201-2)	G3	Aperture 90-270°	X - X
DLOR (%)	82.5	G* (EN 13201 2015)	G*3	I 70-80-90-95 (cd)	725 - 55 - X - X
ULOR (%)	0.0	Imax (cd)	729		
UWLR (%)	0.0	Aperture 0-180°	64 - 64		

Photometrical characteristics

LED count	Colour code	Colour name	CCT	CRI	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	NW	Neutral White	4000	70	350	19	2864	2362	124	2088	B1 U0 G1	230
16	NW	Neutral White	4000	70	500	27	3981	3284	122	2902	B1 U0 G1	230
16	NW	Neutral White	4000	70	700	38	5356	4418	116	3904	B1 U0 G1	230
16	NW	Neutral White	4000	70	1000	57	7246	5977	105	5282	B2 U0 G1	230
16	WW	Warm White	3000	80	350	19	2512	2072	109	1831	B1 U0 G1	230
16	WW	Warm White	3000	80	500	27	3492	2880	107	2545	B1 U0 G1	230
16	WW	Warm White	3000	80	700	38	4697	3875	102	3424	B1 U0 G1	230
16	WW	Warm White	3000	80	1000	57	6355	5242	92	4632	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 @ T_q=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

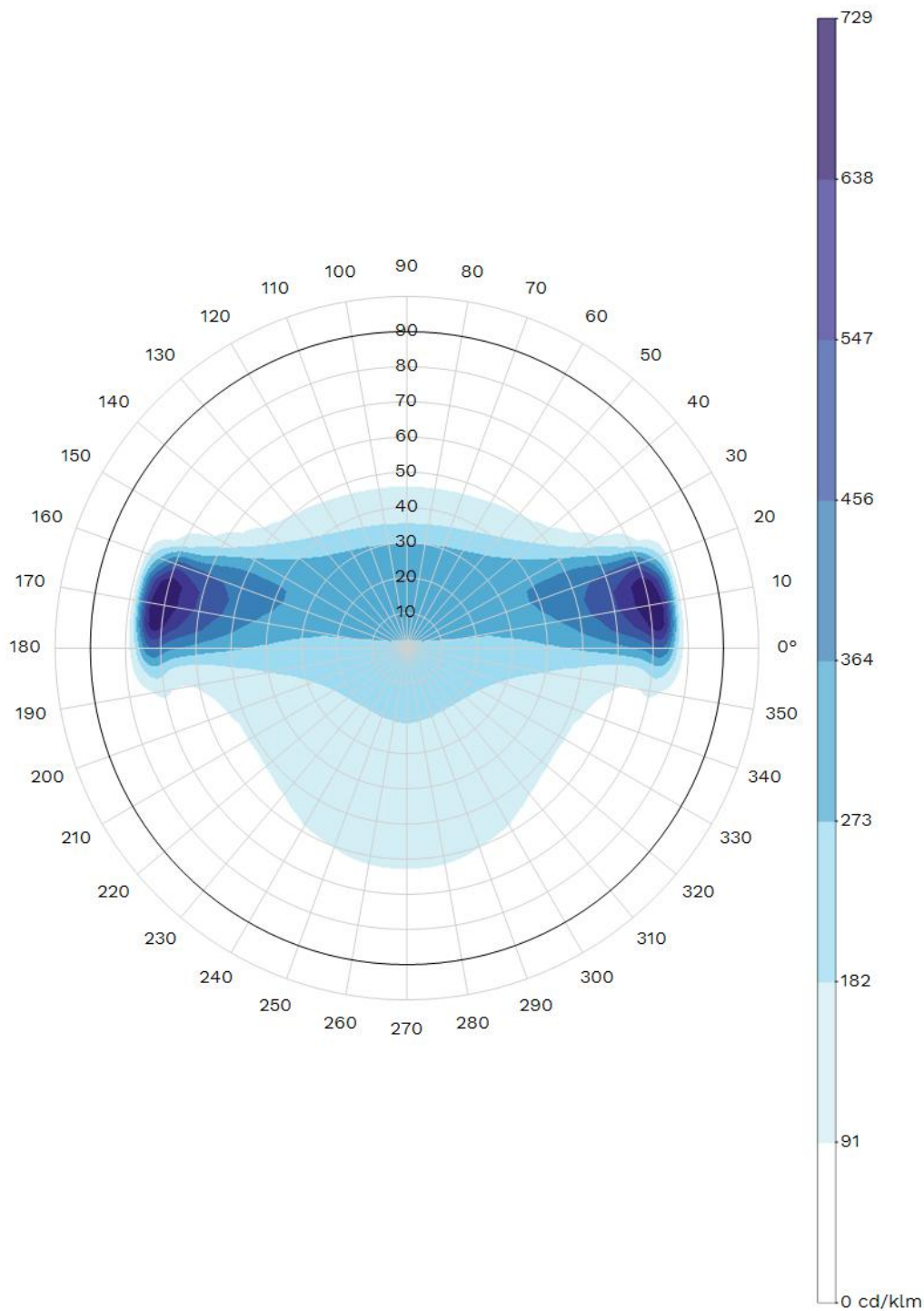
- CE
- ENEC
- LM79-80
- ROHS
- Certified for 3G vibration
- All measurements in ISO17025 accredited laboratory

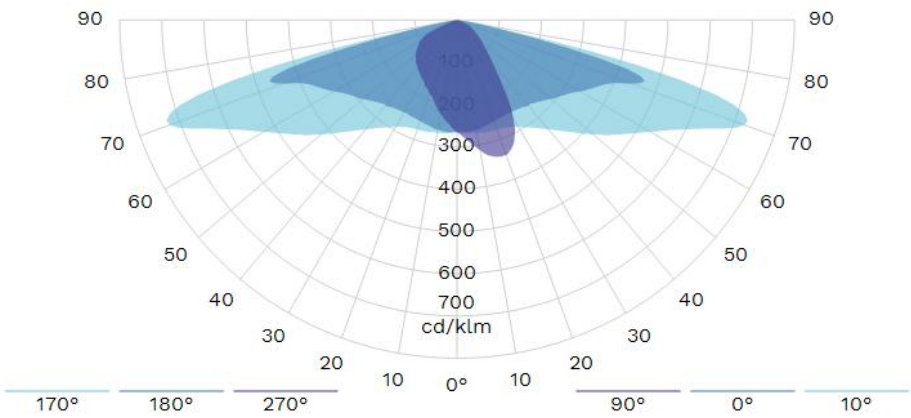
OPTIONS

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

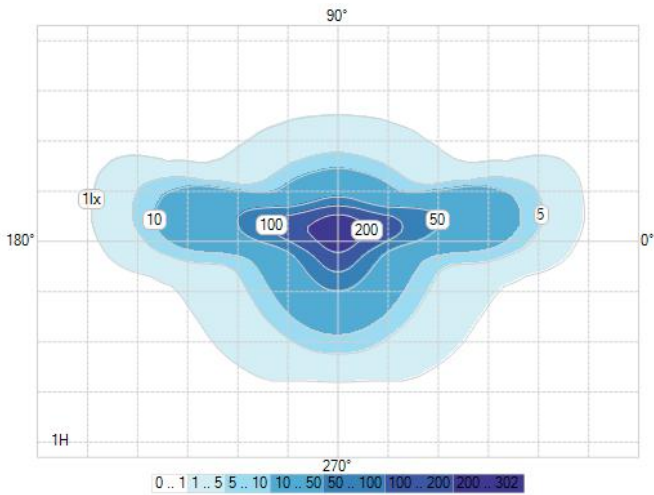
VOLTANA 2 - 5162 - 16 LG Innotech 3535 G4L - Flat glass - 389092

- Photocell

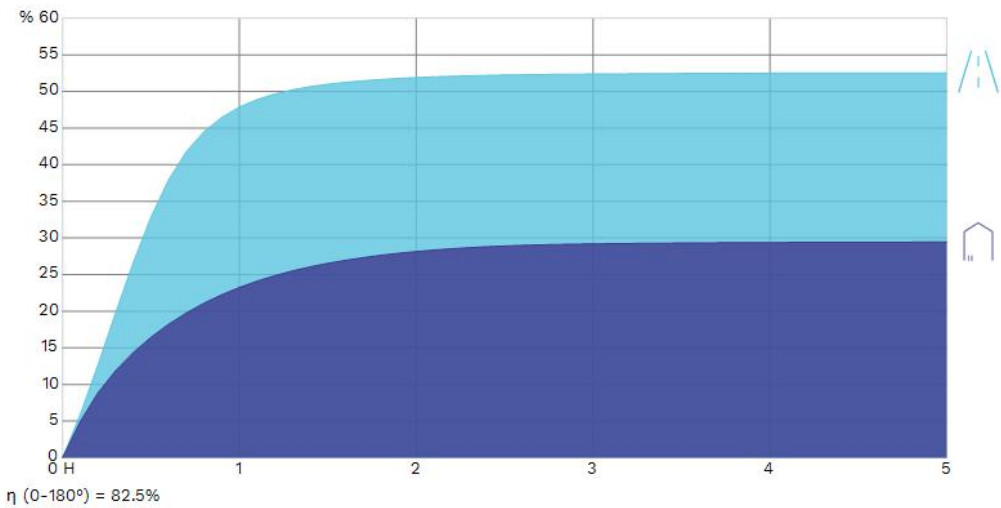


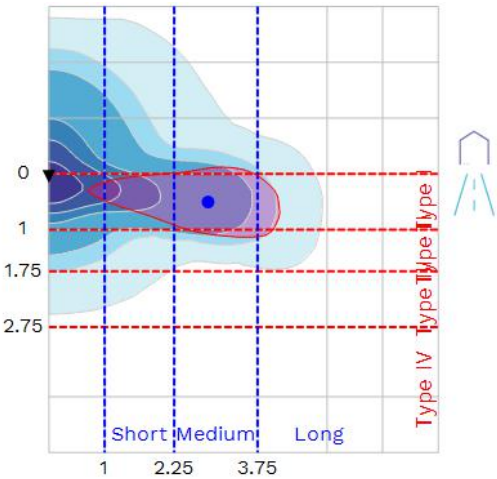


Isolux



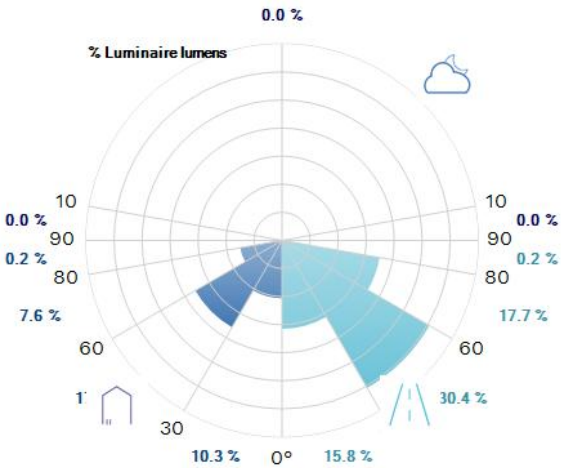
K-Curve



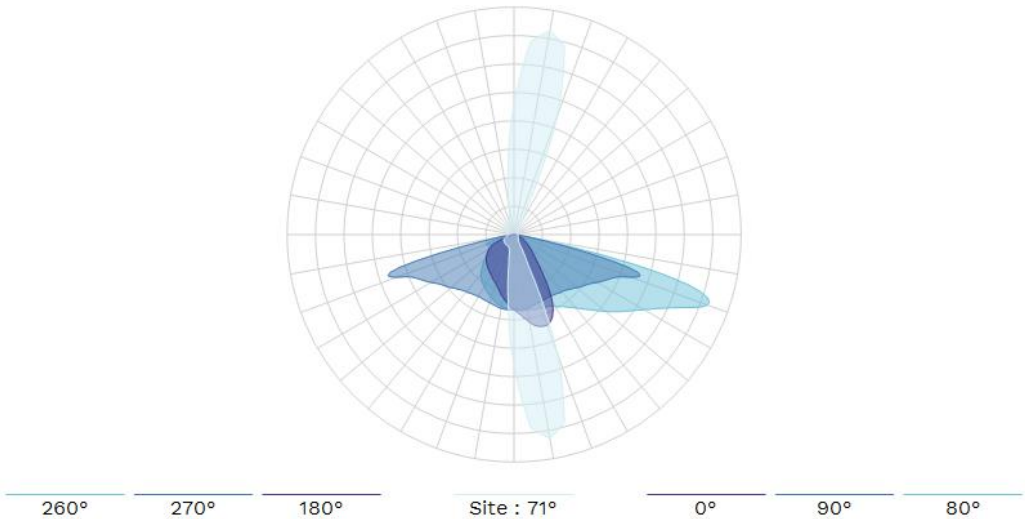


II - Medium

Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



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<http://www.schreder.com>

Laboratory Service PHYSICAL TEST REPORT



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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

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/cm2 - 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

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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

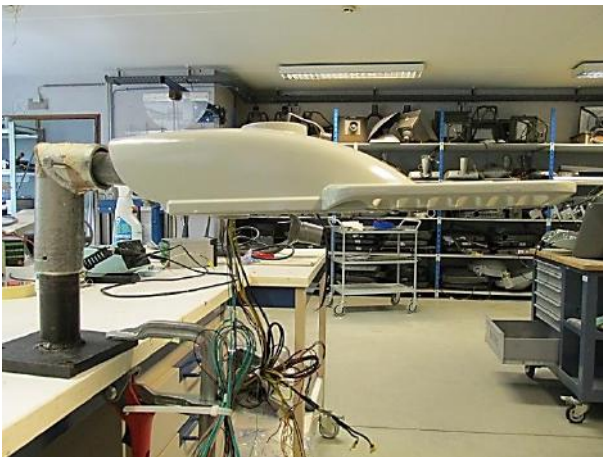
Remarks:

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

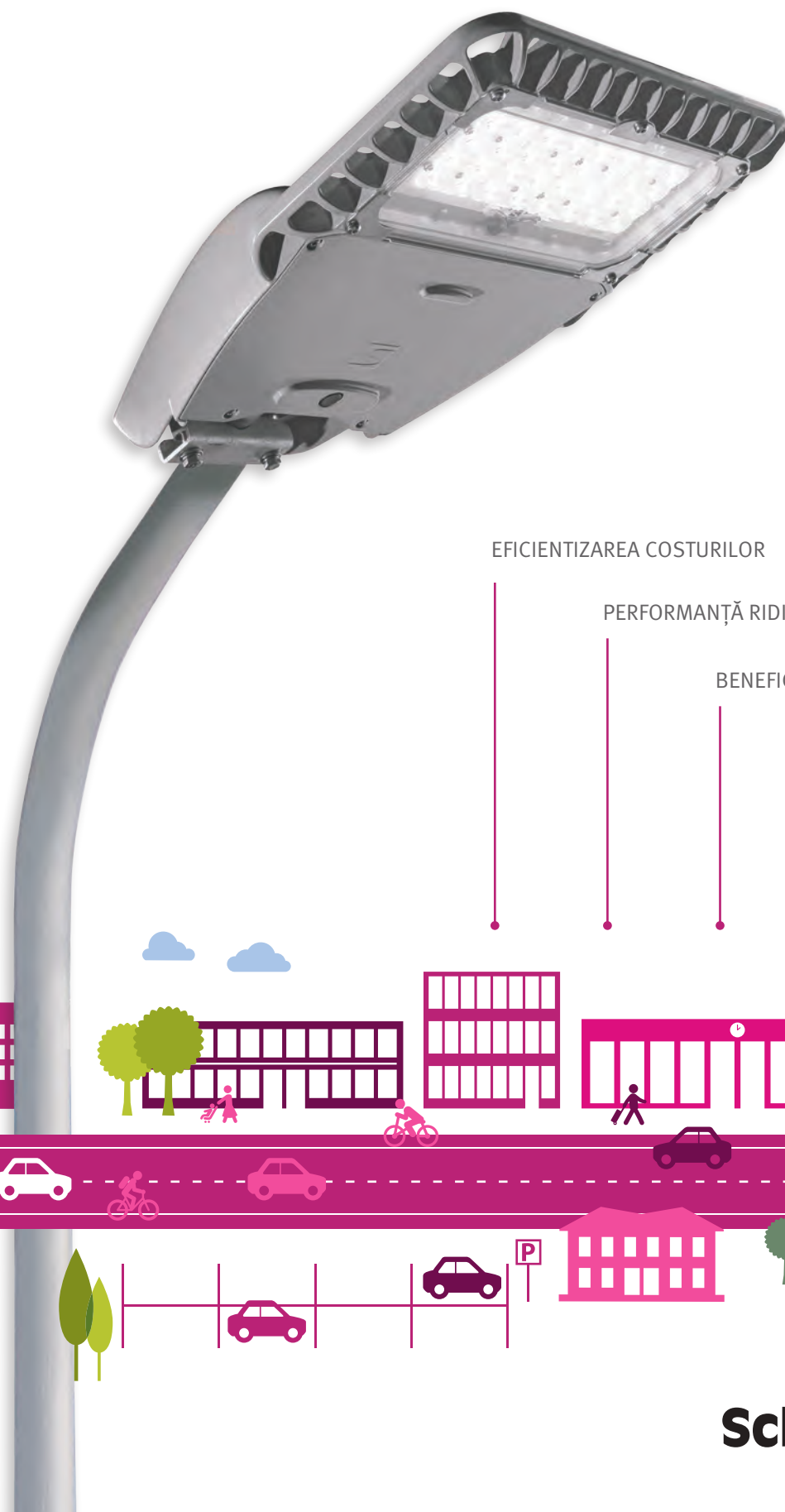
J.P. Harchies

//P-14E697

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

VOLTANA

ILUMINAT CU LEDURI,
POTRIVIT ORICUI



EFICIENTIZAREA COSTURILOR

PERFORMANȚĂ RIDICATĂ

BENEFICII REMARCABILE

NU NECESITĂ ÎNTREȚINERE

Schröder



VOLTANA



CEA MAI NOUĂ, RENTABILĂ ȘI PERFORMANTĂ GAMĂ DE APARATE DE ILUMINAT, CARE ÎȘI ACOPERĂ INVESTIȚIA ÎN TIMP

POSSIBILITATEA DE A RECUPERA INVESTIȚIA RAPID, PENTRU ILUMINAREA ORICĂRUI TIP DE PEISAJ URBAN SAU RURAL, A STAT LA BAZA DEZVOLTĂRII GAMEI VOLTANA. DEVIZA NOASTRĂ ESTE: „ILUMINATUL CU LED ESTE PENTRU ORICINE”.

CALITATE FĂRĂ COMPROMISURI

Bazate pe modulul LED LensoFlex®2, aparatele de iluminat Voltana furnizează soluții de iluminat durabile, care scad semnificativ consumul de energie și îmbunătățesc nivelul de iluminat.

INVESTIȚII MINIME

Disponibil în 5 dimensiuni, cu flux luminos cuprins între 900 de lumeni și 23.900 lumeni, având numeroase distribuții luminoase de înaltă eficiență și diverse opțiuni pentru control, gama Voltana întâmpină toate nevoile de iluminat urban și rutier, cu investiții minime.

RECUPERARE RAPIDĂ, ECONOMII DE DURATĂ

Cu o durată de viață de 100.000 de ore, Voltana permite evitarea a 4, până la 6 schimbări ale lămpilor, comparativ cu sursele de iluminat convenționale. În perioada în care, pentru aparatele cu lămpi, ar fi necesară înlocuirea aparatului de iluminat, Voltana câștigă deja bătălia pentru scăderea costurilor totale, față de soluțiile HID. În primul rând, Voltana recuperează investiția, apoi continuă să ofere beneficii substanțiale, pentru o lungă perioadă de timp.



ZONE PIETONALE

Străzi, alei și piste
de biciclete



STRADAL

Străzi rezidențiale



Spații comune, zone
comerciale din mediul
urban



CĂI DE CIRCULAȚIE

Căi de circulație
din mediul rural



Căi de circulație
din mediul urban



substituit HID

20/50W

70W

100W

150W

250W



ALTE MEDII ÎN CARE VOLTANA OFERĂ BENEFICII-CHEIE PENTRU CLIENT





PERFORMANT

UTILIZÂND **TEHNOLOGIE DE ULTIMĂ ORĂ**, VOLTANA SURCLASEAZĂ ORICE TIP DE APARAT DE ILUMINAT HID:

- › Sistem cu **eficiență ridicată**: până la 130 lm/ W
- › **Index ridicat de redare a culorilor (CRI) > 70**
- › Distribuție luminoasă avansată, care permite ca spațiul dintre stâlpi să crească, oferind un iluminat uniform



VERSATIL

GAMA VOLTANA ESTE **ULTRA-FLEXIBILĂ**, ASTFEL CĂ OFERĂ SOLUȚIA IDEALĂ PENTRU NEVOILE SPECIFICE DE ILUMINAT:

- › **Distribuții luminoase adaptate** atât pentru zonele și căile de circulație foarte înguste, cât și pentru cele foarte largi
- › Numeroase **variante de intensitate luminoasă**, mulțumită celor 6 dimensiuni disponibile și numeroșilor curenți conductori
- › Numeroase **opțiuni de control**
- › Proiectat atât pentru montaj lateral, cât și pentru fixarea în vârf de stâlp (opțional)
- › Rezistență la temperaturi ambiante extreme, de până la 55°C



CONSTRUIT SĂ REZISTE

VOLTANA A FOST PROIECTAT SĂ OFERE **PERFORMANȚĂ PE TERMEN LUNG**

- › **Optimizează disiparea căldurii**, pentru a crește durata de viață a componentelor
- › **Protecție termică integrată**, cu facilități de reducere a fluxului, în caz de supraîncălzire
- › **Protecție la supratensiuni** (4kV standard, 10 kV opțional) pentru a proteja aparatul de iluminat de vârfurile de tensiune
- › **Nivelul ridicat de etanșeitate** (IP 66) previne distrugerea componentelor & pierderea performanței
- › **Materiale robuste** - aluminiu, oțel galvanizat și sticlă securizată, pentru un nivel ridicat de rezistență la impact (IK 08)
- › **Certificat pentru vibrații 3G** (cu montaj)
- › **Rezistență la vânt** de până la 180 km/h
- › **Nu necesită întreținere**



CONFORM

GAMA VOLTANA A FOST **CERTIFICATĂ** DE CELE MAI PRETENȚIOASE ORGANISME EUROPENE ȘI AMERICANE:

- › ENEC
- › ETL / UL
- › date despre iluminatul cu LEDuri



DEZVOLTARE DURABILĂ

DE LA ÎNCEPUT, APARATUL VOLTANA A FOST DEZVOLTAT PENTRU A **PROTEJA MEDIUL**

- › **Materiale reciclabile** (aluminiiu, oțel și sticlă)
- › **Profil destinat protecției mediului** (PEP) pentru scăderea ampretei ecologice
- › **Emisii de CO₂ reduse** (economie și întreținere)
- › Fără poluare luminoasă (**ULOR 0%**), mulțumită distribuției luminoase precise



SOCIAL

VOLTANA ADUCE NUMEROASE **BENEFICII COLECTIVE**

- › Vizibilitate îmbunătățită, cu lumină albă, care oferă **contrast ridicat**
- › **Siguranță ridicată**, pentru pietoni și pentru conducătorii auto
- › Opțional, iluminat la cerere, pentru a oferi lumină atunci când și acolo unde este cu adevărat necesară
- › **Mai puține interferențe în trafic**, datorită faptului că nu este necesară întreținerea și datorită posibilității de monitorizare
- › Contribuie la **administrarea eficientă a finanțelor** și la consumul responsabil de energie



PRECIS

CU 6 DIMENSIUNI DISPONIBILE, VOLTANA RĂSPUNDE EXACT **NEVOILOR SPECIFICE**

- › **Investiție optimizată**, cu minimum de resurse
- › **Adaptare precisă** la nevoile reale
- › **Design uniform** pentru întregul proiect
- › **Ușor de utilizat** pentru instalator (opțional, poate fi furnizat pre-cablat)



INTELIGENT

CU NUMEROASE **OPȚIUNI DE CONTROL**, VOLTANA OFERĂ OPORTUNITĂȚI PENTRU CREAREA DE SCENARII DE ILUMINAT NELIMITATE ȘI PENTRU **ÎMBUNĂTĂȚIREA MANAGEMENTULUI OPERAȚIONAL**

- › Disponibil cu profil **DALI 1-10 V** sau **profil de reducere personalizat**
- › **Flux Luminos Constant (CLO)**, pentru compensarea automată a deprecierei fluxului
- › Poate funcționa într-o **rețea independentă** limitată sau în **rețeaua unui oraș**, prin comunicație fără fir. Scenariile pot fi îmbunătățite prin **senzori externi**.*
- › Disponibil cu **fotocelulă** sau **priză NEMA P7**, pentru a opera în noua platformă Owlet IoT

CARACTERISTICI - CHEIE

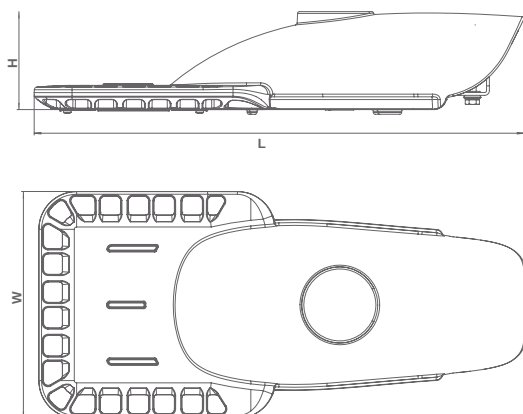
	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
Flux luminos standard (gamă) ^(*)	700 - 2,500lm	800 - 3,000lm	1,800 - 6,100lm	2,700 - 9,200lm	3,700 - 12,700lm	7,500 - 25,200lm
Consum de energie (W) ^(*)	8 - 30W	10 - 31W	20 - 56W	28 - 82W	36 - 110W	70 - 215W
Flux rezidual pe durata de viață @ tq 25°C	Curent până la 700mA: up to 95% Curent de la 701mA până la 1A: până la 90%					@100,000h
Temperatură de culoare	alb cald sau neutru					
Etanș. compartiment optic						IP 66 ^(**)
Etanș. placă echip. control						IP 66 ^(**)
Rezistență la impact (sticlă)						IK 08 ^(***)
Putere nominală	120 - 277V - 50 - 60Hz					
Clasă electrică	EU I sau II ^(**)					
Înălțimea de instalare	4 - 12m					
Materiale						
Corp	Aluminiu turnat sub presiune					
Difuzor	Sticlă (polycarbonat pentru unele variante ale Voltana 0)					
Culoare	RAL 7038 Orice altă culoare din paletarul RAL, la cerere					

^(*) Fluxul inițial și consumul de curent al aparatului sunt valori orientative, pentru temperatură ambientală de 25°C. Fluxul real depinde de condițiile de mediu (de exemplu, temperatură) și poate varia, în anumite configurații. Valorile comunicate sunt supuse modificărilor, conform evoluției tehnologice. Pentru a verifica dacă acest document cuprinde ultimele informații disponibile, vă rugăm să vizitați www.schreder.com

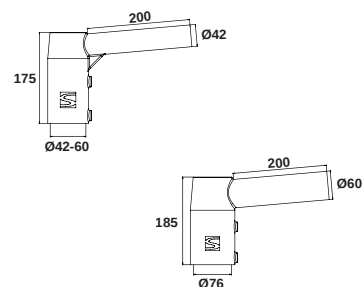
^(**) conform standardului IEC - EN 60598 (doar Voltana 0 este disponibil cu Clasa I) – ^(***) conform standardului IEC - EN 62262

DIMENSIUNI | GREUTATE

	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
L	416mm	501mm	518mm	641mm	555mm	705mm
W	156mm	181mm	240mm	240mm	380mm	480mm
H	91mm	87mm	108mm	111mm	112mm	109mm
KG	2.6kg	4kg	5kg	6kg	8kg	12kg

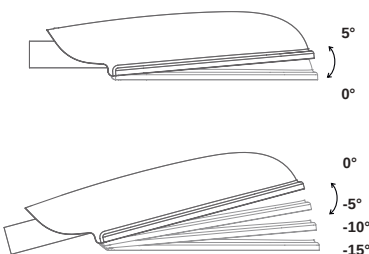


ADAPTOR VÂRF DE STÂLP

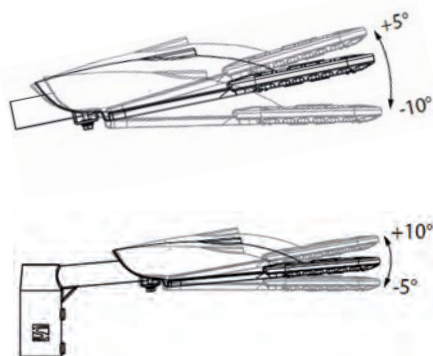


REGLAJE UNGHI ÎNCLINARE

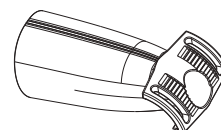
VOLTANA 0



VOLTANA 1 - 5



MONTAJ UNIVERSAL (OPȚIONAL PENTRU VOLTANA 0-1-2-3-4)



Ø 32 - 48mm
Ø 42 - 60mm
Ø 76mm

ÎNLOCUIȚI-VĂ ACTUALUL SISTEM DE ILUMINAT ȘI FACEȚI ECONOMII IMEDIAT, CU VOLTANA!

Prin simpla înlocuire a aparatelor de iluminat cu lămpi pe bază de sodiu cu aparatele Voltana, economiile de energie devin impresionante. În varianta plug-and-play, opțiunile de control - care nu sunt disponibile sau sunt foarte limitate în cazul aparatelor HPS - nu sunt incluse. În funcție de diferite scenarii, aceste opțiuni pot crește semnificativ economiile de energie, oferind, în același timp, siguranță și confort pentru toți utilizatorii și îmbunătățind managementul operațional al întregului sistem.

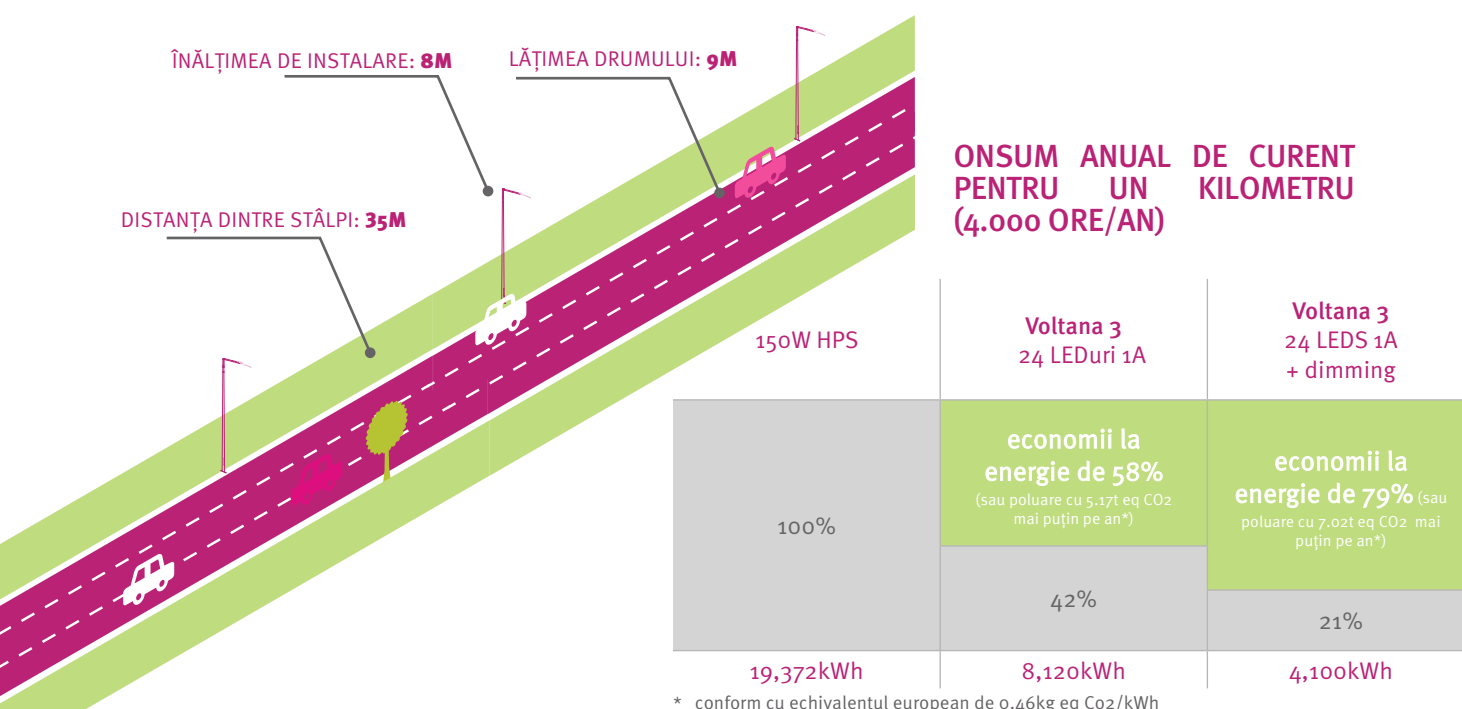
zone pietonale P5-P2		zone pietonale P1		căi de circulație clasificate M6-M5		căi de circulație clasificate M4		căi de circulație clasificate M3		căi de circulație clasificate M2	
aparat HPS 70W	Voltana 1	aparat HPS 100W	Voltana 2	aparat HPS 100W	Voltana 2	aparat HPS 150W	Voltana 3	aparat HPS 150W	Voltana 4	aparat HPS 250W	Voltana 5
	economii de 67%		economii de 56%		economii de 56%		economii de 58%		economii de 45%		economii de 35%
78W ^(*)		110W ^(*)		110W ^(*)		167W ^(*)		167W ^(*)		280W ^(*)	
26W ^(*)		48W ^(*)		48W ^(*)		70W ^(*)		92W ^(*)		180W ^(*)	

(*) Consum de energie total al sistemului

STUDIU DE CAZ

FLEXIBILITATEA DE CARE AVEȚI NEVOIE, PENTRU SCĂDEREA CHELTUIELILOR DE 5 ORI

Cu o investiție minimă (24 de LEDuri, versiunea 1A), Voltana 3 oferă o soluție extrem de competitivă - comparativ cu aparatele de iluminat de 150W, cu lămpi pe bază de sodiu- pentru a ilumina o cale de circulație clasificată M3 (conform standardului CIE 115), cu o recuperare a investiției în mai puțin de 4 ani și economii de energie de până la 79%.





SIGURANȚĂ



STARE DE BINE



DEZVOLTARE DURABILĂ



ECONOMII



SOLUȚII



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