I. FIŞA TEHNICĂ: VOLTANA 2 5136 16 LEDs 700mA NW 37W 424572

	Denumire indicator	Valori şi cerinţe minime	Oferta furnizorului
1.	Puterea nominală	<53W	37W
2.	Cantitate	47 buc	47 buc
3.	Gradul de protecţie a componentei optice	IP66	IP66
4.	Gradul de protecţie a componentei electrotehnice	IP66	IP66
5.	Rezistenta la impact a întregului aparat	IK08	IK08
6.	Carcasa	aluminiu	Aluminiu turnat sub presiune
7.	Curba fotometrică a corpului de iluminat	De tip stradal	De tip stradal
8.	Durata de viaţă	Minim 100000 ore	Tq=25°C @ 100.000 ore: 0.7A: 80%
9.	Diagrama polară a intensităţii luminoase	curbele de tip K	5136
10.	Randamentul corpului de iluminat minim 75%	minim 75%	82.5%
11.	Blocul electronic	compatibil cu tipul sursei de lumină utilizată	compatibil cu tipul sursei de lumină utilizată
12.	Factor de putere	Min 0.9	> 90%, la sarcină maximă
13.	Protecţie împotriva electrocutării	Clasa I sau II	Clasa I EU
14.	temperatura de culoare	Cuprinsă între 4000K±500K	4000 K
15.	Indicele de redare a culorii	≥70	70
16.	Protecţie la descărcări atmosferice	minim 4kV	4 kV
17.	Funcţionare la temperaturi	între -20 şi +40 grade C°	între -20 şi +50 grade C°
18.	Garanţie producător minim 5 ani	minim 5 ani	5 ani
19.	Tip placă LED	SMD -multiled implantat	SMD -multiled implantat
20.	Protectie termo		Thermal protection on LED PCBA

Fisa tehnica poate fi verificata pe: pagina web https://www.schreder.com/ro-ro/produse/voltana/;
raport de calculi Dialux; fisa de produs VOLTANA 2_5136_16 Samsung LH351C_Flat glass_424572
Documente însoţitoare:

1. Certificat ENEC de conformitate emise de un organism de certificare acreditat.
2. Fişa de catalog a corpului de iluminat cu toate caracteristicele tehnice.
3. Declaraţia de conformitate pe proprie răspundere emise de producător.
4. Certificat de garanţie emis de producător.
5. Raporoate de încercări emis de laborator certificat ISO 17025.
6. Raport de calcule luminotehnice Dialux pentru 15 situatii.
7. Fisier electronic VOLTANA 2_5136_16 Samsung LH351C_Flat glass_424572 cu diagrame polare si carteziane, Isolux, K-Curbe.

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II. FIȘA TEHNICĂ: VOLTANA 0 5136 8 LEDs 700mA NW 19W 425502

	Denumire indicator	Valori şi cerințe minime	Oferta furnizorului
21.	Puterea nominală	<27W	19W
22.	Cantitate	146 buc	78 buc
23.	Gradul de protecție a componentei optice	IP66	IP66
24.	Gradul de protecție a componentei electrotehnice	IP66	IP66
25.	Rezistenta la impact a întregului aparat	IK08	IK08
26.	Carcasa	aluminiu	Aluminiu turnat sub presiune
27.	Curba fotometrică a corpului de iluminat	De tip stradal	De tip stradal
28.	Durata de viață	Minim 100000 ore	Tq=25°C @ 100.000 ore: 0.7A: 80%
29.	Diagrama polară a intensității luminoase	curbele de tip K	5136
30.	Randamentul corpului de iluminat minim 75%	minim 75%	86.5 %
31.	Blocul electronic	compatibil cu tipul sursei de lumină utilizată	compatibil cu tipul sursei de lumină utilizată
32.	Factor de putere	Min 0.9	> 90%, la sarcină maximă
33.	Protecție împotriva electrocutării	Clasa I sau II	Clasa I EU
34.	temperatura de culoare	Cuprinsă între 4000K±500K	4000 K
35.	Indicele de redare a culorii	≥70	70
36.	Protecție la descărcări atmosferice	minim 4kV	4 kV
37.	Funcționare la temperaturi	între -20 şi +40 grade C^{o}	între -20 şi +50 grade C^{o}
38.	Garanție producător minim 5 ani	minim 5 ani	5 ani
39.	Tip placă LED	SMD -multiled implantat	SMD -multiled implantat
40.	Protectie termo		Thermal protection on LED PCBA

Fisa tehnica poate fi verificata pe: pagina web https://www.schreder.com/ro-ro/produse/voltana/; raport de calculi Dialux; fisa de produs VOLTANA 0_5136_8 Samsung LH351C_Flat glass_425502

Documente însoțitoare:

1. Certificat ENEC de conformitate emise de un organism de certificare acreditat.
2. Fișa de catalog a corpului de iluminat cu toate caracteristicele tehnice.
3. Declarația de conformitate pe proprie răspundere emise de producător.
4. Certificat de garanție emis de producător.
5. Raporoate de încercări emis de laborator certificat ISO 17025.
6. Raport de calcule luminotehnice Dialux pentru 15 situatii.
7. Fisier electronic VOLTANA 0_5136_8 Samsung LH351C_Flat glass_425502 cu diagrame polare si carteziane, Isolux, K-Curbe.

III. FIȘA TEHNICĂ: VOLTANA 0 5136 8 LEDs 500mA NW 14W 425502

	Denumire indicator	Valori și cerințe minime	Oferta furnizorului
41.	Puterea nominală	<27W	14W
42.	Cantitate	146 buc	83 buc
43.	Gradul de protecție a componentei optice	IP66	IP66
44.	Gradul de protecție a componentei electrotehnice	IP66	IP66
45.	Rezistenta la impact a întregului aparat	IK08	IK08
46.	Carcasa	aluminiu	Aluminiu turnat sub presiune
47.	Curba fotometrică a corpului de iluminat	De tip stradal	De tip stradal
48.	Durata de viață	Minim 100000 ore	Tq=25°C @ 100.000 ore: 0.5A: 90%
49.	Diagrama polară a intensității luminoase	curbele de tip K	5136
50.	Randamentul corpului de iluminat minim 75%	minim 75%	86.5%
51.	Blocul electronic	compatibil cu tipul sursei de lumină utilizată	compatibil cu tipul sursei de lumină utilizată
52.	Factor de putere	Min 0.9	> 90%, la sarcină maximă
53.	Protecție împotriva electrocutării	Clasa I sau II	Clasa I EU
54.	temperatura de culoare	Cuprinsă între 4000K±500K	4000 K
55.	Indicele de redare a culorii	≥70	70
56.	Protecție la descărcări atmosferice	minim 4kV	4 kV
57.	Funcționare la temperaturi	între -20 și +40 grade C^{o}	între -20 și +50 grade C^{o}
58.	Garanție producător minim 5 ani	minim 5 ani	5 ani
59.	Tip placă LED	SMD -multiled implantat	SMD -multiled implantat
60.	Protectie termo		Thermal protection on LED PCBA

Fisa tehnica poate fi verificata pe: pagina web https://www.schreder.com/ro-ro/produse/voltana/; raport de calculi Dialux; fisa de produs VOLTANA 0_5136_8 Samsung LH351C_Flat glass_425502

Documente însoțitoare:

1. Certificat ENEC de conformitate emise de un organism de certificare acreditat.
2. Fișa de catalog a corpului de iluminat cu toate caracteristicele tehnice.
3. Declarația de conformitate pe proprie răspundere emise de producător.
4. Certificat de garanție emis de producător.
5. Raporoate de încercări emis de laborator certificat ISO 17025.
6. Raport de calcule luminotehnice Dialux pentru 15 situatii.
7. Fisier electronic VOLTANA 0_5136_8 Samsung LH351C_Flat glass_425502 cu diagrame polare si carteziane, Isolux, K-Curbe.

OFERTA TEHNICA

EXTINDEREA ŞI MODERNIZAREA SISTEMULUI DE ILUMINAT PUBLIC CU LUNGIMEA DE 6,5 KM DIN S. CIOREŞTI, R. NISPORENI

1. OBIECTUL CERERII DE OFERTE

Procedura are ca obiect Extinderea si modernizarea sistemului de iluminat public cu lungimea de 6,5 km din s. Cioreşti, r. Nisporeni. Procedura aplicată pentru atribuirea contractului de achiziţie publică este „cel mai mic preţ" în condiţii de corespundere deplină a documentaţiei depuse cu documentaţia standard şi cerinţele emise şi se desfăşoară în conformitate cu actele normative în vigoare.

2. ORGANIZATORUL PROCEDURII

3.1 Denumirea autorităţii contractante : Primăria s. Cioreşti
3.2 Adresa: s. Cioreşti, r. Nisporeni, Republica Moldova, MD6421
3.3. Persoana de contact: Maria Fetcu, Telefonul de contact 0 264 45 003, 0264 45 236, E-mail contabilitate.coresti@gmail.com

3. OBIECTUL CONTRACTULUI

3.1. Achiziţionarea şi montarea a 208 aparate de iluminat echipate cu surse LED pe stâlpi existenţi şi/sau stâlpi noi împărţite pe clase ale sistemului de iluminat conform descrierii de mai jos., inclusiv implementarea unui sistem de automatizare încadrat în PA: ceas electronic cu program astronomic

3.2. Modelul de configuraţie şi cerinţele pentru situaţii sunt descrise mai jos:

Clasa de iluminat M5 – total 47 corpuri

	Lmed[cd/m2], minim	U0, minim	Ul1, minim	Ul2, minim	EUo	Emin [lx]	Emed[lx]	TI[max]	EIR[min]
	≥0,50	≥0,35	≥0,40	-	-	nici o cerinţă	nici o cerinţă	≤15	≥0,3

Amplasarea corpurilor de iluminat conform situaţiilor de stradă tip M5:

#	Parametrii	Sit 1. Str. V. Dumbrava	Sit. 2. Viilor
1	Clasa de iluminat	M5	
2	Tipul corpului	37W	
3	Număr de unităţi, buc.	20	27
4	Montare	Unilateral	
5	Distanţa dintre stâlpi	38 m	41 m
6	Lăţimea Carosabil	6 m	5 m
7	Retragerea la stâlp	2,5 m	3,5 m
8	Înălţimea montării aparatelor de iluminat	8,0 m	8,3 m
9	Înălţimea pilonului	7,7 m	8 m
10	Lungimea braţ	1 m	1,5 m
11	Unghi de înclinare braţ	15°	
12	Tip carosabil	asfalt	
13	Factor de menţinere pentru calcule luminotehnice	min. 0,85	

Clasa de iluminat M6 – total 161 corpuri

	Lmed[cd/m2], minim	U0, minim	Ul1, minim	Ul2, minim	EUo	Emin [lx]	Emed[lx]	TI[max]	EIR[min]
	≥0,30	≥0,35	≥0,40	-	-	nici o cerință	nici o cerință	≤20	≥0,3

Amplasarea corpurilor de iluminat conform situațiilor de stradă tip M6:

#	Parametrii	Sit. 3. St. Cobaculu	Sit. 4. Str. Viitorului	Sit. 5. Str. Voievozilo r	Sit. 6. Str. Plaiului	Sit. 7. Str. Păcii	Sit. 8. Str. Tineretului	Sit. 9. Str. Prieteniei
1	Clasa de iluminat	M6						
2	Tipul corpului	19W	14W	14W	14W	19W	19W	14W
3	Număr de unități, buc.	43	10	5	19	19	16	11
4	Montare	Unilateral						
5	Distanța dintre stâlpi	40 m	34 m	31 m	35 m	38 m	39 m	36 m
6	Lățimea Carosabil	4,5 m	3 m	3 m	4,5 m	4m	4,5 m	4 m
7	Retragerea la stâlp	1,5 m	1 m	1 m	1 m	3 m	3 m	2 m
8	Înălțimea montării aparatelor de iluminat	8 m	8 m	8 m	8 m	8 m	8 m	8 m
9	Înălțimea pilonului	7.5 m	7.5 m	7,5 m	7,5 m	8 m	7,5 m	7,5 m
10	Lungimea braț	1 m	0.5 m	0.5 m	0.5 m	1 m	1.3 m	1 m
11	Unghi de înclinare braț	5˚				15˚	15˚	5˚
12	Tip carosabil	pietriș						
13	Factor de menținere pentru calcule luminotehnice	min. 0,85						

#	Parametrii	Sit. 10. Str. I. Creangă	Sit. 11. Str. Doina	Sit. 12. Str. M. Eminescu	Sit. 13. Str. V. Alecsandri	Sit. 14. Str. Plopilor	Sit. 15. Str. Al. Mateevici
1	Clasa de iluminat	M6					
2	Tipul corpului	14W	14W	14W	14W	14W	14W
3	Număr de unități, buc.	9	7	5	6	5	6
4	Montare	Unilateral					
5	Distanța dintre stâlpi	36 m	33 m	35 m	39 m	35 m	34 m
6	Lățimea Carosabil	4 m	4 m	4 m	4 m	4 m	4 m
7	Retragerea la stâlp	2m	2 m	2 m	1,5 m	1,5 m	2 m
8	Înălțimea montării aparatelor de iluminat	8 m	8 m	8 m	8 m	8 m	8 m
9	Înălțimea pilonului	7,5 m	7,5 m	7,5 m	7,5 m	7,5 m	7,5 m
10	Lungimea braț	1 m	1 m	1 m	1 m	1 m	1 m
11	Unghi de înclinare braț	5˚;					
12	Tip carosabil	pietriș					
13	Factor de menținere pentru calcule luminotehnice	min. 0,85					

3.3 Solutia propusa permite realizarea unui sistem modern şi eficient de iluminat public care să corespundă cerinţelor şi normelor naţionale şi internaţionale, în paralel cu optimizarea consumurilor energetice. Prin acasta solutie se garanteza:

Garantarea dreptului cetăţenilor din *s. Cioreşti* la un spaţiu public de calitate;

Modernizarea sistemului de iluminat, bazat pe utilizarea de corpuri de iluminat performante care să asigure calitatea, garanția, eficiența energetică și exploatarea optimă a întregului sistem și optimizarea consumului de energie electrică;

Garantarea indicatorilor de performanță luminotehnică calculați, urmare a lucrărilor de modernizare in conformitate cu SM EN 13201-5:2017

Asumarea și garantarea optimizării consumului de energie electrică;

Garantarea permanenței în funcționare a iluminatului public.

5.5. Pentru întocmirea ofertei tehnice și comerciale, ofertantul a luat în vedere următoarele activități :

- Calcul luminotehnic pentru configurațiile de căi de circulație martor (situațiile din prezenta documentație);
- Lucrări de modernizare a sistemului de iluminat public existent, care constau în achiziționarea și montarea corpurilor de iluminat, brațelor de prindere și conectarea lor la rețea prin cleme și cablul de alimentare pentru 208 corpuri de iluminat;
- Lucrări de reînnoire si extindere a rețelelor electrice de iluminat public aeriene si/sau subterane, care constau in execuție lucrări de instalații electrice 0.4 KV.
- automatizarea SIP;

4. CERINȚE TEHNICE ȘI DE CALITATE

4.1. Pentru iluminatul rutier și pietonal, solutia garanteaza prin calculele luminotehnice atingerea următoarelor obiective :

- Asigurarea nivelurilor luminotehnice care sa aibă valori egale sau superioare celor reglementate de standardele naționale și internaționale. Cu referinta la nivelurile de iluminare și luminanță, uniformități generale, longitudinale și transversale atât pentru iluminare cât și pentru luminanță, pragul de orbire etc.

- Asigurarea unui nivel minim al consumului de energie electrică, în condițiile îndeplinirii tuturor cerințelor, prin următoarele mijloace :

- Corpuri de iluminat cu randament mare și costuri de mentenanță redusa, cu grad mare de protecție, și cu caracteristici optice deosebite echipate cu sursa LED;
- Componentele sistemului de iluminat vor fi executate în conformitate cu standardele în vigoare și dispun de certificate de conformitate;
- **Puterea electrică instalată a corpurilor de iluminat** utilizate pentru modernizare va avea o valoare de **4,383 kW**. (47*37W+78*19W+83*14W= 4383W)

4.2. Sunt prezentate spre examinare pentru corpuri de iluminat:

- Certificate de conformitate emise de un organism de certificare, acreditat de către un organism național / internațional de acreditare semnatar EA – MLA pentru evaluarea conformității acestei categorii de produse;[2]
- Declarații de conformitate pe proprie răspundere emise de producător, cu dovada că producătorul deține sisteme de management integrate (conforme standardelor din seria ISO 9000 (sisteme de management a calității) și/sau ISO 14000 (protecția mediului) și/sau ISO 18000 (sănătatea și securitatea muncii)), certificate de un organism de certificare acreditat de către un organism național de acreditare semnatar EA – MLA pentru acest gen de activități;[1]
- Declarațiile de conformitate pe proprie răspundere emise de producător trebuie să fie însoțite de rapoarte de încercări emise de laboratoare acreditate în conformitate cu standardul ISO 17025 pentru încercarea acestor categorii de produse;
- Certificate de garanție emise de producător;[1]
- Marcaj CE aplicat și/sau certificare ENEC
- Prezentarea calculelor luminotehnice pentru corpurile de iluminat propuse în ofertă. Pentru verificarea calculelor luminotehnice de prezentat matricea de calcul în format „ldt" sau „ies", precum și fișierul de calcul complet (recomandabil Dialux sau Relux).

- Este obligatorie inscripționarea tipului corpului de iluminat și a mărcii producătorului. Tipul corpului de iluminat și marca producătorului astfel inscripționate trebuie să se identifice cu tipul corpurilor de iluminat și producătorul pentru care s-au prezentat certificatele de conformitate solicitate, atât pentru produsele prezentate ca mostre, cât și pentru cele folosite în proiectele luminotehnice și ofertate.

4.3. Caracteristici tehnice fata de Cerințe tehnice minime impuse pentru corpuri de iluminat cu LED, folosite pentru iluminatul rutier si zonelor pietonale M5, M6

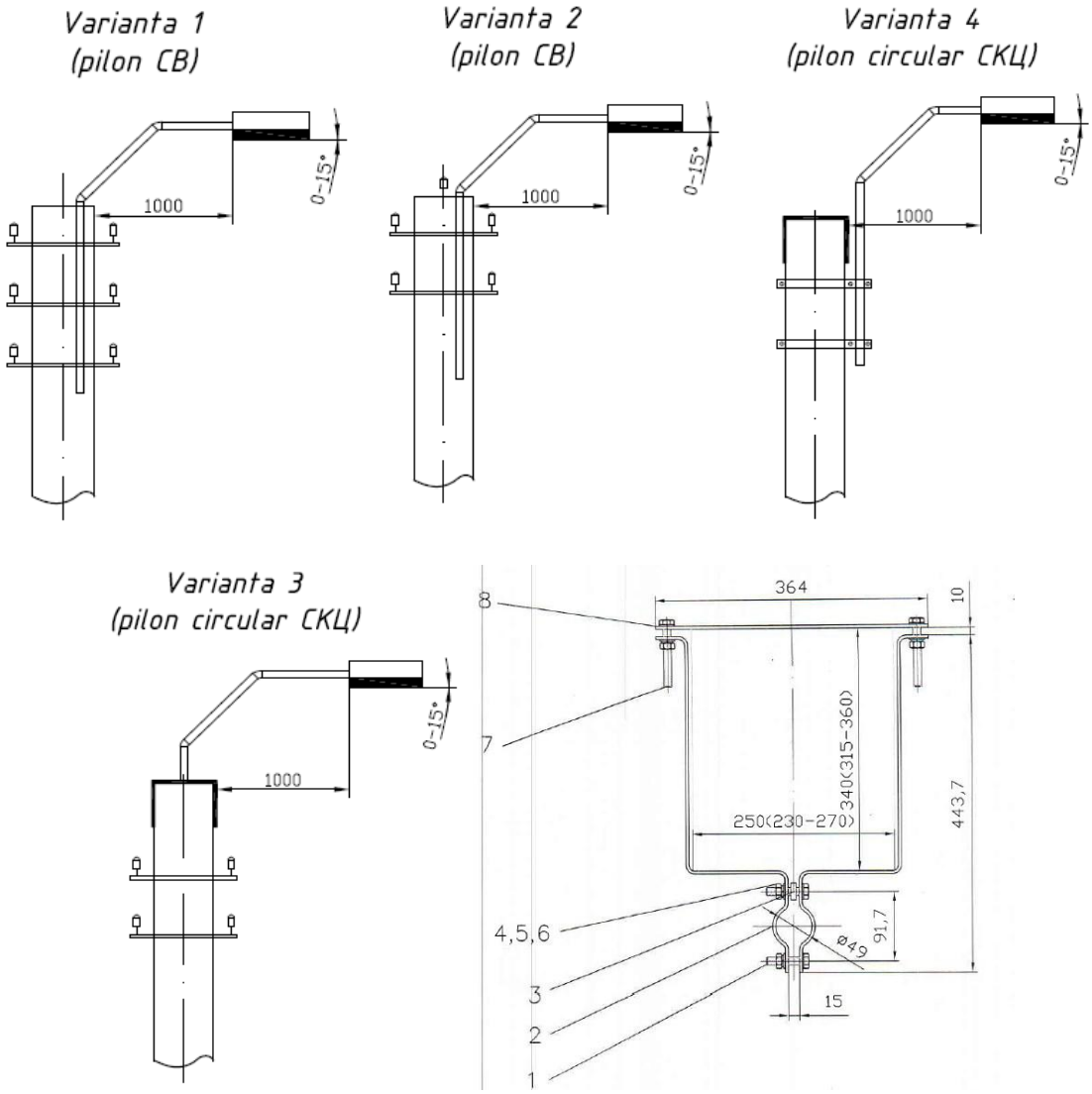
- Gradul de protecție a componentei optice IP66;
- Gradul de protecție a componentei electrotehnice IP66;
- Rezistenta la impact a întregului aparat de iluminat – min. IK08
- Carcasa realizată din aluminiu sau alt aliaj metalic rezistent la coroziune , dimensionată astfel încât să îndeplinească și funcția de radiator pasiv pentru LED;
- Curba fotometrică a corpului de iluminat trebuie să asigure îndeplinirea parametrilor ceruți de clasa de iluminat atribuit obiectivului pentru care se solicită finanțare;[1]
- Durata de viață minimă 100000 ore cu asigurarea a minim 70% din fluxul luminos inițial;
- Se va prezenta diagrama polară a intensității luminoase și curbele de tip K pentru corpul de iluminat propus;
- Randamentul corpului de iluminat minim 75%;
- Blocul electronic, compatibil cu tipul sursei de lumină utilizată, asigurarea funcționării la minim un factor de putere de 0,90;
- Protecție împotriva electrocutării Clasa I sau II;
- Corpuri de iluminat echipate cu surse de tip LED de mare putere, având temperatura de culoare cuprinsă între 4000K±500K;
- Indicele de redare a culorii ≥70
- Protecție la descărcări atmosferice minim 4kV;
- Funcționare la temperaturi între -20 și +40 grade Celsius;
- Eficiența luminoasă întreg sistem (alimentare, sistem optic, sursa) - min. 120 lm/W demonstrată prin raport fotometric emis de laborator acreditat ISO 17025 anexat corpului de iluminat.
- Garanție producător minim 5 ani.
- Tip placă LED- SMD -multiled implantat pe placă

4.4. Cerințe tehnice minime impuse pentru console și coliere de prindere:

- Orice consolă (cu excepția consolelor plasate pe pilonii metalici galvanizați) va fi prinsă de pilon cu ajutorul brațelor de prindere, caracteristicile cărora sunt indicate mai jos. .
- Consolele vor avea o lungime minimă de 0,5 m, respectiv una maximă de 1,5 m. Cauza aplicării acestui standard intervine în contextul de a asigura un aspect arhitectural uniform al localității.

Domeniu de utilizare	susținerea corpurilor de iluminat stradale
Descriere	țeavă de oțel vopsita, având diametru minim ø42mm pentru aparate de iluminat cu greutăți mai mici sau egale cu 7kg si minim ø60mm pentru greutăți mai mari de 7 kilograme. După fabricare este protejată la coroziune prin zincare sau vopsire
Dimensiune:	în funcție de geometria străzii , lungimea minimă a brațului pe orizontală 500mm; lungimea maximă nu va depăși 1,5 m
Prindere pe stâlp	cu coliere de dimensiuni ce sunt alocate fiecărui tip de stâlp pe care se montează colierele vor fi din platbanda OLZn 40x4 sau echivalent
Unghiuri de înclinare:	în funcție de soluția aleasă dar nu mai mari de 15˚ față de planul orizontal
Prinderea brațelor pe stâlpi:	se va face în brățări pereche, cu șuruburi,

Modelul reprezentativ al consolelor propuse spre implementare cuprind



Modelul reprezentativ al consolelor propuse spre implementare care vor fi excluse de la procedura de achiziție

Ofertantul va prezenta un angajament ferm de fabricare a consolelor și prindere a acestora cu coliere de prindere. Neprezentarea angajamentului dat va putea fi considerat drept argument de descalificare a OFERTEI.

4.5 Cerințe tehnice minime impuse pentru cablu de conectare la rețea

- Conductor - izolat autoportant 0,6/1 kV 3x25 AL/54,6
- Tensiune nominala U_0/U: 0,6/1 kV
- Temperatura minima a mediului ambiant (pe manta): -25^0C
- Temperatura maxima admisibila pe conductor: 90^0C
- Tensiunea de încercare: 3kV

4.6 Cerințe tehnice minime impuse pentru cleme de conexiune la rețea

- Clema de derivație cu dinți pentru iluminat public *LEA-JT 95-25/70-mm²* pentru rețelele cu conductor torsadat.
- Material carcasă: sintetic.
- Material/Secțiunea conductorului principal: Al/95-25.
- Material/Secțiunea conductorului secundar: Al/70-25.
- Tipul conductorului: circular compact.
- Tensiune nominala U_0/U: 0,6/1 kV.
- Tensiunea maximă material: 1,2 kV.
- Tensiunea suportată, scufundat, la frecvență industrială: 6 kV.

25

4.7 Cerințe tehnice impuse pentru realizarea calculelor luminotehnice:

- in calcule se va folosi un factor de menținere global MF=0.85 in conformitate cu caracteristicele tehnice ale corpului de iluminat;
- in calculele luminotehnice efectuate pentru oferta pe străzi martor se va considera carosabil conform situațiilor din prezenta documentație;
- calculele luminotehnice se efectuează in conformitate cu prevederile standardului SR EN 13201;
- calculele luminotehnice efecte in program Dialux EVO.
- valorile minime pentru clasele de iluminat vor fi conform situațiilor din prezenta documentație;

4.8 Documente care să ateste respectarea condițiilor tehnice

4.8.1 Corpuri de iluminat (inclusiv componentele acestuia)

Prospect tehnic/fisa de catalog aparat de iluminat

Declarații/certificatul de conformitate de la producător, din care sa rezulte caracteristicile tehnice solicitate și conformitatea cu standardele in vigoare

Certificat de garanție

Rapoarte de încercări emise de laboratoare acreditate în conformitate cu standardul ISO 17025 pentru încercarea acestor categorii de produse. Se vor prezenta minim rapoartele elaborate în conformitate cu standardul SM SR 60598-1 „Corpuri de iluminat Partea 1.

rapoarte de testare fotometrica, pentru întregul aparat de iluminat, emise de un laborator acreditat ISO 17025 cu condiții minime:

- Buletinele trebuie să conțină valorile intensităților luminoase în plan transversal ($I_{transversal}$ [cd], pt. γ^{o}-în cel puțin 25 poz.) și longitudinal ($I_{longitudinal}$ [cd], pt. $C_{90°}$ si $C_{270°}$);
- Prezentarea curbelor fotometrice in coordonate polare, carteziene, prezentarea diagramei izocandela pt. fiecare produs ofertat;
- Buletine de măsurători pentru întregul aparat de iluminat: Flux luminos inițial, Ra, Tc.

6.9.2 Cerințe tehnice minime impuse pentru cablu de conectare la rețea

certificat de conformitate

Prospect tehnic/fisa de catalog aparat de iluminat

6.9.3 Cerințe tehnice minime impuse pentru console, brațe de prindere

certificat de conformitate pentru țeava cu D 40-60 mm

Angajamentul ferm al ofertantului de a fabrica a console conform schițelor de desene menționate și a utiliza prinderea acestora cu coliere de prindere

7. Garanții oferite:

- lucrări de construcții montaj: 3 ani;
- corpuri de iluminat de iluminat (inclusiv componentele acestuia): 5 ani.

Client:
Primaria s. Cioresti

Adresă proiect:
s. Cioresti

Data:
12.05.2019

Iluminat public s. Cioresti

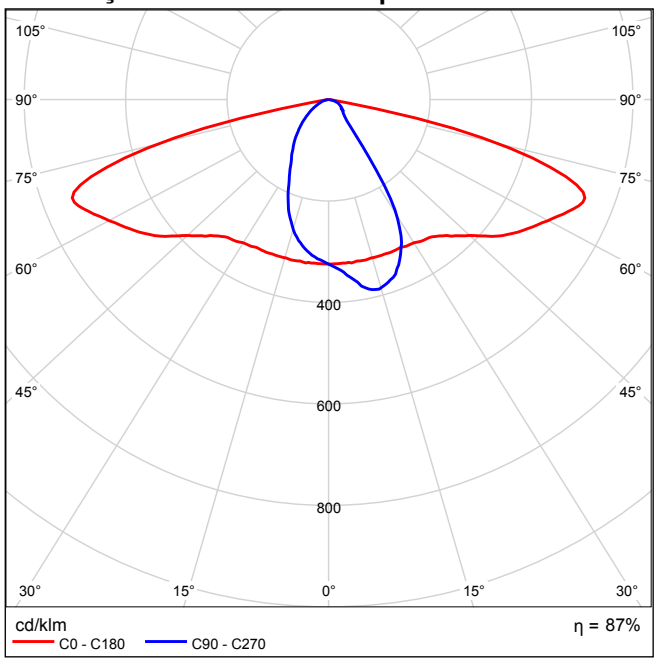
Cuprins

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 1x8 LH351C@500mA NW740 230V 00-17-492

Vedeţi catalogul nostru de corpuri de iluminat pentru o imagine a corpului de iluminat.

Randament luminos: 86.52%
Fluxul luminos al lămpii: 2096 lm
Flux luminos corpuri de iluminat: 1814 lm
Putere: 13.7 W
Eficienţa luminoasă: 132.4 lm/W

Distribuţia luminoasă 1 / LVK polar

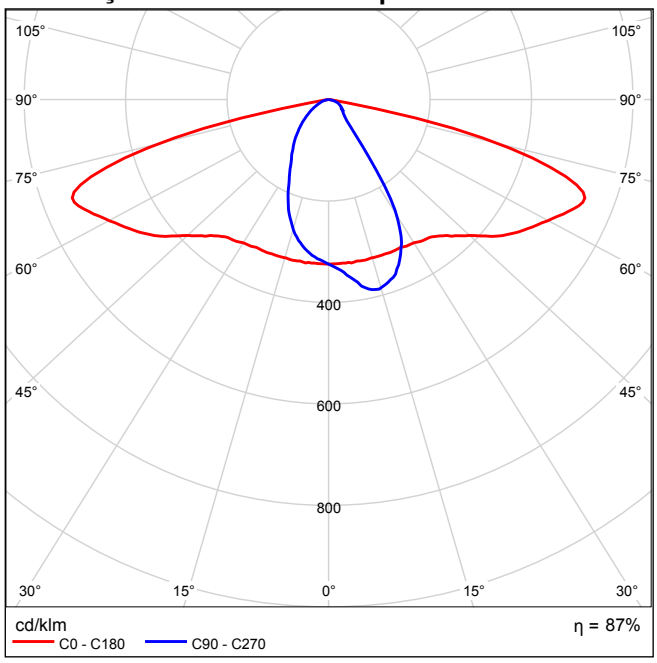


Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502 1x8 LH351C@700mA NW740 230V 00-17-210

Vedeţi catalogul nostru de corpuri de iluminat pentru o imagine a corpului de iluminat.

Randament luminos: 86.52%
Fluxul luminos al lămpii: 2810 lm
Flux luminos corpuri de iluminat: 2431 lm
Putere: 18.9 W
Eficienţa luminoasă: 128.6 lm/W

Distribuţia luminoasă 1 / LVK polar

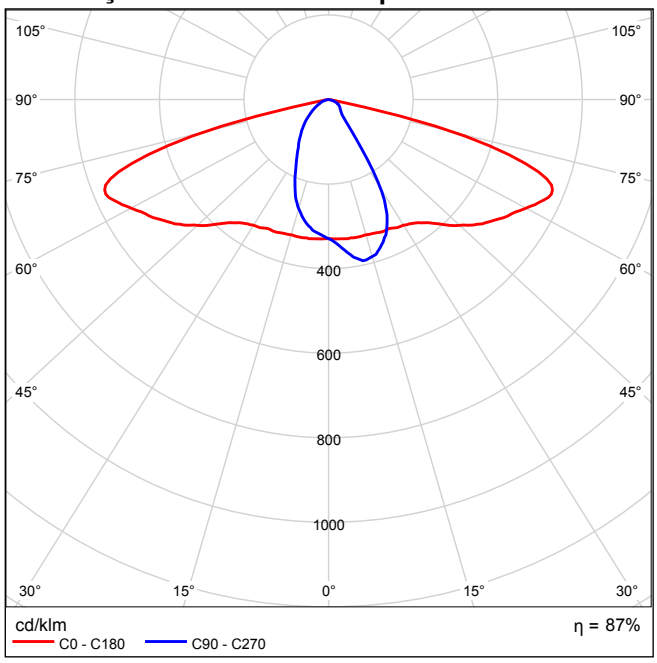


Schréder 424572 VOLTANA 2 5136 Flat glass - 16 LH351C@700mA NW740 230V 00-53-397 424572 1x16 LH351C@700mA NW740 230V 00-53-397

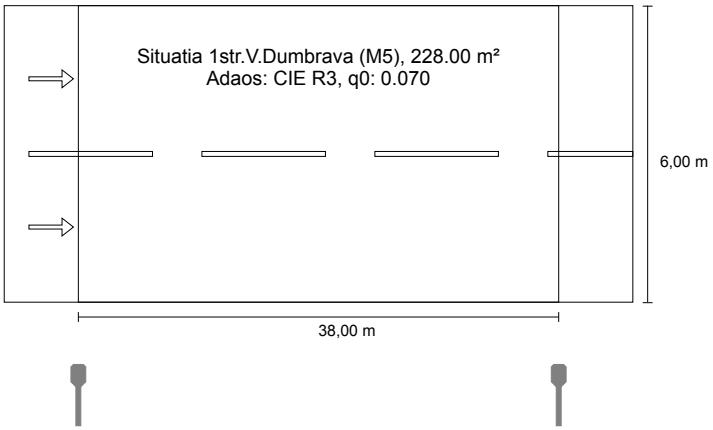
Vedeţi catalogul nostru de corpuri de iluminat pentru o imagine a corpului de iluminat.

Randament luminos: 86.58%
Fluxul luminos al lămpii: 5593 lm
Flux luminos corpuri de iluminat: 4842 lm
Putere: 36.6 W
Eficienţa luminoasă: 132.3 lm/W

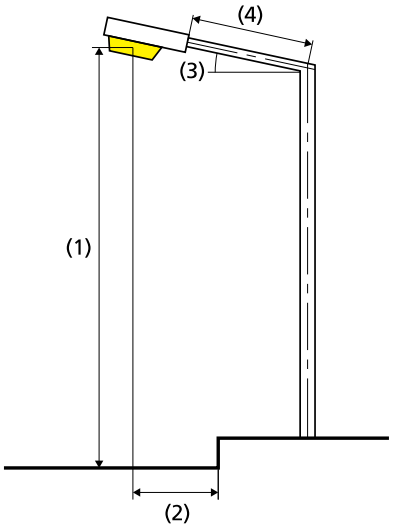
Distribuţia luminoasă 1 / LVK polar



Situatia 1str.V.Dumbrava până la EN 13201:2015



Schréder 424572 VOLTANA 2 5136 Flat glass - 16 LH351C@700mA NW740 230V 00-53-397 424572



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

Situatia 1str.V.Dumbrava (M5)

Lm [cd/m²] ≥ 0.50	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 15	EIR ≥ 0.30
✓ 0.57	✓ 0.45	✓ 0.69	✓ 14	✓ 0.39

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.017 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 2 5136 Flat glass - 16 LH351C@700mA NW740 230V 00-53-397 424572 (146.4 kWh/an)	0.6 kWh/m² an

Lampă:	1x16 LH351C@700mA NW740 230V 00-53-397
Flux luminos (corp de iluminat):	4842.38 lm
Flux luminos (lampă):	5593.00 lm
Ore de lucru	
4000 h:	100.0 %, 36.6 W
W/km:	951.6
Aranjament:	Pe o parte Jos
Distanţă stâlp:	38.000 m
Înclinare consolă (3):	15.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-1.506 m

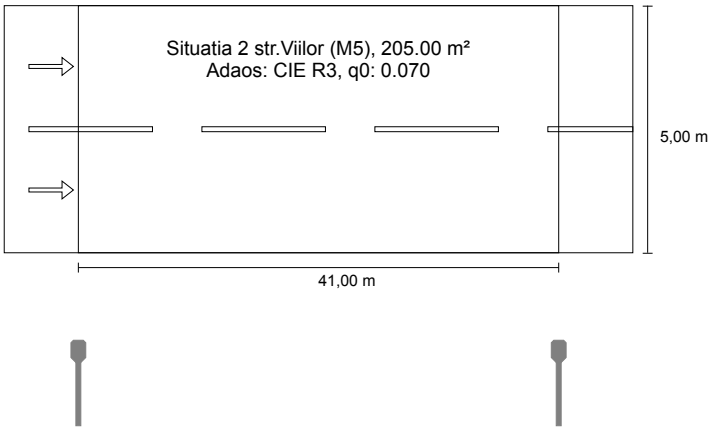
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	680 cd/klm *
peste 80°	268 cd/klm *
peste 90°	12.0 cd/klm *
Clasă intensitate luminoasă:	/

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

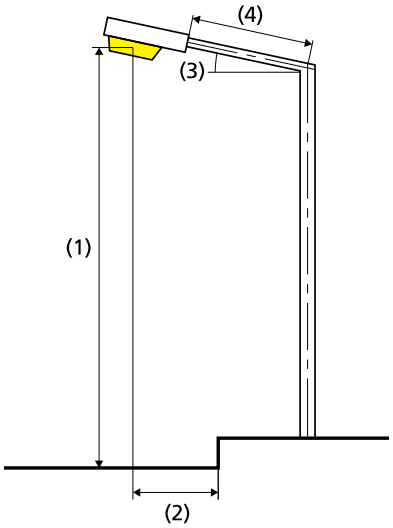
* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.0

Situatia 2 str.Viilor până la EN 13201:2015



Schréder 424572 VOLTANA 2 5136 Flat glass - 16 LH351C@700mA NW740 230V 00-53-397 424572



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

Situatia 2 str.Viilor (M5)

Lm [cd/m²] ≥ 0.50	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 15	EIR ≥ 0.30
✓ 0.52	✓ 0.50	✓ 0.65	✓ 14	✓ 0.55

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.021 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 2 5136 Flat glass - 16 LH351C@700mA NW740 230V 00-53-397 424572 (146.4 kWh/an)	0.7 kWh/m² an

Lampă:	1x16 LH351C@700mA NW740 230V 00-53-397
Flux luminos (corp de iluminat):	4842.38 lm
Flux luminos (lampă):	5593.00 lm
Ore de lucru	
4000 h:	100.0 %, 36.6 W
W/km:	878.4
Aranjament:	Pe o parte Jos
Distanţă stâlp:	41.000 m
Înclinare consolă (3):	15.0°
Lungime consolă (4):	1.500 m
Înălţimea deasupra planului util (1):	8.300 m
Ieşirea în consolă a punctului de lumină (2):	-2.023 m

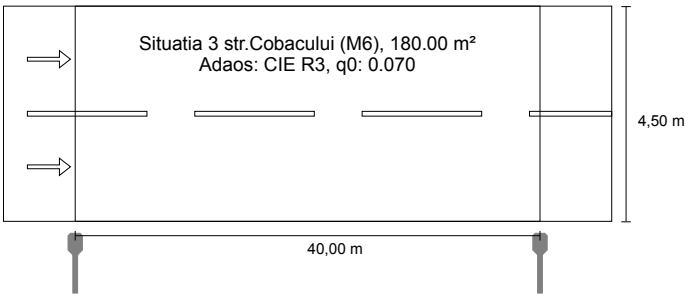
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	680 cd/klm *
peste 80°	268 cd/klm *
peste 90°	12.0 cd/klm *
Clasă intensitate luminoasă:	/

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.0

Situatia 3 str.Cobacului până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

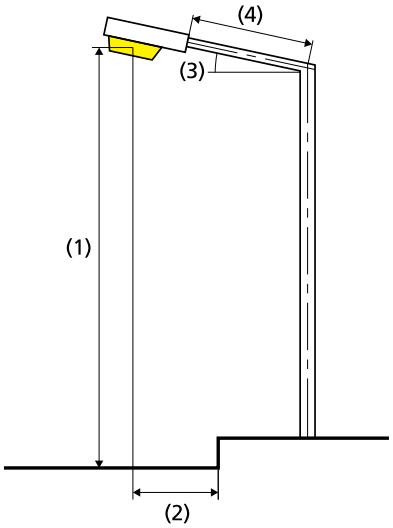
Situatia 2 str.Viilor

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.36	✔ 0.48	✔ 0.61	✔ 11	✔ 0.52

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.020 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502 (75.6 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502



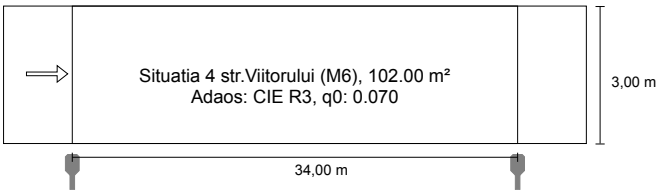
Lampă:	1x8 LH351C@700mA NW740 230V 00-17-210
Flux luminos (corp de iluminat):	2431.35 lm
Flux luminos (lampă):	2810.00 lm
Ore de lucru	
4000 h:	100.0 %, 18.9 W
W/km:	472.5
Aranjament:	Pe o parte Jos
Distanţă stâlp:	40.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.496 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.4

Situatia 4 str.Viitorului până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

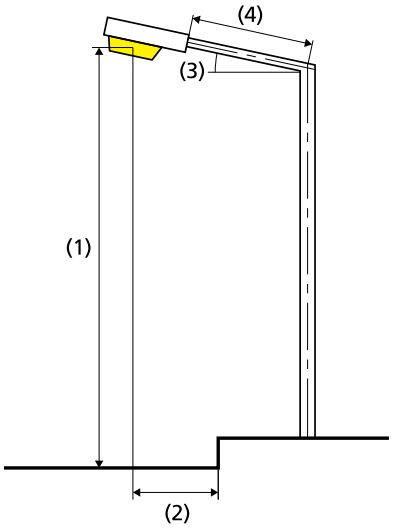
Situatia 4 str.Viitorului (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.37	✓ 0.71	✓ 0.81	✓ 8	✓ 0.66

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.028 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.5 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



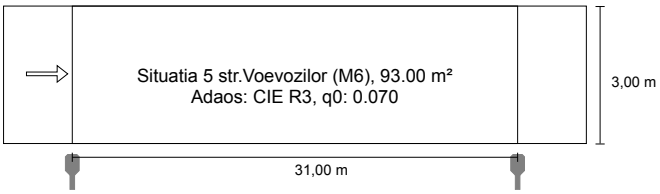
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	397.3
Aranjament:	Pe o parte Jos
Distanţă stâlp:	34.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	0.500 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.494 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 5 str.Voevozilor până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

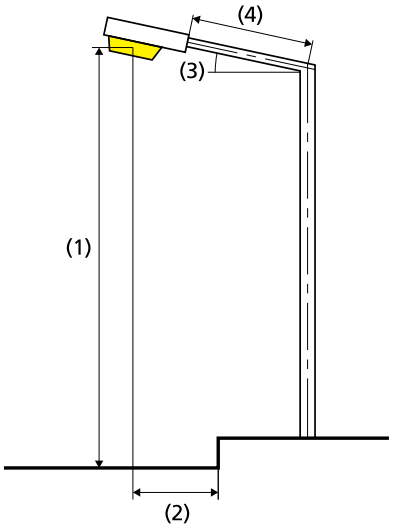
Situatia 5 str.Voevozilor (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.41	✓ 0.73	✓ 0.89	✓ 7	✓ 0.66

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.028 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.6 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



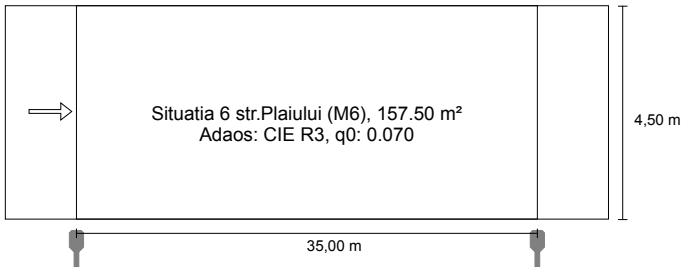
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	438.4
Aranjament:	Pe o parte Jos
Distanţă stâlp:	31.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	0.500 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.494 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 6 str.Plaiului până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

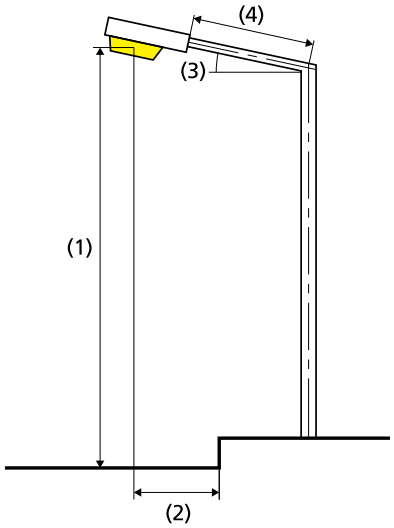
Situatia 6 str.Plaiului (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.32	✔ 0.56	✔ 0.78	✔ 8	✔ 0.30

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.020 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.3 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



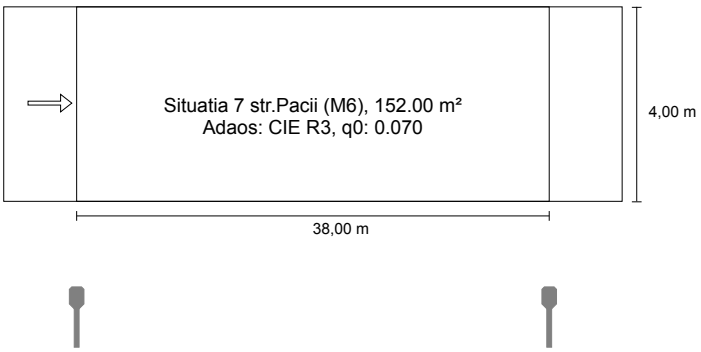
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	397.3
Aranjament:	Pe o parte Jos
Distanţă stâlp:	35.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	0.500 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.494 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

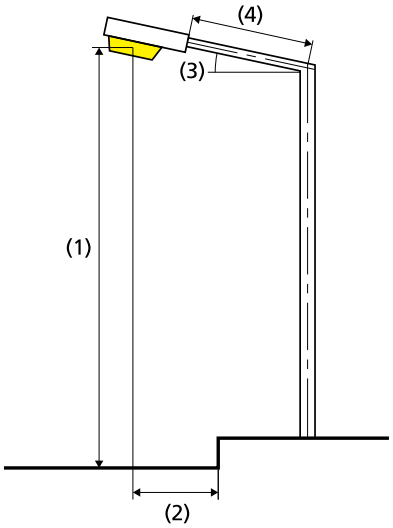
* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 7 str.Pacii până la EN 13201:2015



Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

Situatia 7 str.Pacii (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.32	✔ 0.61	✔ 0.74	✔ 9	✔ 0.48

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.025 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502 (75.6 kWh/an)	0.5 kWh/m² an

Lampă:	1x8 LH351C@700mA NW740 230V 00-17-210
Flux luminos (corp de iluminat):	2431.35 lm
Flux luminos (lampă):	2810.00 lm
Ore de lucru	
4000 h:	100.0 %, 18.9 W
W/km:	491.4
Aranjament:	Pe o parte Jos
Distanţă stâlp:	38.000 m
Înclinare consolă (3):	15.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-2.011 m

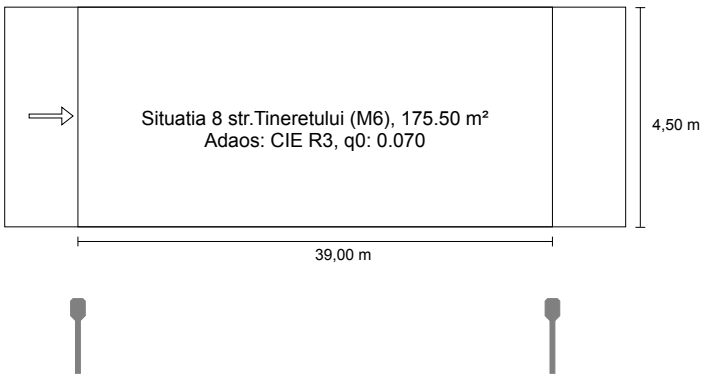
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	639 cd/klm *
peste 80°	333 cd/klm *
peste 90°	14.6 cd/klm *
Clasă intensitate luminoasă:	/

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

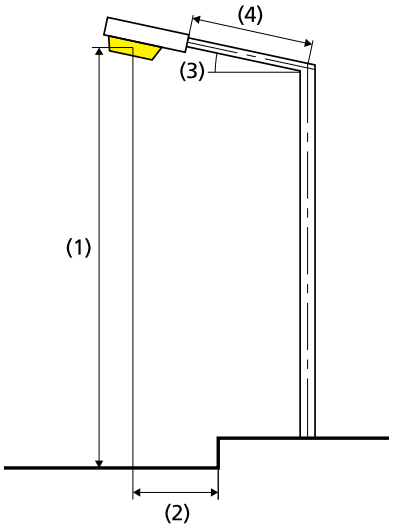
* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.1

Situatia 8 str.Tineretului până la EN 13201:2015



Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

Situatia 8 str.Tineretului (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✓ 0.31	✓ 0.58	✓ 0.73	✓ 9	✓ 0.42

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@700mA NW740 230V 00-17-210 425502 (75.6 kWh/an)	0.4 kWh/m² an

Lampă:	1x8 LH351C@700mA NW740 230V 00-17-210
Flux luminos (corp de iluminat):	2431.35 lm
Flux luminos (lampă):	2810.00 lm
Ore de lucru	
4000 h:	100.0 %, 18.9 W
W/km:	491.4
Aranjament:	Pe o parte Jos
Distanţă stâlp:	39.000 m
Înclinare consolă (3):	15.0°
Lungime consolă (4):	1.300 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-1.721 m

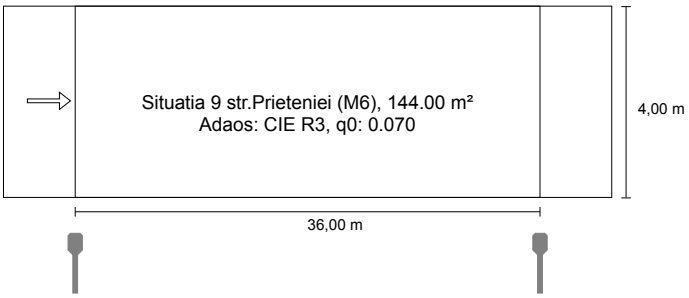
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	639 cd/klm *
peste 80°	333 cd/klm *
peste 90°	14.6 cd/klm *
Clasă intensitate luminoasă:	/

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.1

Situatia 9 str.Prieteniei până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

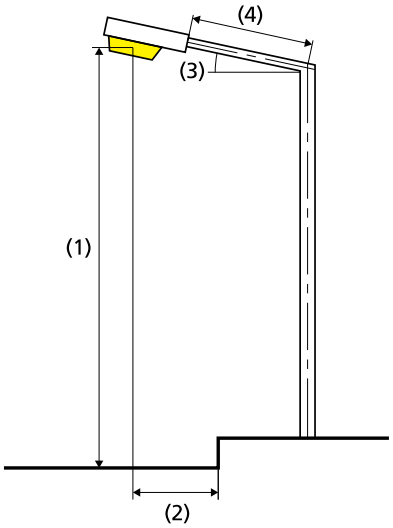
Situatia 9 str.Prieteniei (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.30	✔ 0.57	✔ 0.76	✔ 8	✔ 0.33

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



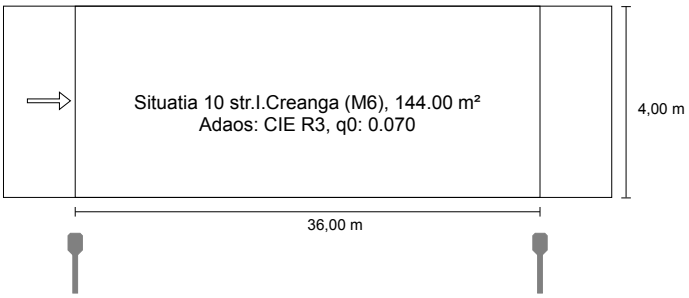
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	383.6
Aranjament:	Pe o parte Jos
Distanţă stâlp:	36.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.996 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 10 str.I.Creanga până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

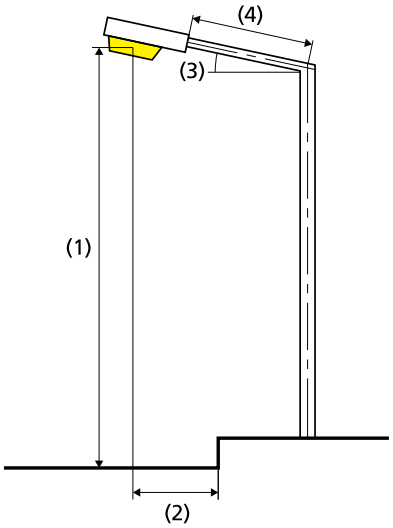
Situatia 10 str.I.Creanga (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.30	✔ 0.57	✔ 0.76	✔ 8	✔ 0.33

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



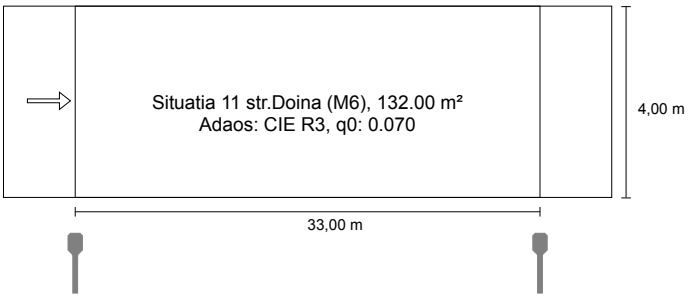
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	383.6
Aranjament:	Pe o parte Jos
Distanţă stâlp:	36.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.996 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 11 str.Doina până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

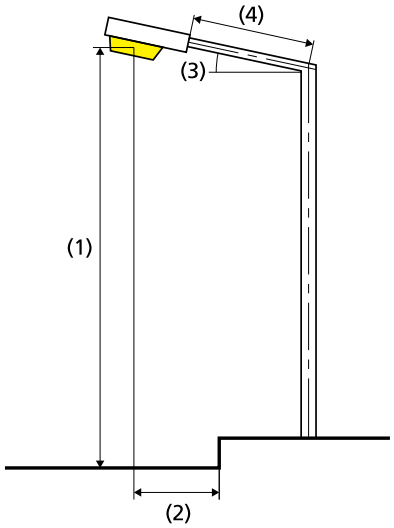
Situatia 11 str.Doina (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.33	✔ 0.60	✔ 0.84	✔ 8	✔ 0.33

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



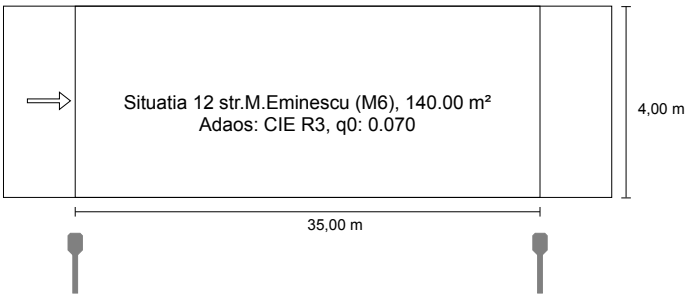
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	411.0
Aranjament:	Pe o parte Jos
Distanţă stâlp:	33.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.996 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 12 str.M.Eminescu până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

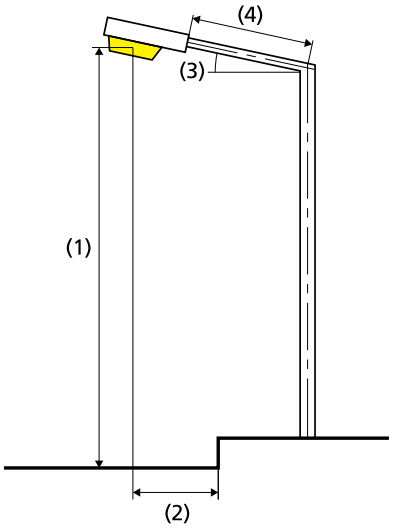
Situatia 12 str.M.Eminescu (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.31	✔ 0.57	✔ 0.79	✔ 8	✔ 0.33

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



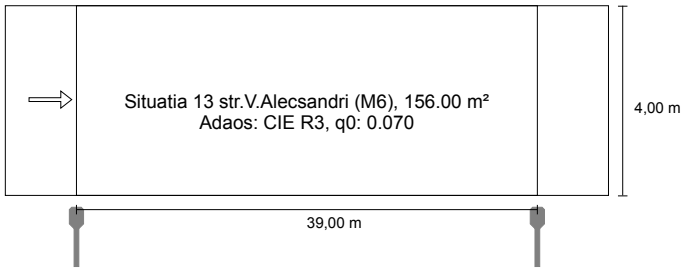
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	397.3
Aranjament:	Pe o parte Jos
Distanţă stâlp:	35.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.996 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 13 str.V.Alecsandri până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

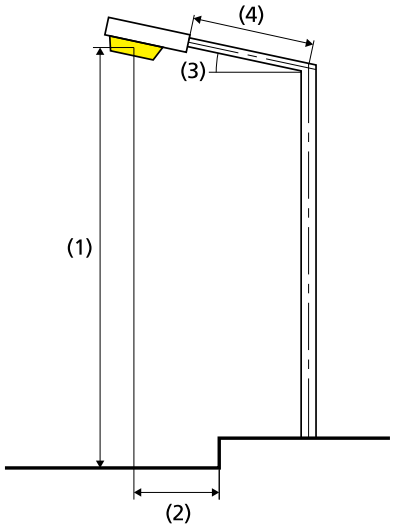
Situatia 13 str.V.Alecsandri (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.30	✔ 0.58	✔ 0.66	✔ 9	✔ 0.40

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



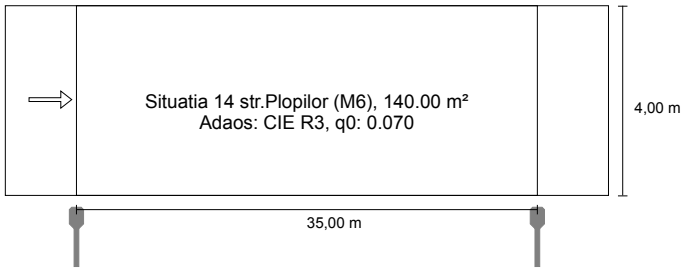
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	356.2
Aranjament:	Pe o parte Jos
Distanţă stâlp:	39.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.496 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 14 str.Plopilor până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

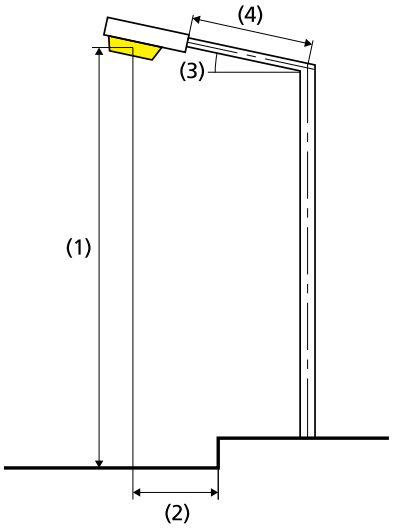
Situatia 14 str.Plopilor (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.33	✔ 0.61	✔ 0.78	✔ 8	✔ 0.40

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



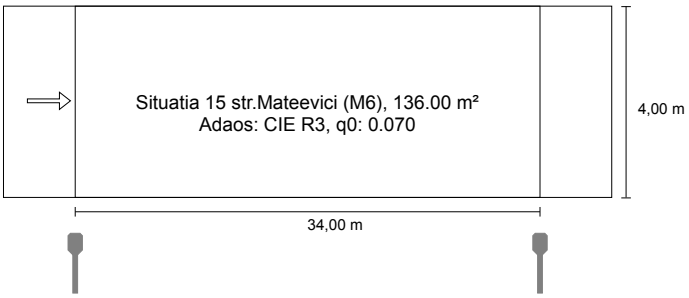
Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	397.3
Aranjament:	Pe o parte Jos
Distanţă stâlp:	35.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.496 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

Situatia 15 str.Mateevici până la EN 13201:2015



Rezultate pentru câmpurile de evaluare
Factorul de menţinere: 0.85

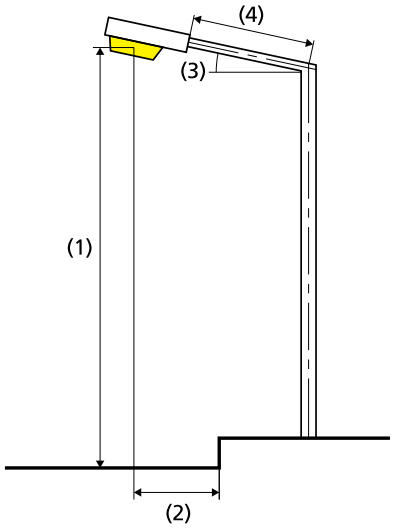
Situatia 15 str.Mateevici (M6)

Lm [cd/m²] ≥ 0.30	Uo ≥ 0.35	Ul ≥ 0.40	TI [%] ≤ 20	EIR ≥ 0.30
✔ 0.32	✔ 0.59	✔ 0.82	✔ 8	✔ 0.33

Rezultate pentru indicatorii de eficienţă energetică

Indicatorul densităţii de putere (Dp)	0.022 W/lxm²
Densitatea consumului de energie	
Aranjament: VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502 (54.8 kWh/an)	0.4 kWh/m² an

Schréder 425502 VOLTANA 0 5136 Flat glass - 8 LH351C@500mA NW740 230V 00-17-492 425502



Lampă:	1x8 LH351C@500mA NW740 230V 00-17-492
Flux luminos (corp de iluminat):	1813.56 lm
Flux luminos (lampă):	2096.00 lm
Ore de lucru	
4000 h:	100.0 %, 13.7 W
W/km:	397.3
Aranjament:	Pe o parte Jos
Distanţă stâlp:	34.000 m
Înclinare consolă (3):	5.0°
Lungime consolă (4):	1.000 m
Înălţimea deasupra planului util (1):	8.000 m
Ieşirea în consolă a punctului de lumină (2):	-0.996 m
ULR:	0.00
ULOR:	0.00
Valori maxime ale intensităţii luminoase	
peste 70°	637 cd/klm *
peste 80°	179 cd/klm *
peste 90°	0.00 cd/klm *
Clasă intensitate luminoasă:	G*1

Orice direcţie ce formează unghiul dat cu verticala în jos a corpurilor de iluminat instalate pentru utilizare.

* Luminous intensity values in [cd/klm] for calculating luminous intensity class refer to the output flux of the luminaire, according EN 13201:2015.

Aranjamentul respectă clasa cu indici de orbire D.5

BUREAU VERITAS
Certification

TUNGSRAM-SCHRÉDER ZRT.

2084 Pilisszentiván, Tópart 2., Hungary

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

Design, manufacturing, sales of lighting fittings, their supporting structures and street furnitures

Original cycle start date:	**27 June 2015**
Expiry date of previous cycle:	**26 June 2018**
Certification / Recertification Audit date:	**9 June 2018**
Certification / Recertification cycle start date:	**27 June 2018**
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	**26 June 2021**

Certificate No. HU003979 Version: **1** Revision date: ***26 June 2018***

*Certification body address: **5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom***
*Local office: **Budafoki út 56., H-1117 Budapest, Hungary***

*Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call: **+36 1 802 6900***

UKAS MANAGEMENT SYSTEMS
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BUREAU VERITAS
Certification

TUNGSRAM-SCHRÉDER ZRT.

2084 Pilisszentiván, Tópart 2., Magyarország

A Bureau Veritas Certification Holding SAS – UK Branch tanúsítja, hogy a fenti szervezet irányítási rendszerét értékelte és az alább feltüntetett irányítási rendszer szabvány követelményeinek megfelelőnek találta

ISO 14001:2015

A tanúsított rendszer alkalmazási területe

Lámpatestek, tartószerkezetek és utcabútorok tervezése, gyártása és értékesítése

Eredeti regisztráció dátuma:	**2015. június 27.**
Előző ciklus lejárati ideje:	**2018. június 26.**
Tanúsító / Újratanúsító audit időpontja:	**2018. június 9.**
Tanúsítási ciklus kezdete:	**2018. június 27.**
Az irányítási rendszer folyamatos megfelelő működése mellett ez a tanúsítvány érvényes:	**2021. június 26.**

Tanúsítvány száma: ***HU003981*** Verzió: **1** dátum: ***2018. június 26***

Tanúsító szervezet címe: ***5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom***
Kiállító iroda: ***Bureau Veritas Magyarország Kft., Budafoki út 56., Budapest H-1117, Magyarország***

UKAS MANAGEMENT SYSTEMS
0008

Amennyiben további információra lenne szüksége a tanúsítvány alkalmazási területét, illetve érvényességét illetően a tanúsító szervezetnél további információhoz juthat. A tanúsítvány érvényességét a következő telefonszámon ellenőrizheti: ***+36 1 802 6900.***

BUREAU VERITAS
Certification

Certification

Awarded to

TUNGSRAM-Schréder Zrt.

H-2048 Pilisszentiván, Tópart 2.
Hungary

Bureau Veritas certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standard detailed below:

Standard

OHSAS 18001:2007

Scope of supply

Design, manufacturing, sales of lighting fittings, their supporting structures and street furnitures

Original Approval Date: 22nd July 2015 Certification cycle start Date: 22nd July 2018
Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 21st July 2021

To check this certificate validity please call: + 36 1 802 6900

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

Version 1, Revision Date: 12th July 2018

Certificate Number: CZE-180109

S 3100

MANAGING OFFICE: BUREAU VERITAS CZECH REPUBLIC, spol. s r.o., Olbrachtova 1, 140 02 Praha 4, Czech Republic
ISSUING OFFICE ADDRESS: BUREAU VERITAS CZECH REPUBLIC, spol. s r.o., Olbrachtova 1, 140 02 Praha 4, Czech Republic

ETICS-CoA-002-2018

ETICS *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

Giancarlo Zappa, Secretary General

Schréder
Experts in lightability™

A U T O R I Z A R E

Către: **PRIMĂRIA S. CIOREȘTI**

Noi, SCHRÉDER ROMANIA S.R.L., cu sediul in Cluj - Napoca, str. Corneliu Coposu, nr. 167A, inregistrată la Registrul Comerţului cu nr. J12 / 1759 / 1998, în calitate de producători de aparate de iluminat public de tipul:

- Aparat de iluminat Schréder, tip **VOLTANA 0**
- Aparat de iluminat Schréder, tip **VOLTANA 2**

autorizăm prin prezenta pe furnizorul **COMELEC LUX S.R.L.**, să livreze produsele mai sus menţionate.

Prin prezenta garantăm calitatea şi performanţele produselor oferite şi autorizăm pe **COMELEC LUX S.R.L.**, să asigure pentru produsele respective îndeplinirea obligaţiilor care decurg din contractul de furnizare, referitoare la serviciile de instalare şi punere în funcţiune, de întreţinere şi de asistenţă tehnică.

Data completării: 16.05.2019

Producător
SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA

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,

Issue date : **2016-05-19**

Validity date : **2021-05-27**

Nicole MEURÉE-VANLAETHEM

Original version of this certificate is in French.

E6-0040

CERTIFICAT DE GARANŢIE
Nr. 101/ 16.05.2019

Producător/ Furnizor: **SCHRÉDER ROMANIA S.R.L.**
Beneficiar: **PRIMĂRIA S. CIOREȘTI**
Data livrării: pe perioda de valabilitate a: **"*EXTINDEREA ŞI MODERNIZAREA SISTEMULUI DE ILUMINAT PUBLIC CU LUNGIMEA DE 6,5 KM DIN S. CIOREŞTI, R. NISPORENI "***

Termen de garanţie:

- Aparat de iluminat Schréder, tip **VOLTANA 0,** 5 ani de la data livrarii
- Aparat de iluminat Schréder, tip **VOLTANA 2,** 5 ani de la data livrarii

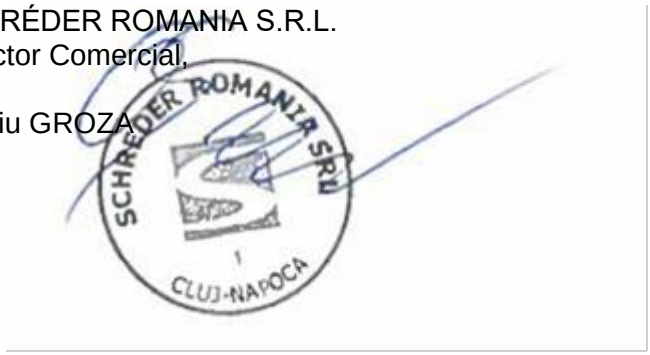
Condiţii de asigurare a garanţiei:

- **Se asigură garanţie** pentru orice defecţiune a produsului generată de vicii ascunse care nu au putut fi detectate la momentul recepţiei de către Beneficiar.
- **Nu se asigură garanţie** pentru viciile aparente după data recepţiei de către Beneficiar.
- Utilizarea necorespunzătoare a produsului şi orice intervenţie asupra sa **duce la pierderea garanţiei**.
- **Nu se asigură garanţie** pentru materialele consumabile (varistori, fuzibili).
- **Nu se asigură garanţie** dacă acest certificat nu este însoţit de originalul sau copia facturii de achiziţie.

La livrare se predau Beneficiarului instrucţiuni de instalare, de punere în funcţiune, utilizare, întreţinere, manipulare, depozitare şi transport.

SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA



Eliberat,
Mai 2019, Cluj-Napoca

DECLARATIE DE CALITATE

Nr. 101/16.05.2019

Producător/Furnizor: SCHRÉDER ROMANIA S.R.L
Beneficiar: **PRIMĂRIA S. CIOREȘTI**

În conformitate cu prevederile legale privind calitatea produselor livrate, SCHRÉDER ROMANIA S.R.L. declară pe propria răspundere că produsele care vor fi livrate în cadrul: ***"EXTINDEREA ȘI MODERNIZAREA SISTEMULUI DE ILUMINAT PUBLIC CU LUNGIMEA DE 6,5 KM DIN S. CIOREȘTI, R. NISPORENI "*** în concordanţă cu Declaraţia de conformitate nr. 101/16.05.2019, îndeplinesc condiţiile de calitate prevăzute în documentaţia tehnică cu care vor fi livrate produsele.

SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA

Eliberat,
Mai 2019, Cluj-Napoca

Schréder
Experts in lightability™

DECLARAȚIE DE CONFORMITATE

CE

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

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

Versiune: max. 8 LED-uri
Clasă electrică: I sau II
Balast: electronic
Tensiune nominală: 230V / 50Hz
Caracteristici: Max. 1000mA
Etanşeitate compartiment optic: IP 66
Etanşeitate compartiment aparataj: IP 66

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

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

SCHRÉDER ROMANIA S.R.L.
Director General,

Alexandru SIRCA

Eliberat,
Martie 2019, Cluj-Napoca

Schréder
Experts in lightability™

DECLARAȚIE DE CONFORMITATE

CE

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

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

Versiune: 16 LED-uri
Clasă electrică: I sau II
Balast: electronic
Tensiune nominală: 230V / 50Hz
Caracteristici: Max. 1000mA
Etanşeitate compartiment optic: IP 66
Etanşeitate compartiment aparataj: IP 66

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

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

SCHRÉDER ROMANIA S.R.L.
Director General,

Alexandru SIRCA

Eliberat,
Martie 2019, Cluj-Napoca

DECLARAŢIE DE CONFORMITATE
Nr. 101/16.05.2019

Noi, SCHRÉDER ROMANIA S.R.L., cu sediul in Cluj - Napoca, str. Corneliu Coposu, nr. 167A, înregistrată la Registrul Comerţului cu nr. J12/1759/1998, asigurăm, garantăm şi declarăm pe propria răspundere, conform prevederilor legale aflate in vigoare privind regimul produselor care pot pune în pericol viaţa, sănătatea, securitatea muncii şi protecţia mediului, că următoarele produse:

Aparat de iluminat Schréder, tip VOLTANA 0
Aparat de iluminat Schréder, tip VOLTANA 2

care vor fi livrate în cadrul contractului **"EXTINDEREA ȘI MODERNIZAREA SISTEMULUI DE ILUMINAT PUBLIC CU LUNGIMEA DE 6,5 KM DIN S. CIOREȘTI, R. NISPORENI "** nu pun în pericol viaţa, sănătatea, securitatea muncii şi nu produc un impact negativ asupra mediului, în situaţia în care sunt instalate şi utilizate conform destinaţiei.

SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA

Schréder
Experts in lightability™

Declaraţie în atenţia: **PRIMĂRIA S. CIOREȘTI**
Din partea: SCHRÉDER ROMANIA S.R.L. şi afiliaţii săi, în poziţia de furnizori

DECLARAŢIA RoHS APARATE DE ILUMINAT
„Restricţia folosirii anumitor substanţe periculoase în echipamentul electric şi electronic” – (RoHS) Directiva Europeană 2011/65/EU

Prin prezenta, *furnizorul* garantează că toate produsele şi componentele lor, şi materialele care intră în componenţa produselor şi a componentelor acestora, furnizate către **COMELEC LUX S.R.L.,** sunt în conformitate cu cerinţelor Directivei RoHS și a standardului EN 50581 : 2012.

Mai departe, *furnizorul* confirmă prin prezenta că informaţia transmisă prin această declaraţie este corectă şi ia la cunoştinţă faptul că **COMELEC LUX S.R.L.,** va acorda încredere totală reprezentărilor pe parcursul derulării contractelor cu propriii clienţi şi va considera furnizorul răspunzător în cazul în care oricare dintre informaţiile transmise este neadevărată sau incorectă.

*Notă: Nivelurile maxime admise conform Directivei RoHS sunt:

□ 0.1% din greutate în materiale omogene pentru conductori;
□ 0.1% din greutate în materiale omogene pentru crom hexavalent;
□ 0.1% din greutate în materiale omogene pentru mercur;
□ 0.1% din greutate în materiale omogene pentru difenil polibromurat;
□ 0.1% din greutate în materiale omogene pentru eter difenil polibromurat;
□ 0.01% din greutate în materiale omogene pentru cadmiu.

Aprobat:
SCHRÉDER ROMANIA S.R.L.
Director Comercial,

Ovidiu GROZA

16 Mai 2019,
Cluj-Napoca

VOLTANA

ILUMINAT CU LEDURI, POTRIVIT ORICUI

LED

owlet

Lenso Flex 2

EFICIENTIZAREA COSTURILOR

PERFORMANȚĂ RIDICATĂ

BENEFICII REMARCABILE

NU NECESITĂ ÎNTREȚINERE

Schréder

VOLTANA

CEA MAI NOUĂ, RENTABILĂ ŞI PERFORMANTĂ GAMĂ DE APARATE DE ILUMINAT, CARE ÎŞI ACOPERĂ INVESTIȚIA ÎN TIMP

POSIBILITATEA 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 şi îmbunătățesc nivelul de iluminat.

INVESTIȚII MINIME

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

VOLTANA **0** VOLTANA **1** VOLTANA **2** VOLTANA **3** VOLTANA **4** VOLTANA **5**

ZONE PIETONALE

Străzi, alei şi piste \de biciclete

STRADAL

Străzi rezidențiale

Spații comune, zone comerciale din mediul urban

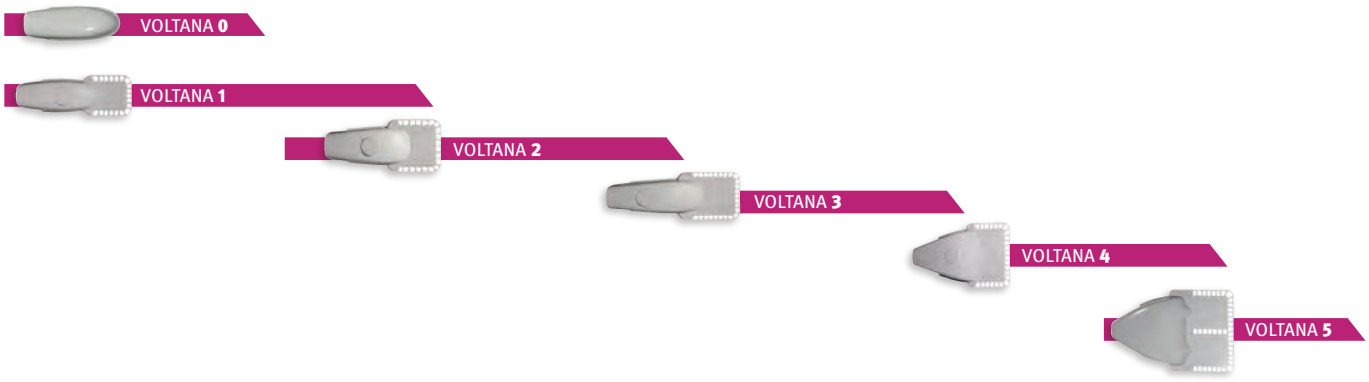
CĂI DE CIRCULAȚIE

Căi de circulație din mediul rural

Căi de circulație din mediul urban

substitut HID

20/50W	70W	100W	150W	250W



ALTE MEDII ÎN CARE VOLTANA OFERĂ BENEFICII-CHEIE PENTRU CLIENT


FACILITĂȚI DE TRANSPORT


ZONE INDUSTRIALE


ZONE COMERCIALE


FACILITĂȚI SPORTIVE

PERFORMANT

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

› Sistem cu **eficienţă 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:

› **Distribuţii luminoase adaptate** atât pentru zonele şi căile de circulație foarte înguste, cât şi pentru cele foarte largi
› Numeroase **variante de intensitate luminoasă,** mulțumită celor 6 dimensiuni disponibile şi numeroşilor curenți conductori
› Numeroase **opțiuni de control**
› Proiectat atât pentru montaj lateral, cât şi 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 creşte durata de viață a componentelor
› **Protecție termică integrată,** cu facilități de reducere a fluxului, în caz de supraîncălzire
› **Protecţie la supratensiuni** (4kV standard, 10 kV opțional) pentru a proteja aparatul de iluminat de vârfurile de tensiune
› **Nivelul ridicat de etanşeitate** (IP 66) previne distrugerea componentelor & pierderea performanței
› **Materiale robuste** - aluminiu, oțel galvanizat şi sticlă securizată, pentru un nivel ridicat de rezistență la impact (IK 08)
› **Certificat pentru vibraţii 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 ŞI 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** (aluminiu, oțel şi sticlă)
› **Profil destinat protejării mediului** (PEP) pentru scăderea amprentei ecologice
› **Emisii de CO_2 reduse** (economie şi 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 şi pentru conducătorii auto
› Opțional, iluminat la cerere, pentru a oferi lumină atunci când şi acolo unde este cu adevărat necesară
› **Mai puține interferențe în trafic**, datorită faptului că nu este necesară întreținerea şi datorită posibilității de monitorizare
› Contribuie la **administrarea eficientă a finanțelor** şi 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
› **Uşor 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 ŞI PENTRU **ÎMBUNĂTĂȚIREA MANAGEMENTULUI OPERAȚIONAL**

› Disponibil cu profil **DALI** 1-10 V sau **profil de reducere** personalizat
› **Flux Luminos Constant** (CLO), pentru compensarea automată a deprecierii fluxului
› Poate funcționa într-o **rețea independentă** limitată sau în **rețeaua unui oraş**, 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

* indisponibil pentru Voltana 0

CARACTERISTICI - CHEIE

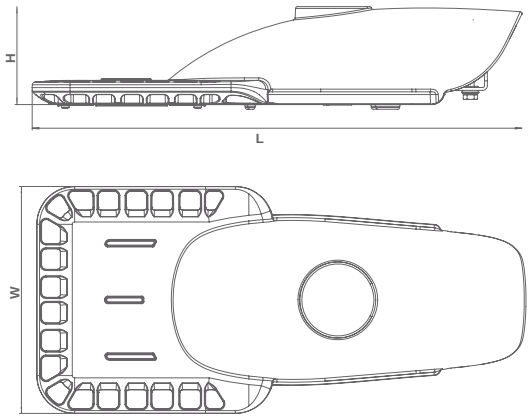
	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
Flux luminos standard (gamă) (*)	700 - 2,500lm	800 - 3,000lm	1,800 - 6,100lm	2,700 - 9,200lm	3,700 - 12,700lm	7,500 - 25,200lm
Consum de energie (W) (*)	8 - 30W	10 - 31W	20 - 56W	28 - 82W	36 - 110W	70 - 215W
Flux rezidual pe durata de viață @ tq 25°C	@100,000h Curent până la 700mA: up to 95% | Curent de la 701mA până la 1A: până la 90%					
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 (policarbonat pentru unele variante ale Voltana o)					
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

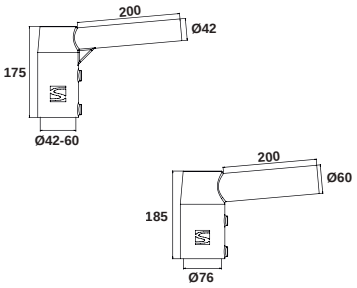
(**) conform standardului IEC - EN 60598 (doar Voltana o este disponibil cu Clasa I) – (***) conform standardului IEC - EN 62262

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

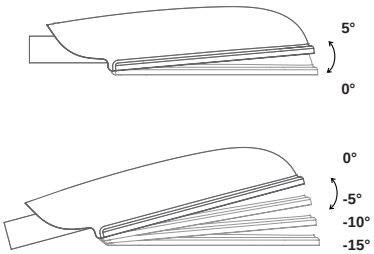


ADAPTOR VÂRF DE STÂLP

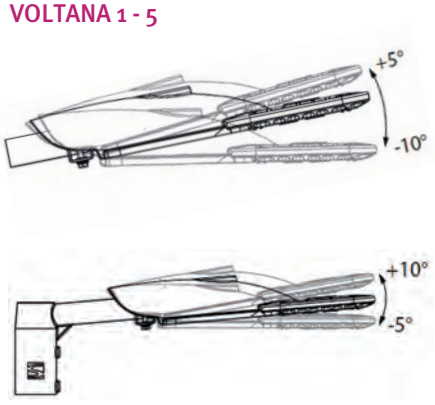


REGLAJE UNGHI ÎNCLINARE

VOLTANA o

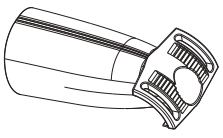


VOLTANA 1 - 5



MONTAJ UNIVERSAL

(OPȚIONAL PENTRU VOLTANA 0-1-2-3-4)



Ø 32 - 48mm

Ø 42 - 60mm

Ø 76mm

ÎNLOCUIȚI-VĂ ACTUALUL SISTEM DE ILUMINAT ŞI 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 creşte semnificativ economiile de energie, oferind, în acelaşi timp, siguranță şi confort pentru toți utilizatorii şi îmbunătățind managementul operațional al întregului sistem.

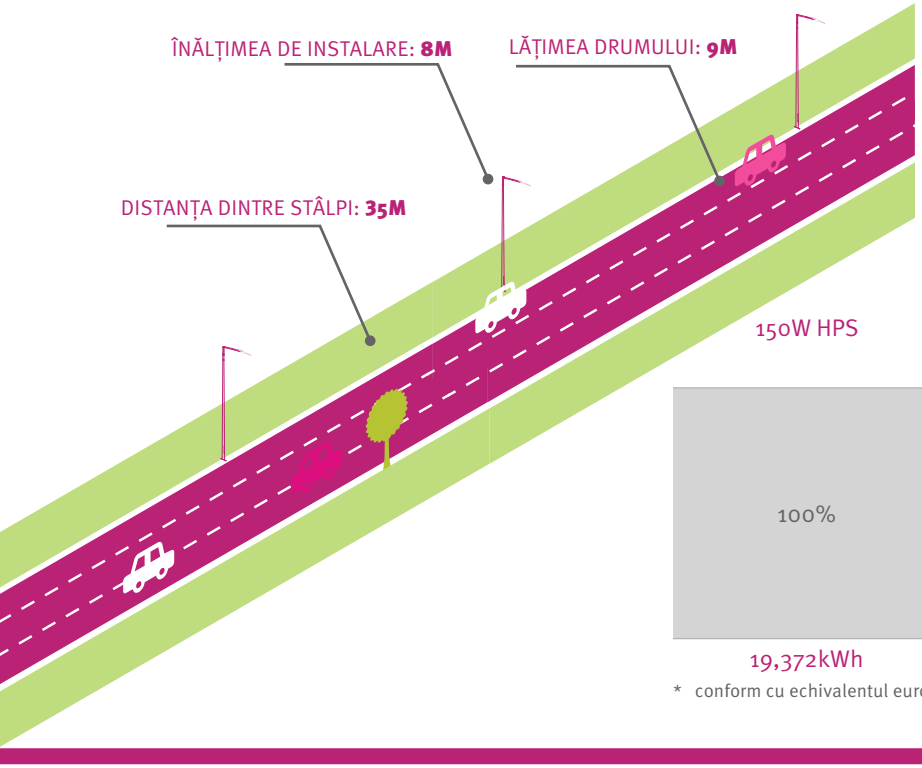
zone pietonale P5-P2		zone pietonale P1		căi de circulație clasificate M6-M5		căi de circulație clasificate M4		căi de circulație clasificate M3		căi de circulație clasificate M2	
aparat HPS 70W	Voltana 1	aparat HPS 100W	Voltana 2	aparat HPS 100W	Voltana 2	aparat HPS 150W	Voltana 3	aparat HPS 150W	Voltana 4	aparat HPS 250W	Voltana 5
78W(*)	economii de 67% / 26W(*)	110W(*)	economii de 56% / 48W(*)	110W(*)	economii de 56% / 48W(*)	167W(*)	economii de 58% / 70W(*)	167W(*)	economii de 45% / 92W(*)	280W(*)	economii de 35% / 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 şi economii de energie de pană la 79%.



ONSUM ANUAL DE CURENT PENTRU UN KILOMETRU (4.000 ORE/AN)

150W HPS	Voltana 3 24 LEDuri 1A	Voltana 3 24 LEDS 1A + dimming
100%	economii la energie de 58% (sau poluare cu 5.17t eq CO2 mai puțin pe an*) / 42%	economii la energie de 79% (sau poluare cu 7.02t eq CO2 mai puțin pe an*) / 21%
19,372kWh	8,120kWh	4,100kWh

* conform cu echivalentul european de 0.46kg eq Co2/kWh

SIGURANȚĂ

STARE DE BINE

DEZVOLTARE DURABILĂ

ECONOMII

SOLUȚII

Schréder

www.schreder.com

14/05/2019

Schréder

Lumen maintenance report

LED information

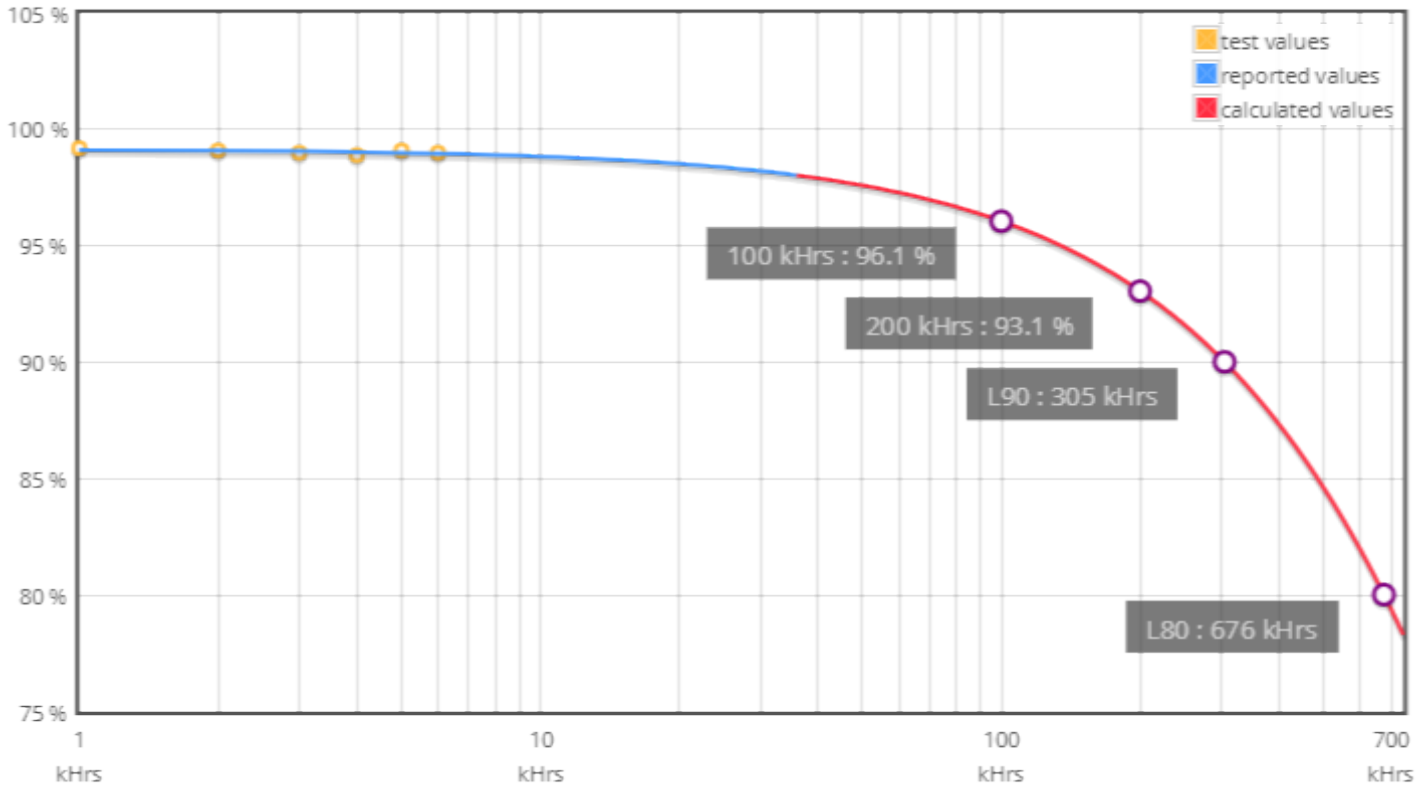
LED type	LH351C
LED current	700 mA
Ts	55°C
Description	SLED-18-015

Projection data

Test duration	6000 hrs	**α**	3.172E-007
Time used for projection	1000 to 6000hrs	**β**	0.992

L (%)	Time (kHrs)
80.0	677
90.0	305
93.1	200
96.1	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.

14/05/2019

Lumen maintenance report

LED information

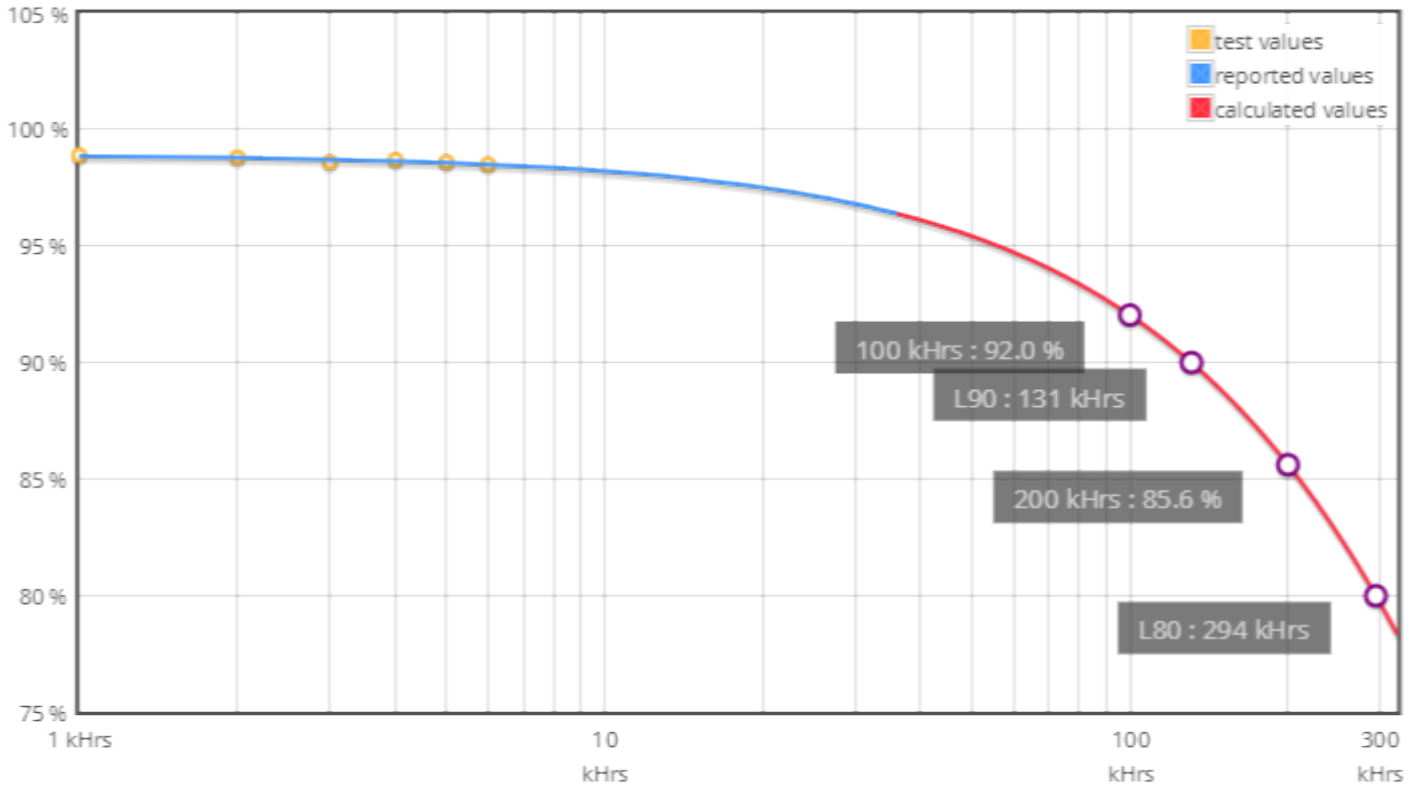
LED type	LH351C
LED current	700 mA
Ts	105°C
Description	SLED-18-015

Projection data

Test duration	6000 hrs	**α**	7.237E-007
Time used for projection	1000 to 6000hrs	**β**	0.989

L (%)	Time (kHrs)
80.0	293
85.6	200
90.0	130
92.0	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.

LM80 Test Report

IES LM-80-08 Approved Method for Measuring Lumen Maintenance of LED Light Sources

Samsung Electronics LED Business Report

Report No. : SLED-17-017-R01
Test Initiated Date : 2016.09.12
Test End Date : 2017.12.04
Report issued Date : 2018.01.18

Test result reported for	Testing performed by
SAMSUNG ELECTRONICS LED BUSINESS Lighting Marketing Group Tel) +82-31-8021-3231	**SAMSUNG ELECTRONICS LED BUSINESS** 1, Samsung-ro, Giheung-gu, Yongin-si, Gyeonggi-do 17113, Korea
Tested By KyungYeup Kwak	**Approved by SeungYoon Choi**
	
Test Personal Name & Signatory	**Approval Name & Signatory**

SAMSUNG ELECTRONICS LED BUSINESS Executive Vice President
Accredited by KOLAS, Republic of KOREA

The above testing certificate is the accredited testing items by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

■ Test Summary ■

Life test condition			Summary of result		
Test condition	Current (mA)	Case temperature (℃)	Test duration (h)	Average lumen maintenance (%)	Maximum chromaticity shift (△u'v')
1	1 000	55.0	10 000	97.4	0.001 3
2	1 000	84.8	10 000	97.1	0.001 5
3	1 000	104.9	10 000	96.2	0.002 3

1. Number of LED light sources tested

- 20 Packages tested at actual case temperature 55.0 ℃
- 20 Packages tested at actual case temperature 84.8 ℃
- 20 Packages tested at actual case temperature 104.9 ℃

2. Description of LED light sources

- IF = 1 000 ㎃, CCT(Nominal) = 2 700 K
- Package Dimension : (3.5 × 3.5) ㎜
- Samsung Electronics LED Package : LH351C Series (SPHWHxL3D50xxxxxxx)

3. Description of auxiliary equipment

1) Instrument Integrating sphere ISP1000-100
2) Instrument CAS140-CT
3) Keithley 2425 Sourcemeter

4. Operating time

- 10 000 h at (55.0 ℃, 84.8 ℃, 104.9 ℃)
- Drive current : 1 000 ㎃
- Typical voltage : 3.1 V

* LED packages are driven with a constant direct current.

5. Ambient conditions including airflow, temperature and relative humidity

The minimal airflow is maintained in chamber.
The ambient temperature around the LED packages inside chamber is controlled by air flowing and the thermocouple readings are monitored.

- Case temperature : Contorlled to -2 ℃
- Surrounding air temperature : Contorlled to -5 ℃
- Relative humidity : < 65 % R.H.

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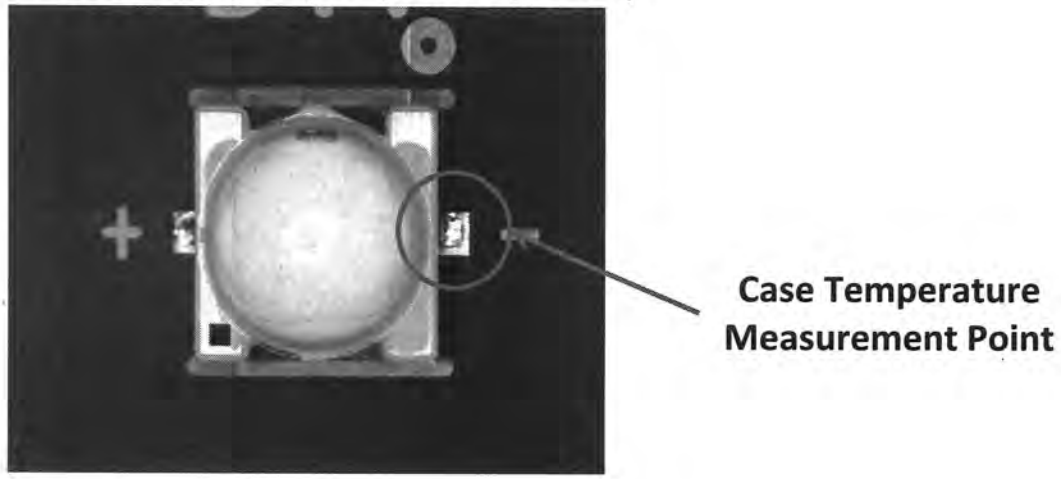
6. Case temperature (Test point temperature)



7. Drive current of the LED light source during lifetime test

See Sub-clause 9.1, 9.2 and 9.3

8. Initial luminous flux and forward voltage

See the table

9. Lumen maintenance data for each individual LED light source

See the table

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9.1 Test condition 1 **55 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Flux (lm)	Vf (V)	Lumen Maintenance (%)						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	336.8	3.076	98.9	98.6	98.3	98.2	98.2	98.2	97.9
2	331.4	3.071	98.9	98.7	98.4	98.2	98.2	98.2	98.1
3	331.5	3.048	99.2	98.7	98.6	98.5	98.3	98.4	98.3
4	340.1	3.094	99.0	98.7	98.4	98.3	98.3	98.3	98.0
5	340.6	3.067	99.0	98.5	98.4	98.2	98.0	98.1	98.0
6	343.8	3.082	99.0	98.7	98.3	98.3	98.3	98.2	98.0
7	335.7	3.108	99.0	98.4	98.2	98.2	98.0	98.1	98.0
8	335.2	3.079	99.2	98.4	98.0	97.9	97.9	97.7	97.7
9	339.8	3.114	98.8	98.6	98.1	98.1	98.1	98.0	97.8
10	342.1	3.096	98.9	98.4	98.2	98.1	97.9	98.0	97.8
11	335.5	3.109	98.9	98.0	97.7	97.6	97.6	97.4	97.6
12	332.1	3.071	98.5	98.2	98.0	97.9	97.9	97.7	97.6
13	337.6	3.120	99.0	98.4	98.2	98.1	97.9	97.9	97.7
14	339.9	3.080	98.8	98.6	98.3	98.1	98.2	98.0	98.0
15	336.7	3.071	98.6	98.1	97.9	97.9	97.6	97.6	97.4
16	331.2	3.136	98.3	97.6	97.9	97.8	97.8	97.7	97.6
17	334.9	3.123	98.6	97.7	97.7	97.4	97.5	97.3	97.1
18	334.4	3.131	98.8	98.3	98.0	97.9	97.8	97.8	97.5
19	332.2	3.073	98.8	98.4	98.4	98.1	98.0	98.1	97.9
20	332.3	3.053	98.9	98.3	98.2	98.3	98.0	98.1	97.8
Mean	336.2	3.09	98.9	98.4	98.2	98.1	98.0	97.9	97.8
Median	335.6	3.08	98.9	98.4	98.2	98.1	98.0	98.0	97.8
std.dev	3.8	0.03	0.2	0.3	0.3	0.3	0.2	0.3	0.3
Max	343.8	3.14	99.2	98.7	98.6	98.5	98.3	98.4	98.3
Min	331.2	3.05	98.3	97.6	97.7	97.4	97.5	97.3	97.1

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9.1 Test condition 1 **55 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Lumen Maintenance (%)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	97.8	97.8	97.8	97.4					
2	98.1	97.9	98.0	97.6					
3	98.2	98.0	97.9	97.9					
4	98.1	97.8	97.9	97.6					
5	97.8	97.6	97.3	97.4					
6	97.9	97.8	97.8	97.6					
7	97.8	97.8	97.5	97.6					
8	97.7	97.5	97.5	97.2					
9	97.5	97.5	97.5	97.4					
10	97.5	97.5	97.3	97.5					
11	97.2	97.0	97.0	97.2					
12	97.5	97.2	97.3	97.2					
13	97.5	97.4	97.2	97.4					
14	97.7	97.7	97.5	97.4					
15	97.2	97.1	97.0	97.1					
16	97.3	97.5	97.2	97.1					
17	97.0	97.0	96.9	96.8					
18	97.3	97.4	97.3	97.2					
19	97.6	97.6	97.6	97.5					
20	97.5	97.4	97.4	97.6					
Mean	97.6	97.5	97.4	97.4					
Median	97.6	97.5	97.4	97.4					
std.dev	0.3	0.3	0.3	0.2					
Max	98.2	98.0	98.0	97.9					
Min	97.0	97.0	96.9	96.8					

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Gyeonggi-do 17113, Korea

9.1 Test condition 1 **55 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Cx	Cy	Chromaticity Shift (△u'v')						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	0.458 1	0.409 3	0.001 0	0.000 9	0.001 0	0.001 1	0.001 2	0.001 1	0.001 1
2	0.459 4	0.409 5	0.000 9	0.001 1	0.001 0	0.001 1	0.001 2	0.001 2	0.001 1
3	0.457 7	0.407 7	0.000 9	0.001 0	0.001 0	0.001 1	0.001 1	0.001 2	0.001 1
4	0.456 8	0.408 4	0.000 9	0.000 9	0.001 0	0.001 0	0.001 1	0.001 1	0.001 1
5	0.456 4	0.409 2	0.000 9	0.000 9	0.001 1	0.001 3	0.001 3	0.001 3	0.001 3
6	0.455 3	0.408 5	0.000 8	0.000 8	0.000 9	0.001 0	0.001 1	0.001 0	0.001 0
7	0.460 2	0.409 1	0.000 9	0.000 9	0.001 0	0.001 1	0.001 2	0.001 2	0.001 2
8	0.457 4	0.409 1	0.000 8	0.001 1	0.001 2	0.001 2	0.001 3	0.001 3	0.001 2
9	0.455 3	0.409 7	0.001 1	0.001 0	0.001 2	0.001 2	0.001 3	0.001 2	0.001 2
10	0.459 8	0.410 9	0.001 1	0.000 9	0.001 0	0.001 1	0.001 1	0.001 1	0.001 1
11	0.458 9	0.409 2	0.000 8	0.000 8	0.000 9	0.001 0	0.001 0	0.001 0	0.001 1
12	0.454 7	0.406 8	0.000 7	0.000 7	0.000 9	0.001 0	0.001 1	0.001 0	0.001 0
13	0.455 6	0.407 8	0.001 0	0.000 9	0.001 0	0.001 1	0.001 1	0.001 1	0.001 1
14	0.455 4	0.408 9	0.000 9	0.001 0	0.001 0	0.001 1	0.001 1	0.001 1	0.001 1
15	0.456 2	0.408 8	0.000 8	0.001 0	0.001 2	0.001 3	0.001 3	0.001 3	0.001 2
16	0.457 7	0.408 1	0.001 0	0.001 1	0.001 1	0.001 3	0.001 3	0.001 3	0.001 3
17	0.452 9	0.404 8	0.000 8	0.000 9	0.001 0	0.001 0	0.001 1	0.001 1	0.001 0
18	0.459 4	0.410 0	0.000 9	0.000 8	0.001 0	0.001 1	0.001 1	0.001 1	0.001 1
19	0.456 7	0.408 5	0.000 8	0.000 9	0.001 0	0.001 0	0.001 1	0.001 1	0.001 1
20	0.455 8	0.408 8	0.000 9	0.000 9	0.000 9	0.001 1	0.001 1	0.001 2	0.001 1
Mean	0.457 0	0.408 7	0.000 9	0.000 9	0.001 0	0.001 1	0.001 2	0.001 2	0.001 1
Median	0.456 8	0.408 8	0.000 9	0.000 9	0.001 0	0.001 1	0.001 1	0.001 1	0.001 1
std.dev	0.001 9	0.001 3	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1
Max	0.460 2	0.410 9	0.001 1	0.001 1	0.001 2	0.001 3	0.001 3	0.001 3	0.001 3
Min	0.452 9	0.404 8	0.000 7	0.000 7	0.000 9	0.001 0	0.001 0	0.001 0	0.001 0

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9.1 Test condition 1 **55 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Chromaticity Shift (△u'v')								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	0.001 0	0.001 0	0.001 0	0.001 0					
2	0.001 1	0.001 0	0.001 1	0.001 1					
3	0.001 1	0.001 0	0.001 0	0.001 1					
4	0.001 0	0.001 0	0.000 9	0.001 0					
5	0.001 2	0.001 1	0.001 1	0.001 2					
6	0.000 9	0.000 9	0.000 9	0.001 0					
7	0.001 1	0.001 0	0.001 0	0.001 1					
8	0.001 2	0.001 1	0.001 1	0.001 2					
9	0.001 1	0.001 1	0.001 1	0.001 1					
10	0.001 0	0.001 0	0.000 9	0.001 0					
11	0.001 0	0.000 9	0.000 9	0.001 0					
12	0.000 9	0.000 9	0.000 9	0.001 0					
13	0.001 0	0.001 0	0.001 0	0.001 1					
14	0.001 0	0.001 0	0.000 9	0.001 0					
15	0.001 1	0.001 0	0.001 0	0.001 1					
16	0.001 2	0.001 3	0.001 2	0.001 3					
17	0.001 0	0.001 0	0.001 0	0.001 0					
18	0.001 0	0.001 0	0.001 0	0.001 0					
19	0.001 0	0.001 0	0.001 0	0.001 0					
20	0.001 0	0.001 0	0.001 0	0.001 1					
Mean	0.001 0	0.001 0	0.001 0	0.001 1					
Median	0.001 0	0.001 0	0.001 0	0.001 0					
std.dev	0.000 1	0.000 1	0.000 1	0.000 1					
Max	0.001 2	0.001 3	0.001 2	0.001 3					
Min	0.000 9	0.000 9	0.000 9	0.001 0					

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9.1 Test condition 1 **55 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	CCT (K)							
	0 h	500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	2 709	2 731	2 730	2 731	2 733	2 734	2 734	2 733
2	2 692	2 713	2 716	2 714	2 717	2 718	2 718	2 717
3	2 702	2 722	2 725	2 724	2 725	2 726	2 726	2 725
4	2 721	2 741	2 741	2 742	2 744	2 745	2 745	2 744
5	2 734	2 754	2 753	2 758	2 762	2 762	2 764	2 763
6	2 745	2 763	2 763	2 766	2 767	2 768	2 767	2 767
7	2 677	2 697	2 697	2 699	2 701	2 702	2 703	2 702
8	2 718	2 736	2 743	2 744	2 745	2 747	2 746	2 745
9	2 755	2 779	2 779	2 781	2 783	2 783	2 783	2 782
10	2 698	2 722	2 719	2 721	2 722	2 722	2 721	2 721
11	2 697	2 715	2 715	2 717	2 718	2 718	2 718	2 719
12	2 739	2 754	2 755	2 758	2 760	2 762	2 760	2 760
13	2 734	2 756	2 753	2 756	2 757	2 758	2 758	2 757
14	2 746	2 767	2 769	2 769	2 769	2 770	2 769	2 770
15	2 733	2 751	2 756	2 761	2 761	2 762	2 761	2 760
16	2 705	2 726	2 728	2 729	2 733	2 734	2 734	2 733
17	2 750	2 768	2 770	2 772	2 773	2 775	2 775	2 773
18	2 697	2 717	2 716	2 718	2 720	2 721	2 720	2 720
19	2 723	2 741	2 744	2 746	2 746	2 746	2 747	2 746
20	2 740	2 759	2 759	2 761	2 765	2 765	2 764	2 763
Mean	2 721	2 741	2 742	2 743	2 745	2 746	2 746	2 745
Median	2 722	2 741	2 744	2 745	2 746	2 747	2 747	2 746
std.dev	22	22	22	23	23	23	23	23
Max	2 755	2 779	2 779	2 781	2 783	2 783	2 783	2 782
Min	2 677	2 697	2 697	2 699	2 701	2 702	2 703	2 702

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.1 Test condition 1 **55 ℃**

Drive Current **1000 mA**

Measurement Current **1000 mA**

No.	CCT (K)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	2 731	2 731	2 729	2 729					
2	2 716	2 714	2 714	2 715					
3	2 724	2 722	2 721	2 723					
4	2 743	2 741	2 740	2 741					
5	2 760	2 759	2 758	2 759					
6	2 765	2 763	2 762	2 763					
7	2 700	2 699	2 698	2 700					
8	2 744	2 741	2 741	2 743					
9	2 780	2 779	2 778	2 780					
10	2 719	2 718	2 717	2 718					
11	2 717	2 715	2 714	2 715					
12	2 759	2 757	2 757	2 759					
13	2 757	2 754	2 755	2 756					
14	2 768	2 766	2 763	2 766					
15	2 758	2 755	2 755	2 757					
16	2 732	2 733	2 732	2 733					
17	2 772	2 771	2 771	2 770					
18	2 718	2 718	2 717	2 718					
19	2 745	2 743	2 742	2 743					
20	2 761	2 759	2 758	2 760					
Mean	2 743	2 742	2 741	2 742					
Median	2 744	2 742	2 741	2 743					
std.dev	23	22	22	22					
Max	2 780	2 779	2 778	2 780					
Min	2 700	2 699	2 698	2 700					

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Flux (lm)	Vf (V)	Lumen Maintenance (%)						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	335.8	3.143	99.0	98.8	98.5	98.5	98.3	98.1	98.0
2	335.6	3.107	98.9	98.7	98.4	98.3	98.2	98.0	97.9
3	336.2	3.077	98.6	98.1	98.0	98.0	97.6	97.6	97.5
4	336.4	3.156	98.7	98.4	97.8	97.8	97.7	97.6	97.4
5	338.9	3.107	98.3	98.2	97.8	97.8	97.7	97.5	97.5
6	340.4	3.090	98.4	97.9	98.0	98.0	97.6	97.7	97.5
7	338.7	3.044	98.6	98.3	98.1	98.1	97.9	97.7	97.6
8	339.5	3.109	98.7	98.4	98.1	98.2	98.0	97.8	97.7
9	338.0	3.106	98.6	98.2	98.2	98.2	97.8	97.8	97.8
10	337.9	3.101	98.7	98.5	98.5	98.3	98.1	98.0	98.2
11	335.0	3.080	98.7	98.1	98.2	98.0	97.8	97.6	97.5
12	335.3	3.058	98.4	98.2	98.2	98.0	97.9	97.7	97.5
13	335.3	3.154	98.6	97.9	97.8	97.8	97.3	97.3	97.3
14	336.5	3.138	98.7	98.5	98.3	98.2	98.0	97.8	98.0
15	338.8	3.077	98.9	98.3	98.2	98.1	97.9	97.8	97.7
16	338.9	3.054	98.6	98.1	98.1	98.0	97.7	97.8	97.6
17	336.2	3.162	99.1	98.4	98.2	98.0	97.8	97.7	97.7
18	338.8	3.080	98.5	98.3	98.0	98.0	97.8	97.7	97.6
19	332.1	3.085	98.5	98.0	97.9	97.9	97.5	97.5	97.4
20	335.0	3.150	98.3	98.1	97.7	97.7	97.5	97.4	97.3
Mean	337.0	3.10	98.6	98.3	98.1	98.0	97.8	97.7	97.6
Median	336.4	3.10	98.6	98.2	98.1	98.0	97.8	97.7	97.6
std.dev	2.0	0.04	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Max	340.4	3.16	99.1	98.8	98.5	98.5	98.3	98.1	98.2
Min	332.1	3.04	98.3	97.9	97.7	97.7	97.3	97.3	97.3

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Lumen Maintenance (%)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	98.0	97.9	97.9	97.7					
2	97.7	97.7	97.7	97.4					
3	97.3	97.2	97.0	97.0					
4	97.4	97.3	97.2	97.0					
5	97.3	97.3	97.3	97.1					
6	97.3	97.3	97.1	97.1					
7	97.6	97.4	97.3	97.1					
8	97.5	97.4	97.4	97.2					
9	97.6	97.6	97.3	97.4					
10	97.9	97.8	97.7	97.5					
11	97.4	97.3	97.2	97.0					
12	97.3	97.4	97.3	97.1					
13	97.1	97.1	96.8	96.8					
14	97.7	97.8	97.5	97.3					
15	97.5	97.5	97.3	97.2					
16	97.5	97.4	97.1	97.1					
17	97.6	97.5	97.3	97.1					
18	97.4	97.4	97.3	97.1					
19	97.2	97.2	96.9	96.9					
20	97.2	97.0	96.9	96.7					
Mean	97.5	97.4	97.3	97.1					
Median	97.4	97.4	97.3	97.1					
std.dev	0.2	0.2	0.3	0.2					
Max	98.0	97.9	97.9	97.7					
Min	97.1	97.0	96.8	96.7					

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Cx	Cy	Chromaticity Shift (△u'v')						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	0.459 1	0.410 3	0.001 1	0.001 3	0.001 3	0.001 3	0.001 4	0.001 4	0.001 3
2	0.459 3	0.409 7	0.001 0	0.001 1	0.001 1	0.001 1	0.001 3	0.001 2	0.001 2
3	0.459 8	0.410 3	0.001 1	0.001 2	0.001 2	0.001 3	0.001 3	0.001 3	0.001 3
4	0.459 3	0.409 7	0.001 0	0.001 1	0.001 1	0.001 2	0.001 3	0.001 2	0.001 2
5	0.455 7	0.408 5	0.001 2	0.001 2	0.001 2	0.001 2	0.001 4	0.001 3	0.001 3
6	0.455 4	0.408 4	0.001 0	0.001 0	0.001 1	0.001 1	0.001 1	0.001 2	0.001 2
7	0.455 7	0.408 4	0.001 0	0.001 1	0.001 0	0.001 1	0.001 1	0.001 2	0.001 2
8	0.453 1	0.406 2	0.001 0	0.001 3	0.001 3	0.001 3	0.001 4	0.001 3	0.001 3
9	0.458 9	0.409 1	0.001 1	0.001 1	0.001 1	0.001 1	0.001 1	0.001 2	0.001 2
10	0.457 1	0.409 3	0.001 0	0.001 1	0.001 1	0.001 1	0.001 2	0.001 2	0.001 2
11	0.455 1	0.407 5	0.001 0	0.001 1	0.001 1	0.001 1	0.001 2	0.001 2	0.001 2
12	0.458 9	0.409 6	0.001 0	0.001 2	0.001 3	0.001 3	0.001 3	0.001 3	0.001 3
13	0.456 8	0.408 8	0.001 0	0.001 2	0.001 3	0.001 3	0.001 3	0.001 3	0.001 3
14	0.460 5	0.409 9	0.001 1	0.001 2	0.001 2	0.001 2	0.001 3	0.001 3	0.001 3
15	0.457 6	0.409 9	0.001 1	0.001 2	0.001 2	0.001 2	0.001 3	0.001 3	0.001 2
16	0.456 4	0.408 1	0.001 0	0.001 1	0.001 1	0.001 2	0.001 2	0.001 2	0.001 2
17	0.458 6	0.409 7	0.001 1	0.001 1	0.001 2	0.001 2	0.001 3	0.001 3	0.001 4
18	0.458 2	0.408 6	0.001 1	0.001 2	0.001 1	0.001 2	0.001 3	0.001 3	0.001 2
19	0.456 0	0.408 0	0.001 0	0.001 1	0.001 1	0.001 2	0.001 2	0.001 3	0.001 2
20	0.458 8	0.411 4	0.001 0	0.001 1	0.001 1	0.001 1	0.001 2	0.001 2	0.001 2
Mean	0.457 5	0.409 1	0.001 0	0.001 1	0.001 2	0.001 2	0.001 3	0.001 3	0.001 2
Median	0.457 9	0.409 2	0.001 0	0.001 1	0.001 1	0.001 2	0.001 3	0.001 3	0.001 2
std.dev	0.001 9	0.001 2	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1
Max	0.460 5	0.411 4	0.001 2	0.001 3	0.001 3	0.001 3	0.001 4	0.001 4	0.001 4
Min	0.453 1	0.406 2	0.001 0	0.001 0	0.001 0	0.001 1	0.001 1	0.001 2	0.001 2

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Chromaticity Shift (△u'v')								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	0.001 3	0.001 4	0.001 4	0.001 5					
2	0.001 1	0.001 3	0.001 3	0.001 4					
3	0.001 2	0.001 4	0.001 4	0.001 4					
4	0.001 2	0.001 2	0.001 3	0.001 4					
5	0.001 2	0.001 3	0.001 3	0.001 4					
6	0.001 1	0.001 2	0.001 2	0.001 3					
7	0.001 2	0.001 2	0.001 2	0.001 2					
8	0.001 2	0.001 4	0.001 4	0.001 4					
9	0.001 1	0.001 2	0.001 2	0.001 3					
10	0.001 1	0.001 2	0.001 3	0.001 3					
11	0.001 1	0.001 2	0.001 3	0.001 2					
12	0.001 2	0.001 3	0.001 4	0.001 3					
13	0.001 2	0.001 4	0.001 4	0.001 5					
14	0.001 2	0.001 3	0.001 3	0.001 3					
15	0.001 2	0.001 3	0.001 3	0.001 3					
16	0.001 1	0.001 2	0.001 2	0.001 3					
17	0.001 3	0.001 4	0.001 4	0.001 4					
18	0.001 1	0.001 2	0.001 3	0.001 3					
19	0.001 1	0.001 2	0.001 2	0.001 3					
20	0.001 2	0.001 2	0.001 3	0.001 3					
Mean	0.001 2	0.001 3	0.001 3	0.001 3					
Median	0.001 2	0.001 3	0.001 3	0.001 3					
std.dev	0.000 1	0.000 1	0.000 1	0.000 1					
Max	0.001 3	0.001 4	0.001 4	0.001 5					
Min	0.001 1	0.001 2	0.001 2	0.001 2					

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	CCT (K)							
	0 h	500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	2 704	2 728	2 733	2 733	2 732	2 733	2 733	2 731
2	2 695	2 716	2 718	2 718	2 718	2 720	2 719	2 718
3	2 693	2 717	2 719	2 720	2 720	2 720	2 720	2 720
4	2 696	2 717	2 719	2 720	2 720	2 721	2 721	2 720
5	2 739	2 766	2 766	2 766	2 766	2 768	2 768	2 766
6	2 742	2 764	2 765	2 766	2 766	2 766	2 767	2 766
7	2 738	2 760	2 761	2 760	2 760	2 760	2 761	2 761
8	2 758	2 781	2 788	2 787	2 786	2 787	2 787	2 787
9	2 697	2 721	2 721	2 721	2 721	2 720	2 722	2 721
10	2 725	2 747	2 748	2 749	2 748	2 749	2 750	2 749
11	2 739	2 762	2 763	2 764	2 763	2 764	2 764	2 763
12	2 701	2 724	2 727	2 729	2 729	2 729	2 730	2 728
13	2 724	2 747	2 751	2 752	2 752	2 751	2 752	2 750
14	2 680	2 705	2 707	2 707	2 707	2 708	2 708	2 707
15	2 721	2 745	2 747	2 747	2 747	2 748	2 748	2 747
16	2 725	2 748	2 750	2 750	2 750	2 750	2 750	2 749
17	2 706	2 730	2 730	2 731	2 731	2 732	2 732	2 732
18	2 702	2 725	2 727	2 726	2 727	2 728	2 729	2 728
19	2 730	2 751	2 754	2 754	2 754	2 754	2 755	2 752
20	2 717	2 738	2 739	2 740	2 739	2 741	2 741	2 740
Mean	2 717	2 740	2 742	2 742	2 742	2 743	2 743	2 742
Median	2 719	2 741	2 743	2 744	2 743	2 744	2 745	2 743
std.dev	21	21	21	21	21	21	21	21
Max	2 758	2 781	2 788	2 787	2 786	2 787	2 787	2 787
Min	2 680	2 705	2 707	2 707	2 707	2 708	2 708	2 707

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.2 Test condition 2 **85 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	CCT (K)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	2 731	2 734	2 734	2 736					
2	2 718	2 719	2 720	2 721					
3	2 720	2 722	2 723	2 722					
4	2 719	2 719	2 720	2 722					
5	2 765	2 765	2 766	2 766					
6	2 764	2 765	2 766	2 765					
7	2 761	2 760	2 760	2 760					
8	2 785	2 787	2 788	2 787					
9	2 720	2 721	2 721	2 721					
10	2 748	2 748	2 749	2 749					
11	2 762	2 762	2 764	2 762					
12	2 727	2 728	2 729	2 728					
13	2 750	2 752	2 752	2 753					
14	2 706	2 706	2 707	2 707					
15	2 746	2 746	2 747	2 747					
16	2 749	2 749	2 750	2 749					
17	2 731	2 731	2 732	2 733					
18	2 727	2 727	2 727	2 729					
19	2 752	2 752	2 753	2 753					
20	2 740	2 739	2 741	2 739					
Mean	2 741	2 742	2 743	2 743					
Median	2 743	2 743	2 744	2 743					
std.dev	20	20	21	20					
Max	2 785	2 787	2 788	2 787					
Min	2 706	2 706	2 707	2 707					

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Flux (lm)	Vf (V)	Lumen Maintenance (%)						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	331.6	3.137	98.8	97.8	97.6	97.3	97.1	97.0	96.8
2	332.1	3.063	98.5	97.6	97.4	97.0	96.9	96.6	96.6
3	328.8	3.041	98.6	97.6	97.3	97.1	96.9	96.6	96.4
4	335.4	3.088	98.3	97.5	97.3	96.8	96.7	96.5	96.4
5	333.2	3.090	98.9	97.9	97.4	97.3	97.2	96.8	96.7
6	334.3	3.037	99.1	98.2	97.8	97.4	97.3	97.2	97.0
7	335.9	3.092	98.8	97.8	97.6	97.3	97.1	96.9	96.8
8	338.1	3.078	98.8	97.8	97.8	97.4	97.2	97.0	97.0
9	334.2	3.106	98.7	97.8	97.4	97.3	97.0	96.8	96.6
10	335.0	3.045	99.1	98.1	97.8	97.4	97.2	97.2	97.0
11	334.4	3.042	98.6	97.7	97.2	97.0	96.8	96.4	96.6
12	338.9	3.072	99.0	98.0	97.7	97.3	97.1	97.0	96.7
13	333.2	3.088	99.0	98.0	97.7	97.3	97.1	96.8	97.0
14	333.8	3.106	99.1	98.2	97.9	97.7	97.5	97.2	97.2
15	339.5	3.096	98.9	97.9	97.4	97.1	96.9	96.9	96.6
16	333.8	3.087	98.9	97.8	97.4	97.1	97.0	96.7	96.7
17	332.8	3.090	98.6	97.8	97.5	97.2	97.0	96.7	96.7
18	336.0	3.058	98.3	97.2	97.0	96.7	96.5	96.2	96.2
19	332.1	3.077	98.2	97.2	97.0	96.7	96.6	96.4	96.3
20	324.7	3.093	98.3	97.3	97.0	96.8	96.7	96.4	96.1
Mean	333.9	3.08	98.7	97.8	97.4	97.2	97.0	96.8	96.7
Median	334.0	3.09	98.8	97.8	97.4	97.2	97.0	96.8	96.7
std.dev	3.3	0.03	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Max	339.5	3.14	99.1	98.2	97.9	97.7	97.5	97.2	97.2
Min	324.7	3.04	98.2	97.2	97.0	96.7	96.5	96.2	96.1

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Lumen Maintenance (%)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	96.8	96.6	96.5	96.3					
2	96.5	96.3	96.3	96.2					
3	96.2	96.2	96.3	96.0					
4	96.1	96.3	96.1	96.1					
5	96.6	96.5	96.5	96.3					
6	96.9	96.6	96.5	96.5					
7	96.7	96.5	96.3	96.2					
8	96.8	96.8	96.6	96.5					
9	96.5	96.4	96.5	96.4					
10	96.9	96.8	96.6	96.5					
11	96.4	96.3	96.1	95.9					
12	96.7	96.6	96.5	96.3					
13	96.8	96.8	96.6	96.4					
14	96.8	96.6	96.7	96.6					
15	96.5	96.5	96.3	96.2					
16	96.6	96.6	96.3	96.3					
17	96.6	96.5	96.4	96.3					
18	95.9	95.9	95.7	95.6					
19	96.2	96.0	96.0	95.8					
20	96.0	95.9	95.9	95.7					
Mean	96.5	96.4	96.3	96.2					
Median	96.6	96.5	96.4	96.3					
std.dev	0.3	0.3	0.3	0.3					
Max	96.9	96.8	96.7	96.6					
Min	95.9	95.9	95.7	95.6					

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Cx	Cy	Chromaticity Shift (△u'v')						
	0 h		500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	0.457 2	0.408 2	0.001 2	0.001 4	0.001 7	0.001 7	0.001 8	0.001 9	0.002 0
2	0.457 5	0.409 2	0.000 9	0.001 2	0.001 6	0.001 4	0.001 6	0.001 7	0.001 8
3	0.458 2	0.408 5	0.001 1	0.001 4	0.001 7	0.001 6	0.001 8	0.001 8	0.001 7
4	0.455 7	0.409 7	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 7	0.001 8
5	0.458 0	0.410 8	0.001 1	0.001 3	0.001 6	0.001 5	0.001 7	0.001 8	0.001 7
6	0.457 7	0.408 9	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 8	0.001 7
7	0.455 8	0.408 3	0.001 0	0.001 5	0.001 7	0.001 6	0.001 7	0.001 8	0.001 8
8	0.458 1	0.410 4	0.001 0	0.001 3	0.001 7	0.001 5	0.001 6	0.001 8	0.001 8
9	0.460 8	0.411 0	0.001 0	0.001 3	0.001 5	0.001 5	0.001 6	0.001 7	0.001 7
10	0.458 0	0.408 7	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 7	0.001 7
11	0.456 2	0.407 6	0.001 0	0.001 4	0.001 6	0.001 5	0.001 7	0.001 7	0.001 8
12	0.455 9	0.408 3	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 8	0.001 7
13	0.457 3	0.410 1	0.001 1	0.001 4	0.001 6	0.001 5	0.001 6	0.001 8	0.001 8
14	0.454 5	0.408 2	0.000 9	0.001 2	0.001 5	0.001 4	0.001 6	0.001 7	0.001 8
15	0.456 7	0.408 9	0.001 1	0.001 3	0.001 6	0.001 5	0.001 6	0.001 8	0.001 8
16	0.459 6	0.409 5	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 7	0.001 7
17	0.455 0	0.407 4	0.000 9	0.001 2	0.001 6	0.001 5	0.001 6	0.001 7	0.001 8
18	0.457 6	0.408 4	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 7	0.001 8
19	0.456 3	0.408 1	0.001 0	0.001 2	0.001 6	0.001 4	0.001 6	0.001 7	0.001 8
20	0.458 1	0.410 5	0.001 0	0.001 3	0.001 6	0.001 6	0.001 7	0.001 8	0.001 8
Mean	0.457 2	0.409 0	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 8	0.001 8
Median	0.457 4	0.408 8	0.001 0	0.001 3	0.001 6	0.001 5	0.001 6	0.001 8	0.001 8
std.dev	0.001 5	0.001 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1	0.000 1
Max	0.460 8	0.411 0	0.001 2	0.001 5	0.001 7	0.001 7	0.001 8	0.001 9	0.002 0
Min	0.454 5	0.407 4	0.000 9	0.001 2	0.001 5	0.001 4	0.001 6	0.001 7	0.001 7

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9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	Chromaticity Shift (△u'v')								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	0.002 2	0.002 2	0.002 2	0.002 3					
2	0.001 9	0.002 1	0.002 1	0.002 2					
3	0.002 0	0.002 1	0.002 2	0.002 2					
4	0.001 9	0.002 1	0.002 1	0.002 1					
5	0.002 0	0.002 0	0.002 2	0.002 2					
6	0.002 0	0.002 0	0.002 1	0.002 1					
7	0.002 1	0.002 1	0.002 1	0.002 2					
8	0.002 0	0.002 1	0.002 1	0.002 1					
9	0.001 9	0.001 9	0.002 1	0.002 1					
10	0.002 0	0.002 0	0.002 1	0.002 1					
11	0.002 0	0.002 1	0.002 1	0.002 2					
12	0.002 0	0.002 0	0.002 0	0.002 1					
13	0.002 0	0.002 1	0.002 1	0.002 2					
14	0.001 9	0.001 9	0.002 1	0.002 1					
15	0.002 0	0.002 1	0.002 2	0.002 2					
16	0.002 0	0.002 0	0.002 1	0.002 1					
17	0.002 0	0.002 0	0.002 1	0.002 1					
18	0.001 9	0.002 1	0.002 1	0.002 1					
19	0.001 9	0.002 0	0.002 1	0.002 1					
20	0.002 0	0.002 1	0.002 2	0.002 2					
Mean	0.002 0	0.002 1	0.002 1	0.002 2					
Median	0.002 0	0.002 1	0.002 1	0.002 1					
std.dev	0.000 1	0.000 1	0.000 1	0.000 1					
Max	0.002 2	0.002 2	0.002 2	0.002 3					
Min	0.001 9	0.001 9	0.002 0	0.002 1					

SAMSUNG ELECTRONICS LED BUSINESS
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9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	CCT (K)							
	0 h	500 h	1 000 h	2 000 h	3 000 h	4 000 h	5 000 h	6 000 h
1	2 714	2 741	2 744	2 749	2 751	2 751	2 753	2 751
2	2 717	2 736	2 741	2 745	2 742	2 743	2 744	2 741
3	2 702	2 726	2 732	2 735	2 732	2 734	2 734	2 729
4	2 748	2 769	2 773	2 777	2 774	2 774	2 776	2 772
5	2 723	2 746	2 749	2 753	2 750	2 753	2 752	2 748
6	2 712	2 734	2 739	2 744	2 741	2 743	2 744	2 739
7	2 735	2 757	2 767	2 770	2 767	2 768	2 769	2 765
8	2 719	2 741	2 746	2 751	2 747	2 749	2 750	2 746
9	2 685	2 705	2 710	2 714	2 711	2 712	2 713	2 710
10	2 706	2 726	2 732	2 735	2 733	2 733	2 734	2 731
11	2 724	2 746	2 753	2 755	2 754	2 756	2 756	2 753
12	2 734	2 756	2 762	2 766	2 762	2 764	2 764	2 759
13	2 728	2 751	2 755	2 759	2 755	2 756	2 758	2 754
14	2 754	2 774	2 778	2 782	2 779	2 780	2 780	2 777
15	2 727	2 750	2 753	2 757	2 755	2 756	2 757	2 753
16	2 690	2 712	2 717	2 722	2 718	2 720	2 720	2 717
17	2 740	2 760	2 764	2 769	2 765	2 767	2 767	2 764
18	2 710	2 732	2 737	2 741	2 739	2 740	2 740	2 737
19	2 726	2 748	2 752	2 756	2 752	2 754	2 755	2 751
20	2 719	2 740	2 744	2 747	2 745	2 745	2 746	2 742
Mean	2 721	2 742	2 747	2 751	2 749	2 750	2 751	2 747
Median	2 721	2 743	2 748	2 752	2 751	2 752	2 753	2 749
std.dev	17	17	17	17	17	17	17	17
Max	2 754	2 774	2 778	2 782	2 779	2 780	2 780	2 777
Min	2 685	2 705	2 710	2 714	2 711	2 712	2 713	2 710

SAMSUNG ELECTRONICS LED BUSINESS
1, Samsung-ro, Giheung-gu, Yongin-si,
Gyeonggi-do 17113, Korea

9.3 Test condition 3 **105 ℃**

Drive Current **1 000 mA**

Measurement Current **1 000 mA**

No.	CCT (K)								
	7 000 h	8 000 h	9 000 h	10 000 h	11 000 h	12 000 h	13 000 h	14 000 h	15 000 h
1	2 756	2 754	2 753	2 754					
2	2 746	2 746	2 747	2 746					
3	2 735	2 735	2 735	2 735					
4	2 778	2 776	2 777	2 778					
5	2 755	2 753	2 754	2 754					
6	2 746	2 743	2 743	2 745					
7	2 772	2 770	2 770	2 770					
8	2 752	2 751	2 752	2 750					
9	2 716	2 714	2 715	2 716					
10	2 737	2 735	2 736	2 736					
11	2 759	2 758	2 759	2 759					
12	2 766	2 764	2 765	2 765					
13	2 761	2 760	2 760	2 760					
14	2 782	2 781	2 782	2 782					
15	2 759	2 757	2 758	2 758					
16	2 723	2 721	2 722	2 722					
17	2 770	2 768	2 769	2 769					
18	2 743	2 742	2 743	2 743					
19	2 756	2 755	2 756	2 755					
20	2 747	2 746	2 747	2 746					
Mean	2 753	2 752	2 752	2 752					
Median	2 755	2 754	2 753	2 754					
std.dev	17	17	17	17					
Max	2 782	2 781	2 782	2 782					
Min	2 716	2 714	2 715	2 716					

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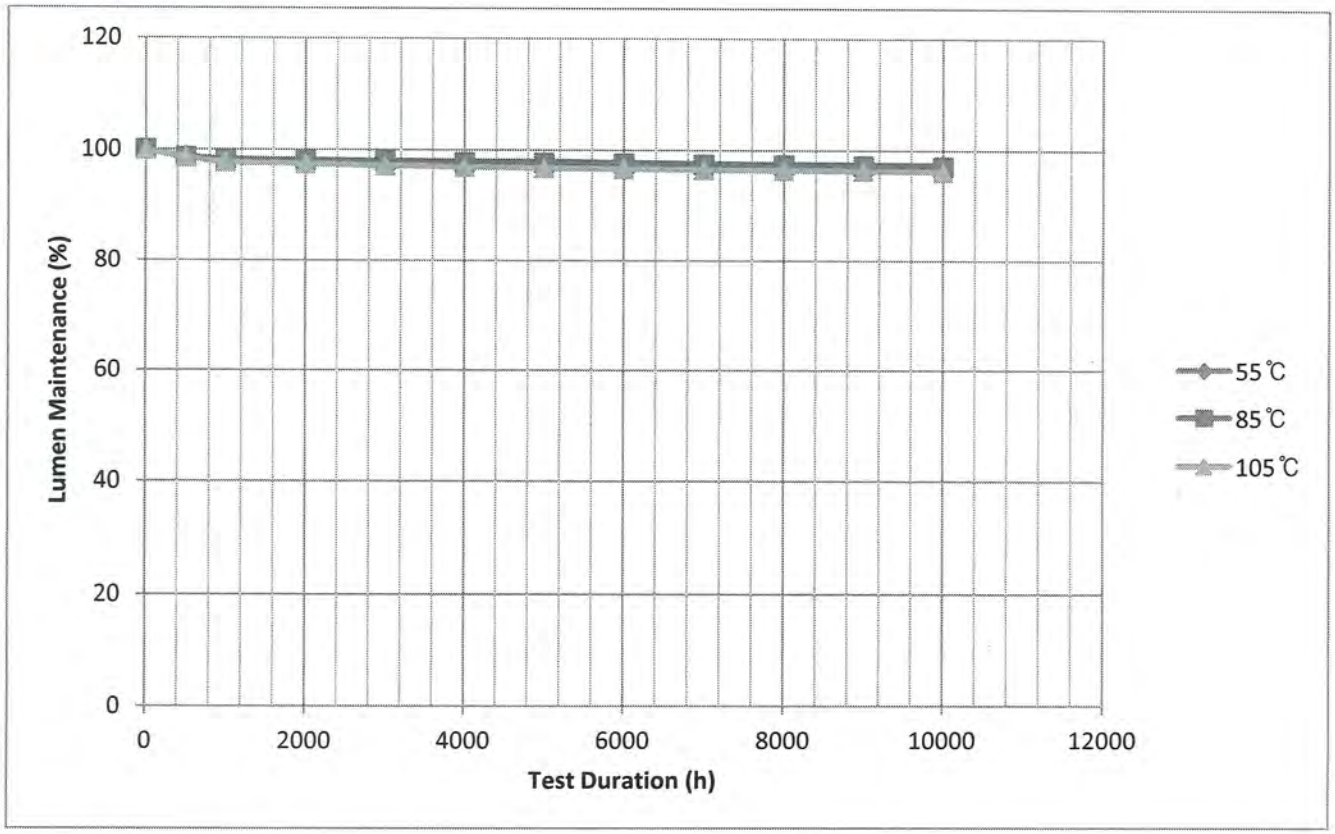
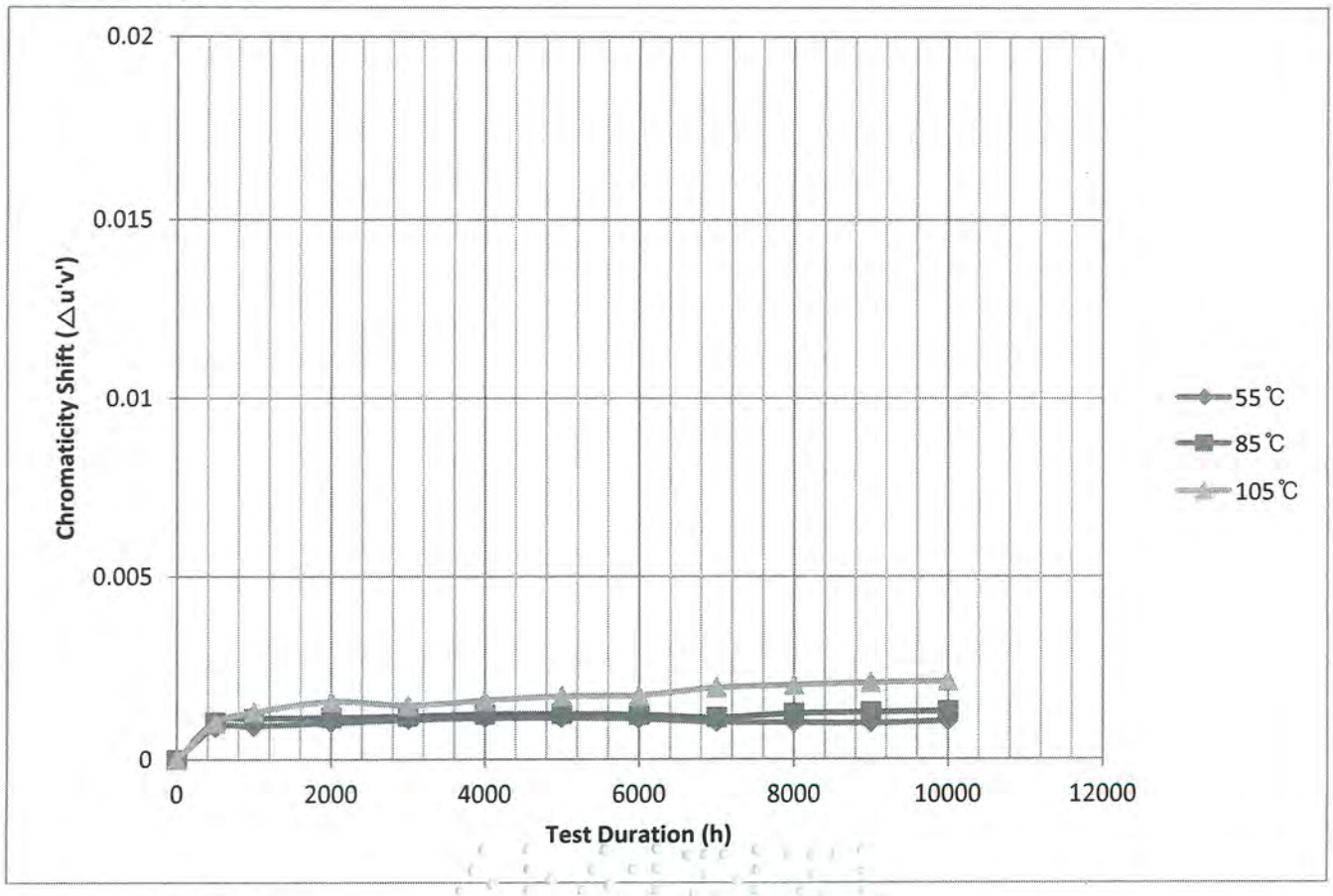
9.4 Chart

<Lumen Maintenance>



<Chromaticity Shift>



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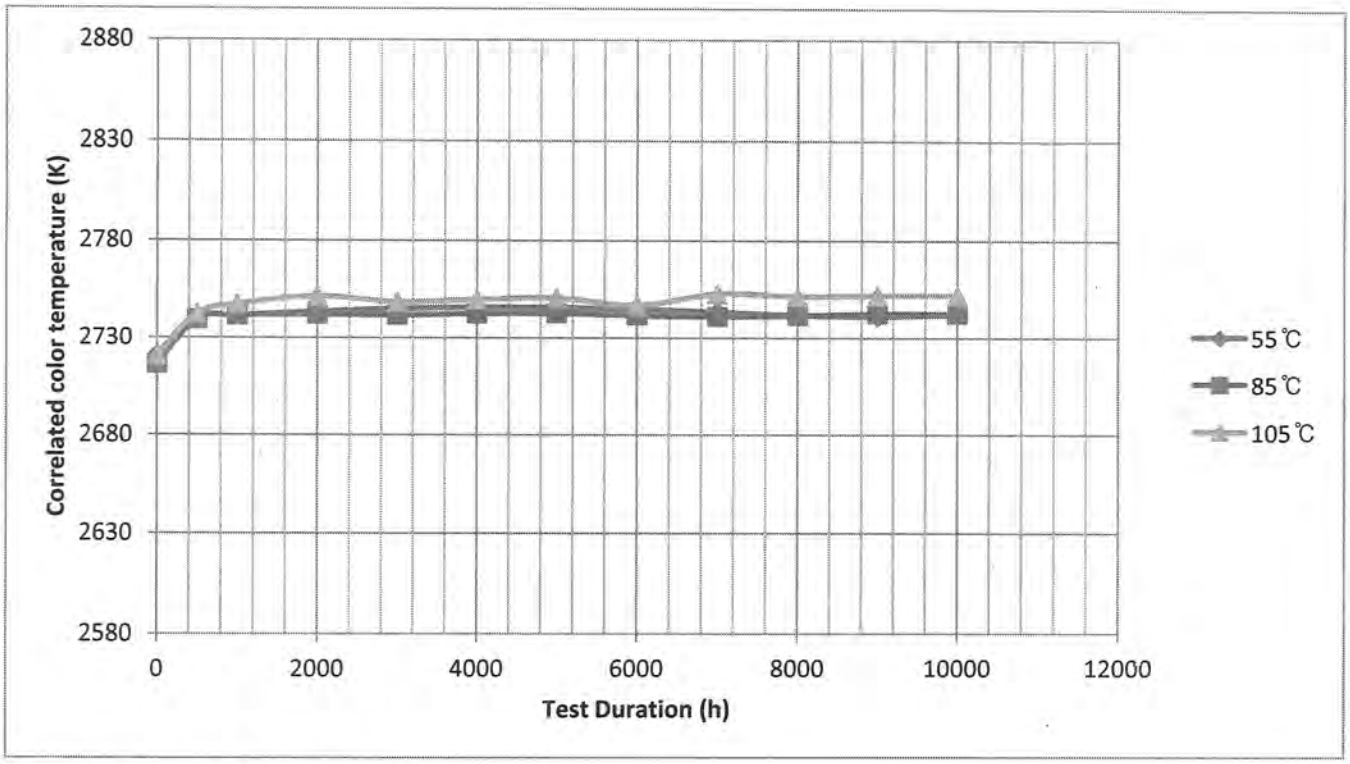
<CCT>



10. Observation of failures

No optical, Electrical or mechanical failure of any LED Package was seen during the lifetime testing.

11. LED light source monitoring interval

0 500 1 000 2 000 3 000 4 000 5 000 6 000 7 000 8 000 9 000 10 000

12. Photometric measurement uncertainty

3.5%

13. TM-21-11 Report : Projecting Long Term Lumen Maintenance of LED Light Source

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)					
Test Condition 1 - 55°C Case Temp		**Test Condition 2 - 85°C Case Temp**		**Test Condition 3 - 105°C Case Temp**	
Sample size	20	Sample size	20	Sample size	20
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	1000	DUT drive current used in the test (mA)	1000	DUT drive current used in the test (mA)	1000
Test duration (hours)	10,000	Test duration (hours)	10,000	Test duration (hours)	10,000
Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	105
α	1.112E-06	α	1.173E-06	α	1.273E-06
B	0.984	B	0.983	B	0.974
Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000

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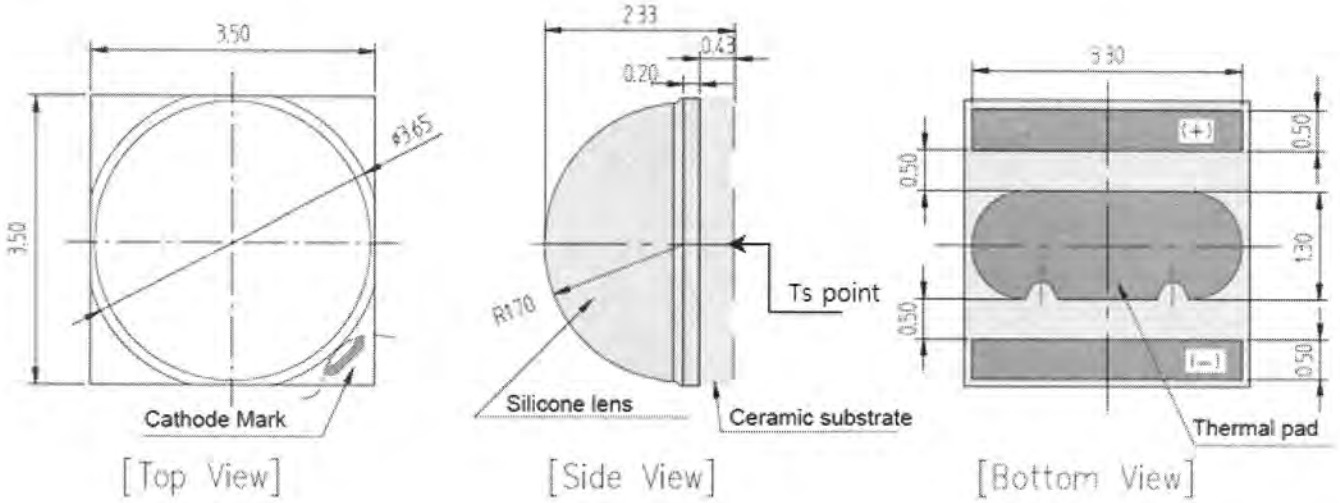
14. Dimension of samples



**********END OF TEST REPORT**********

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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 Schréder Group

Subject: **VOLTANA-0 8 led's / Xitanium 40W FP driver**
Sample n°: P-E16372, P-E16377

Test purpose: **Electrical measurements @1.05A**

Remarks:
Test request n°: P-D16547
Folder n°: P-F16041

TEST CONDITIONS:

Operator: CLOSSET Frédérick

Load: 8 Led's
Typical Vf: 3.17 V

Driver: Xi FP 40W 0.3 1.0A SNLDAE 230V S175 sXt set on 1.05A

Power supply: Elgar ET3500 230V 50Hz

Measurement device: Fluke Norma 4000 HF power meter

CONCLUSIONS:

PF: 0.98

Efficiency: 85.5 %

THD: 7.8 %

Harmonics according to IEC 61000-3-2, Class C, > 25W

Duplicate to: Mr M. Thijs
LAB 28/09/2016
L. Maghe

//P-16CR547

ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE
ORGANISM INDEPENDENT PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
SOCIETATE CU RĂSPUNDERE LIMITATĂ
SPLAIUL UNIRII Nr. 313, CORP M-1, D3-14, 030138, BUCUREŞTI, ROMÂNIA,
J40/3946/2009; Tel. : +40 21 589 33 05 Tel/Fax : +40 21 346 49 35; http://www.oicpe.ro
LICPE

LABORATORUL DE ÎNCERCĂRI PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
Testing Laboratory for Electrical Products Certification

RAPORT DE ÎNCERCĂRI

TEST REPORT

Nr. 92 / 08.03.2019
Pag. 1 / 6

Exemplar nr. 1 din 2

ÎNCERCAREA SOLICITATĂ Required Test	**Verificarea gradului de protecţie asigurat prin carcase împotriva impacturilor mecanice din exterior – IK10 conform SR EN 62262:2004, cap. 5, cap. 6 şi cap. 7**
PRODUSUL Equipment	**CORP DE ILUMINAT CU LED-uri tip VOLTANA 0-8LED**
PRODUCĂTOR Manufacturer	**TUNGSRAM-Schréder Zrt., Ungaria**
CLIENT (nume, adresă, cerere) Customer (name, address, order)	**SCHRÉDER ROMANIA S.R.L Cluj-Napoca / 400228, Str. Corneliu Coposu, Nr. 167A Cerere nr. 61/26.02.2019**
MANAGER LABORATOR Laboratory Manager	**Ing. Niculae LICSANDRU**
DIRECTOR TEHNIC OICPE OICPE Technical Director	**Ing. Dragoş ROSMETENIUC**

ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY • SOCIETATE CU RĂSPUNDERE LIMITATĂ

DATELE TEHNICE ALE PRODUSULUI:

CORP DE ILUMINAT CU LED-uri tip VOLTANA 0-8LED

- Tensiune nominală	: 230 V~
- Frecvenţa nominală	: 50 Hz
- Putere consumată	: 30 W
- Sursa alimentare	: model
- Factor de putere	: > 0,97
- Sursă de lumină	: 1 modul LED cu 8 LED-uri : 2 module a câte 4 lentile tip 5136 – PMMA (producător Schréder)
- Grad de protecţie	: IP 66
- Rezistenţa la impact	: IK10
- Temperatura ambiantă maximă nominală (t_a)	: + 55 ^{0}C
- Clasa de protecţie	: I
- Dispersor carcasă	: sticlă securizată tratată termic cu grosimea de 5mm
- Carcasă de protecţie	: aluminiu turnat sub presiune
- Masă	: 2,6 kg
- Dimensiuni de gabarit	: [416 x 156 x 91] mm
- Înălţimea de montare	: 4 - 6 m
- Utilizare	: iluminatul şoselelor, străzilor, aleilor şi pentru alte locuri de interes public

Lot / Serie / An fabricaţie	: ..... / 2019
Felul produsului	: serie curentă
Data primirii produsului	: 26.02.2019
Perioada încercărilor	: 26.02.2018 – 08.03.2019
Modul de prelevare:	: conform procedurii PG-11, OICPE
Număr de produse încercate	: 1 bucată

Responsabil de încercări	**Ing. Cornel PREDUŢ**	

OPINII ŞI INTERPRETĂRI:
Rezultatele încercării pentru verificarea rezistenţei la impact mecanic exterior IK10, din prezentul Raport de Încercări, atestă conformitatea produsului „CORP DE ILUMINAT CU LED-uri tip VOLTANA 0-8LED " cu cerinţele cap. 5; 6 şi 7 din SR EN 62262:2004.

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei
	GRAD DE PROTECŢIE ÎMPOTRIVA IMPACTURILOR MECANICE		
5	**PRESCRIPŢII GENERALE PENTRU ÎNCERCĂRI**		
5.1	**Condiţii atmosferice pentru încercări**		
	Dacă nu este specificat altfel în standardul particular de produs, încercările trebuie efectuate în condiţii atmosferice standard pentru încercările definite în CEI 60068-1: - domeniul de temperaturi: de la 15 °C până la 35 °C; - presiune atmosferică: de la 86 kPa până la 106 kPa (de la 860 mbar până la 1060 mbar)	 Măsurat : 18 °C Măsurat : 956 mbar	 P P
5.2	**Carcase supuse încercării**		
	Fiecare carcasă supusă încercării trebuie să fie curată şi în stare nouă, completă şi cu toate părţile la locul lor, dacă nu este prevăzut altfel în standardul particular de produs.	1 bucată CORP DE ILUMINAT CU LED-uri tip VOLTANA 0–8LED, curat și în stare nouă complet și cu toate părțile la locul lor.	P
5.3	**Prevederi indicate în standardul particular de produs**		
	Standardul particular de produs trebuie să prevadă: - definţia pentru «carcasă» așa cum se aplică la tipul particular de echipament; - mijlocul de încercare (de exemplu ciocanul pendular, ciocanul cu resort sau ciocanul vertical, a se vedea articolul 7); - numărul de eșantioane supuse la încercări; - condițiile de montaj, asamblarea și poziționarea eșantioanelor, de exemplu prin utilizarea unei suprafețe artificiale (tavan, podea sau perete) cu scopul de a simula condițiile destinate de serviciu, atât cât este posibil; - precondiționarea care trebuie utilizată, dacă se aplică; - dacă încercarea se efectuează sub tensiune; - dacă încercarea se efectuează cu părțile mobile în mișcare; - numărul de impacturi și punctele lor de aplicare (a se vedea 6.4). În absenţa unor astfel de precizări în standardul particular de produs, trebuie aplicate condiţiile din acest standard.	Standardul particular de produs SR EN 60598-2-3:2004 + A1:2012 + AC:2015 prevede condițiile în care trebuie să se realizeaze verificarea gradului de protecție la impacturi mecanice. N = 1 (un) impact S-au aplicat condiţiile din standardul SR EN 60598-2-3:2004 + A1:2012 + AC:2015 art. 3.6.5.2.1 referitor la numărul de impacturi.	P P P
6	**ÎNCERCĂRI PENTRU VERIFICAREA PROTECŢIEI ÎMPOTRIVA IMPACTURILOR MECANICE**		
6.1	Încercarea specificată în acest standard este încercare de tip.	Încercare de tip IK 10	P
6.2	Verificarea protecției împotriva impacturilor mecanice se efectuează prin aplicarea de lovituri carcasei de încercat. Articolul 7 descrie dispozitivele care se utilizează pentru această încercare.	A se vedea articolul 7 din prezentul RI	P
6.3	În timpul încercării, carcasa trebuie montată pe un suport rigid și în conformitate cu instrucțiunile de utilizare ale fabricantului. Se consideră că un suport este suficient de rigid dacă deplasarea sa este mai mică sau cel mult egală cu 0,1 mm sub efectul unei lovituri aplicate direct și a cărei energie corespunde gradului de protecție.	Corp de iluminat cu LED-uri VOLTANA 0 – 8LED montat pe suport rigid.	P

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei
	Pot fi specificate montaje și suporturi alternative în standardul particular de produs, adecvate produsului.		
6.4	Numărul de impacturi (lovituri) trebuie să fie de cinci pe fiecare față expusă, dacă nu este specificat altfel în standardul particular de produs. Loviturile trebuie distribuite normal pe fețele carcasei (sau carcaselor) de încercat. În niciun caz nu trebuie aplicate mai mult de trei lovituri în jurul aceluiași punct al carcasei. Standardul particular de produs trebuie să specifice punctele pentru aplicarea loviturilor.	A fost pregătit corpul de iluminat VOLTANA 0-8LED pentru încercarea la impact mecanic. Numărul de impacturi aplicate - 1 impact în zona centrală a dispersorului conform SR EN 60598-2-3:2004 + A1:2012 + AC:2015 art. 3.6.5.2.1 (Vezi Fig. 1 și Fig. 2 din Anexă).	P
6.5	**Evaluarea încercării**		
	Standardul particular de produs trebuie să specifice criteriile pe care se bazează acceptarea sau respingerea carcasei, și în particular: - deteriorările admise; - criteriul de verificare privind menținerea securității și siguranței echipamentului.	Dispersorul carcasei din sticlă securizată tratată termic a rezistat la impactul central aplicat - IK 10 (Vezi Fig. 3 - Anexă)	P
7	**APARATE DE ÎNCERCARE**		
	Încercările trebuie realizate prin utilizarea unia din aparatele de încercare descrise în CEI 60068-2-75. Standardele particulare de produs trebuie să specifice tipurile de aparate de încercare care sunt adecvate.	Produsul a fost încercat conform testului Ehc: Ciocan vertical, descris în SR EN 60068-2-75:2015 Pentru IK 10: - Dispozitivul corespunde cu figura A.3 din SR EN 60068-2-75:2015 - Greutate ciocan: 5 kg - Înălţime: 400 mm. - Energie de impact: 20 J	P

Mod de îndeplinire a cerinţei:

P - Cerinta este îndeplinită
NP - Cerinta nu este îndeplinită
NA - Cerinta nu este aplicabilă acestui tip de produs

INCERTITUDINI DE MĂSURARE

Denumire încercare (Punct RI)	Mărimea măsurată/ calculată	Aparat de măsură /tip/serie sau inventar	Certificat de etalonare/emitent	Incertitudinea extinsă [U]	Factor de extindere [k]
Impact mecanic (cod IK) 5, 6 și 7	Masă	Aparat de cântărit cu funcționare neautomată/R1/ CAS Tip EP-10 Seria 96070397	CE460/2017/ IPROEB Bistriţa (LE 018)	2,9 g	2
	Dimensiuni	Ruletă de măsurare S3489 A34W	01.01-911/2017/ INM (CIPM MRA)	0,22 mm	2
	Temperatură/ umiditate	Higrometru electronic cu traductor electrochimic seria 41843	2224/ 2017 METROMAT Braşov (LE 008)	0,5 °C/ 2,6 % rH	2

Incertitudinea atribuită este incertitudinea extinsă obţinută prin multiplicarea incertitudinii standard cu factorul de extindere k = 2, şi a fost estimate în conformitate cu SR Ghid ISO/CEI 98-3:2010. Valoarea măsurandului se află în intervalul de valori desemnat cu o probabilitate de 95,45 %.

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei

ANEXĂ

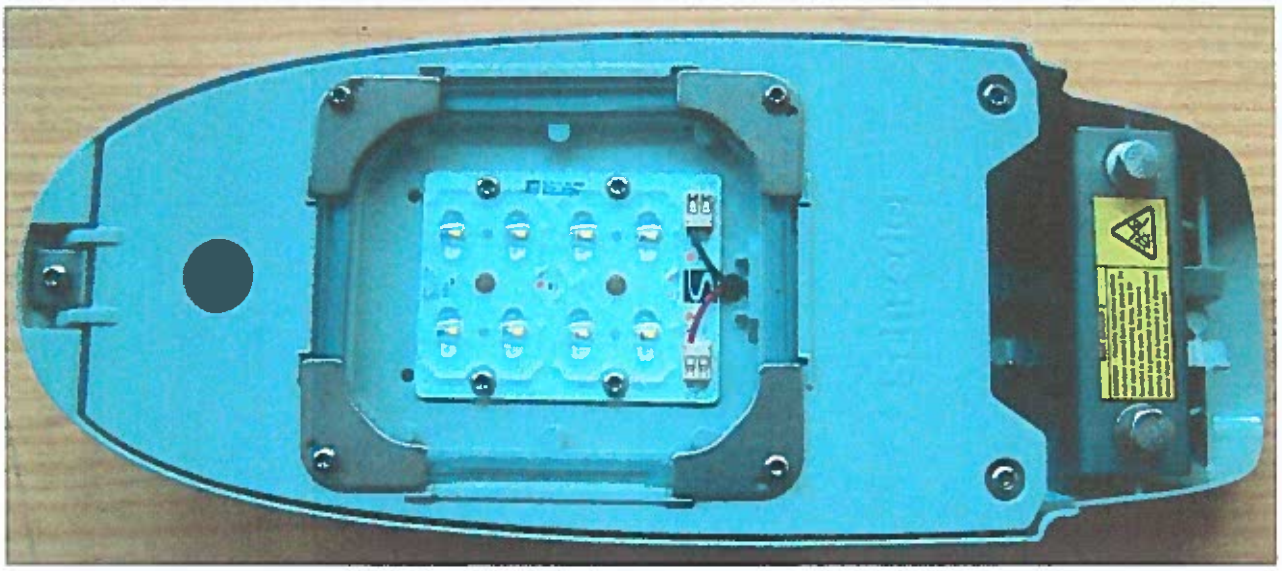


Fig. 1 – Corpul de iluminat VOLTANA 0-8LED înainte de verificarea la impact (IK 10)

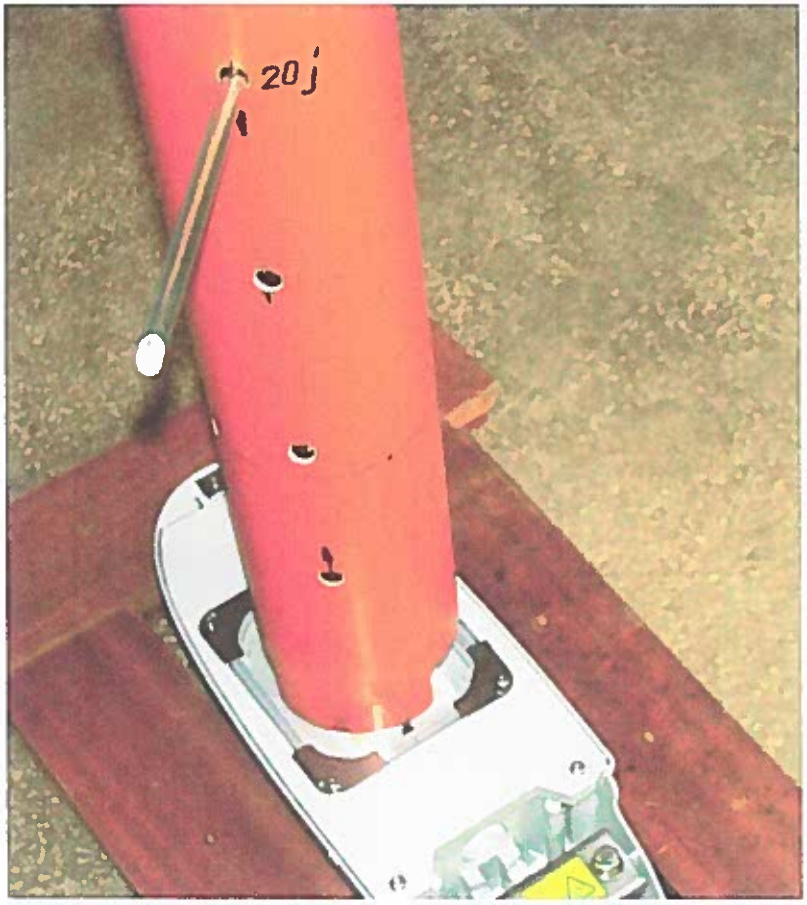


Fig. 2 – Corpul de iluminat VOLTANA 0-8LED pregătit pentru verificarea la impact (IK 10)

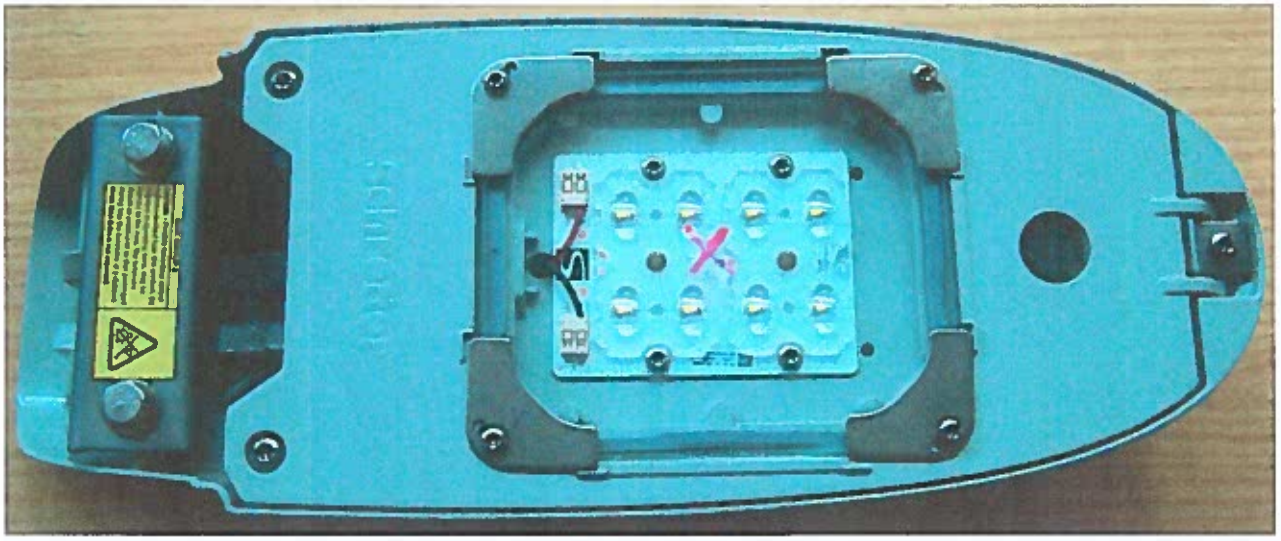


Fig. 3 – Corpul de iluminat VOLTANA 0 - 8LED după verificarea la impact (IK 10) - punctul de impact a fost marcat cu marker de culoare roșie

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 Schréder 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
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-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

Traducere din limba engleză

Laborator teste
RAPORT DE TEST FIZIC

R-Tech
Rue de Mons 3 - B-4000 Liège - Belgia
Tel. :+32 4 224 71 40 - Fax :+32 4 224 25 90
Membră a Schréder Group

Subiect: **VOLTANA 0 - 8 LEDuri –difuzor din sticlă plană**
Eşantion nr: P-E16377, P-E16394

Scopul testului: **Test nivel etanşeitate IP66 conform standardului IEC/EN 60598-1**

Observaţii:
Cerere de efectuare test nr.: P-D16575
Dosar nr.: P-F16041

CERINŢELE TESTULUI:

Operator: BOMBIL Patrick

VOLTANA 0 - 8 LEDuri, cu difuzor din sticlă plană

Pregătire: test de rezistenţă

Test	Rezultat
IP6X : -Aparatul de iluminat pornit până la T° stabilă -Talc în suspensie (suflantă pornită) -După 1', aparatul este închis -Talc 3 ore	VALIDAT.
IPX6 : -Aparatul de iluminat pornit până la T° stabilă -Aparatul de iluminat închis şi pus imediat sub jet de apă -Φ furtun 12,5 mm -Presiunea apei: 1 kg/cm2 -Distanţa de pulverizare: 3 m -Durata testului: 3 minute	VALIDAT

CONCLUZII:

VOLTANA 0 8 LEDuri, cu difuzor din sticlă plană, a trecut testul IP66 conform Standard IEC/EN 60598-1.

Duplicat pentru: M. Thijs
LAB 21.11.2016
L. Maghe
[Semnătură indescifrabilă]

//P-16CR575

LED Flux measurement

FORM-L-41 ED1 REV 2

226 - TEST

NBN EN ISO/IEC 17025 : 2005

Date : **16-01-19**

Operator : **FCE**

Filename : **2019_58.xml**

LEDs

Trademark : **Samsung**

Entry number : **39R005-2**

Type : **LH351C**

Power (Catalogue) : **0,00** W

Flux : **0** lm/LED

BIN Description : **40-70M-4-TB-RB**

Part number : **Unknown**

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

Number of LEDs : **8**

Lenses

Trademark : **None**

Type : **None**

Power & Print

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

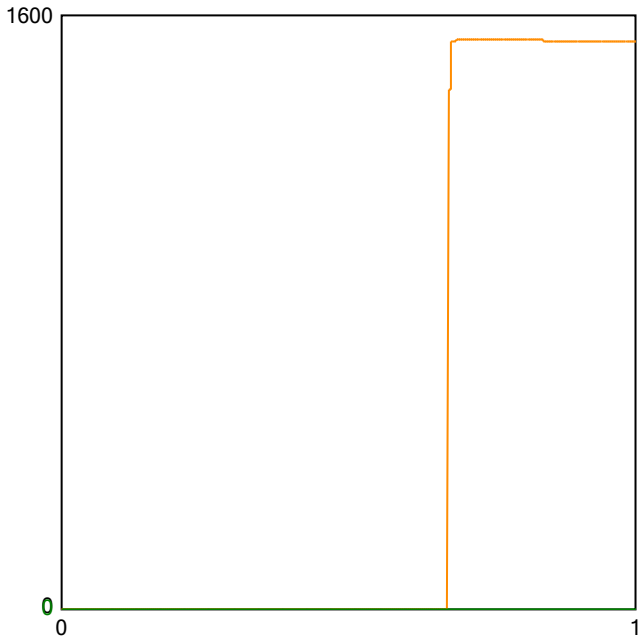
Print description : **00-71-636 A - Voltana 1**

Active ☐

Picture

Sphere photometric measurement

Maximum flux : **1538** lumens



Operating condition

Position in sphere : 

Ambient sphere T ° : **24,3**

Electrical measurement

- Secondary electrical measurement

Voltage : **22,37** V

Current : **0,350** A

Power : **7,82** Watt

→ LEDs light efficiency at 25° :

196,6 lm/W

192,2 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 1 - 8 Samsung LH351C - pcb N°2

Comment :

FORM-L-41 ED1 REV 2

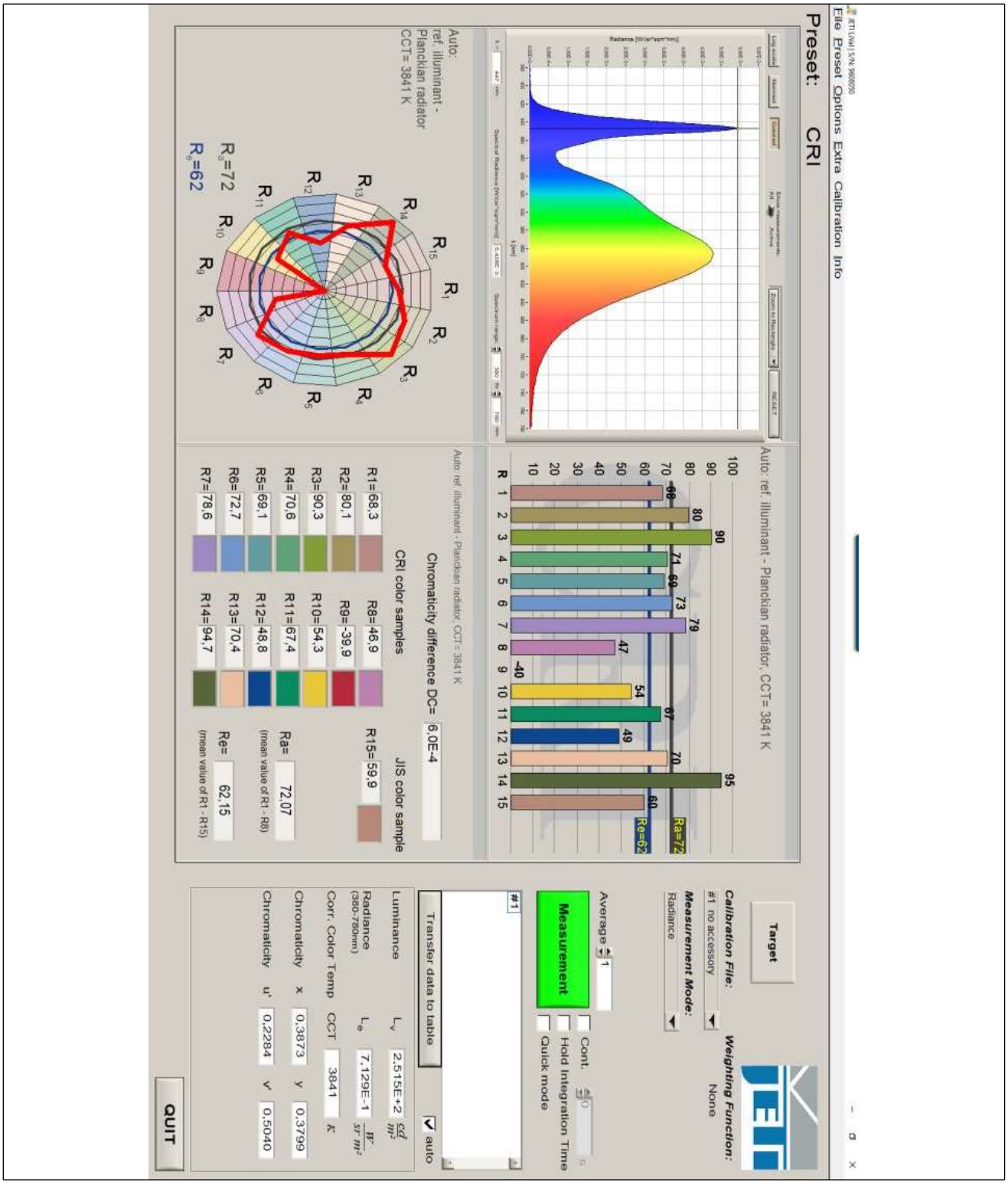
226 - TEST

Approved by :

Colorimetry

226 - TEST

NBN EN ISO/IEC 17025 : 2005



RTECH-PHOTOMETRY LABORATORY

LED

Testreport : Measurement of luminous intensity distribution related to the standard
NBN-EN 13032-1; NBN-EN 13032-4; CIE 121-1996; CIE S 025/E; 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 Schréder group.

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source

Type	BIN	Trademark	Reference	# LEDs	Reflector
LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Master	Reflector	No
-	Schreder Led assembly Narrow Assembled 0.0°	5136

Protector Refractor Lens

Protector Glass Extra Clear Flat Smooth

Lens Gaggione 5136 PMMA

Laboratory observation

VOLTANA 0 with 8 SAMSUNG LH351C
Used flux for efficiency matrix calculation = 1538 lm - CCT = 3841 K - CRI = 72,07 (see sphere test report 2019/58 on appendix).

Purpose	Sample date	Sample #
DOC	08-01-2019	39R005

Observation

DOC VOLTANA 0 with lenses 5136

Flux coefficient multiplicator (only for efficiency matrix):
From 350 to 500 mA : 1,379
From 350 to 700 mA : 1,849
From 350 to 1000 mA : 2,474

Fixture powered with driver Philips Xi FP 22W 0,3-1,0A SNLDAE 230V S175 sXt DALI for matrix @350/500/700mA
Fixture powered with driver Philips Xi FP 40W 0,3-1,0A SNLDAE 230V S175 sXt DALI for matrix @1000mA

Notes

This report concerns type tests on one or a series of specimens.

Asked by	Measured by	Approved by	Appendix		
RCA	CLD	RLABO	1	226-TEST NBN EN ISO/IEC 17025 : 2005	42550

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**425501** Φ 0-90° = 1331lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @350 mA

Light losses due to thermal stabilization: 1 %

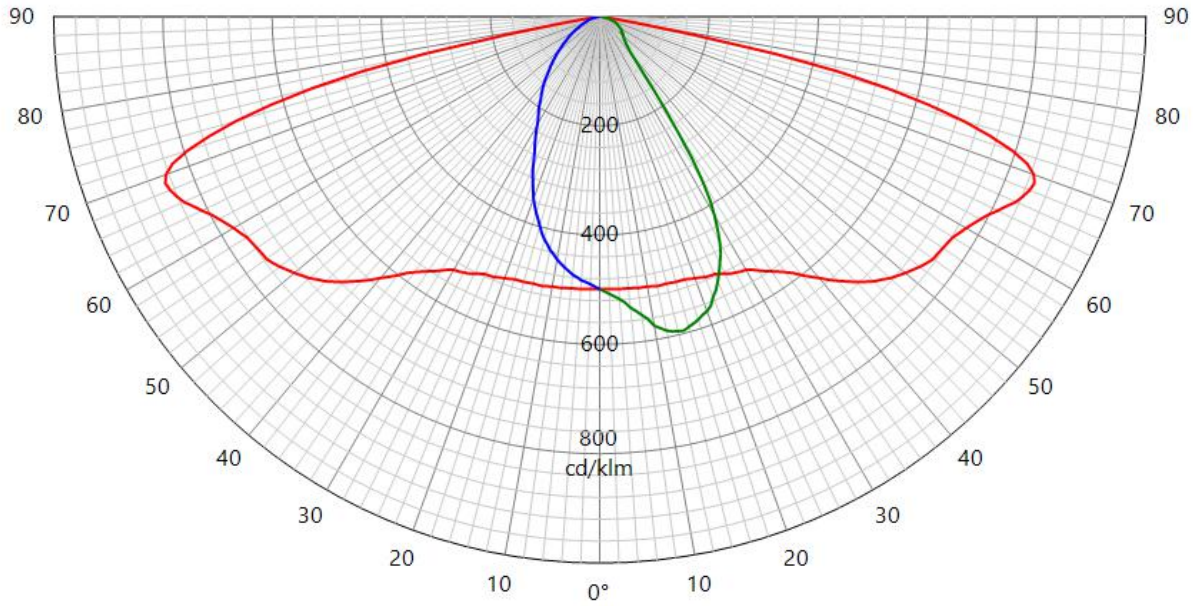
Electrical measurement on LED (#1) : Voltage = 22.32 V Current = 0.350 A Power = 7.81 W

Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.046 A Power = 10.19 W PF = 0.957

Total luminaire power = 10.19 W : Lm/Watt = 130.60 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	852	69	S	499	25.4°	06-02-2019
90	595	15	D			
270	499	0	G			



42550

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**425502** η 0-90° = 86.5% - 90-180° = 0.0%		Relative measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5136 PMMA		

Observation

Matrix in efficiency @350 mA

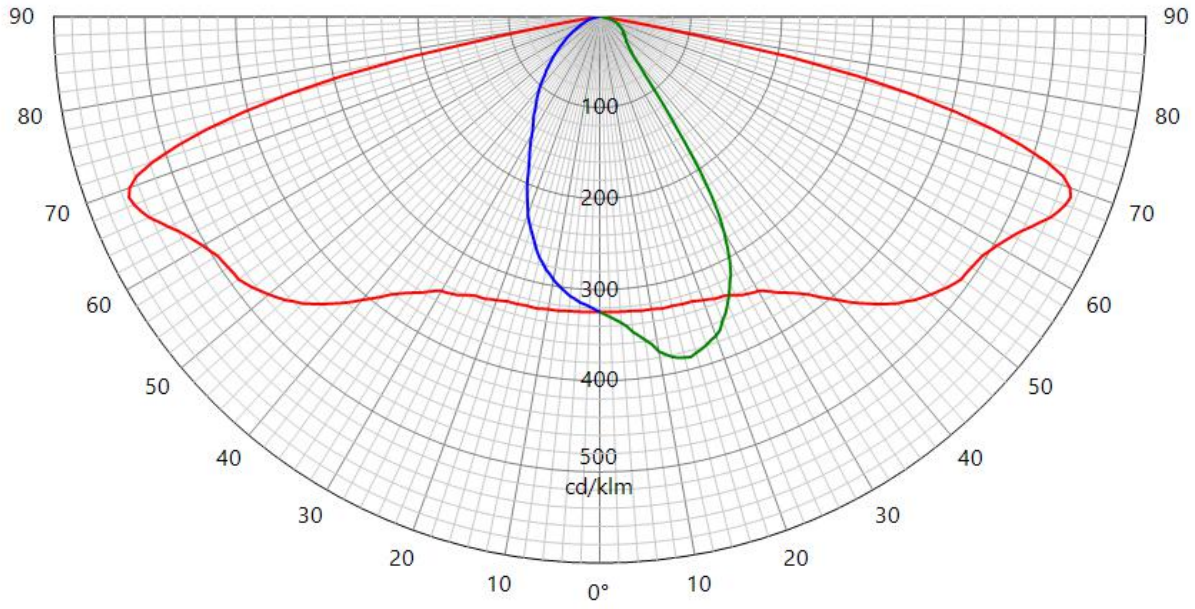
Light losses due to thermal stabilization: 1 %

Electrical measurement on LED (#1) :	Voltage = 22.32 V	Current = 0.350 A	Power = 7.81 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.046 A	Power = 10.19 W	PF = 0.957

Total luminaire power = 10.19 W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	554	69	S	324	25.4°	06-02-2019
90	387	15	D			
270	324	0	G			



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LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**425503** Φ 0-90° = 1835lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @500 mA

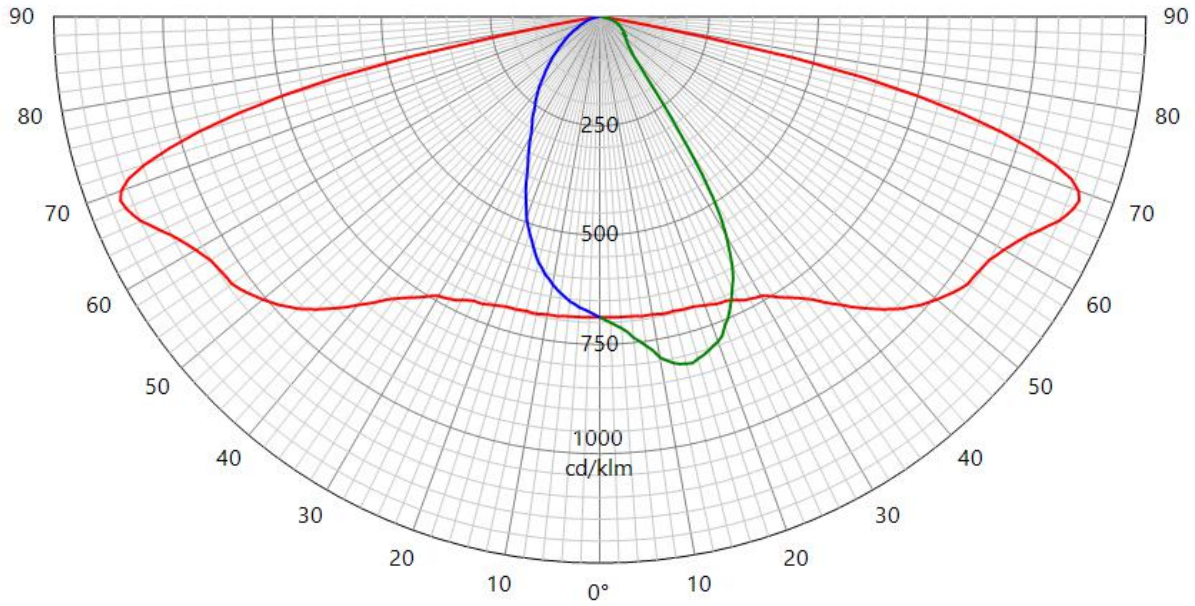
Light losses due to thermal stabilization: 1,5 %

Electrical measurement on LED (#1) :	Voltage = 22.76 V	Current = 0.500 A	Power = 11.38 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.063 A	Power = 14.16 W	PF = 0.974

Total luminaire power = 14.16 W : Lm/Watt = 129.60 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	1175	69	S	688	25.4°	06-02-2019
90	820	15	D			
270	688	0	G			



42550

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**425504** Φ 0-90° = 2461lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @700 mA

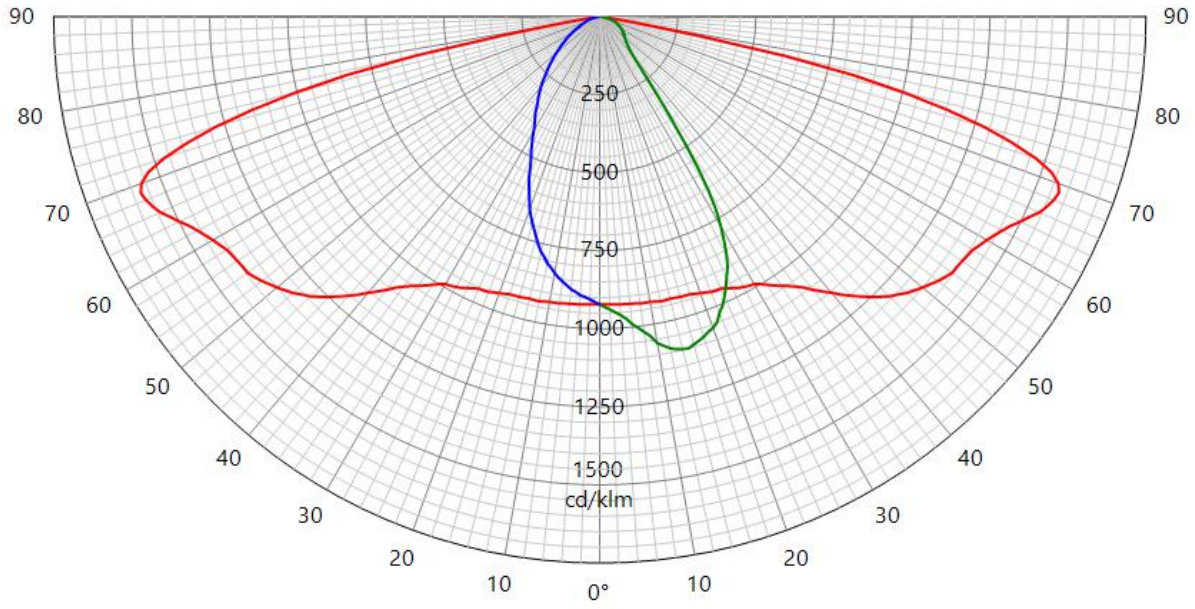
Light losses due to thermal stabilization: 2 %

Electrical measurement on LED (#1) :	Voltage = 23.26 V	Current = 0.700 A	Power = 16.29 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.087 A	Power = 19.79 W	PF = 0.985

Total luminaire power = 19.79 W : Lm/Watt = 124.34 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	1576	69	S			
90	1100	15	D	922	25.4°	06-02-2019
270	922	0	G			



42550

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 0	0°	FD39019

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	8	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**425505** Φ 0-90° = 3292lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 1 Lens 8 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @1000 mA

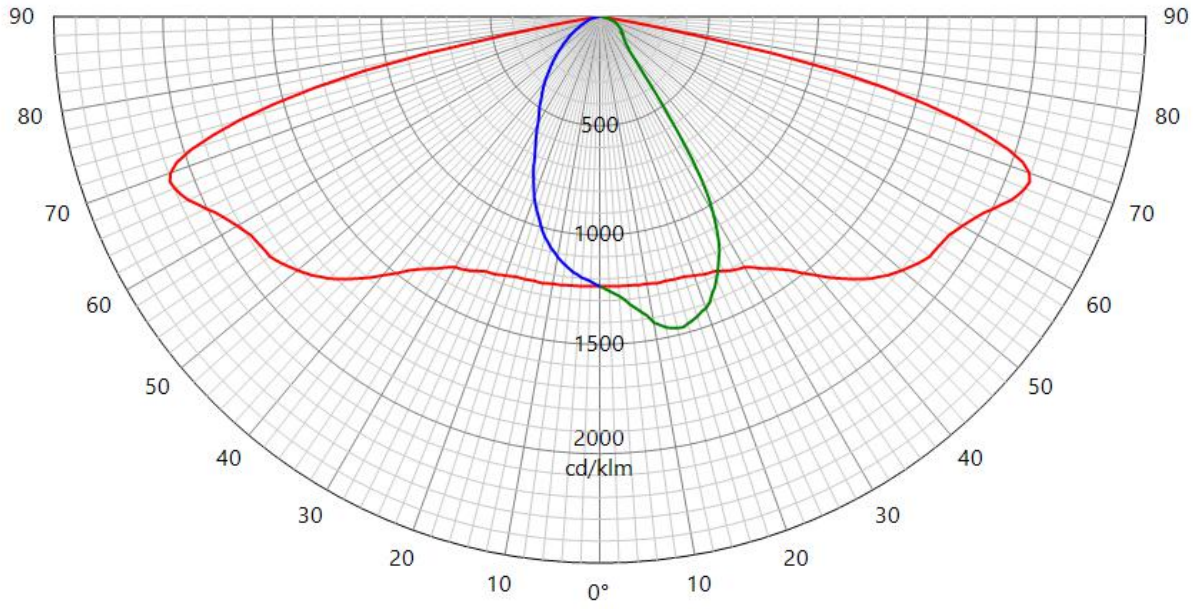
Light losses due to thermal stabilization: 2,5 %

Electrical measurement on LED (#1) :	Voltage = 23.93 V	Current = 1.000 A	Power = 23.93 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.128 A	Power = 28.74 W	PF = 0.978

Total luminaire power = 28.74 W : Lm/Watt = 114.56 lm/W

Driver #1 : See observations for driver details - PCB 00-71-636 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	2108	69	S			
90	1472	15	D	1234	25.4°	06-02-2019
270	1234	0	G			



42550

CONFORMITY STATEMENT

Measurement fulfil Standards:

NBN-EN 13032-1
NBN-EN 13032-4
NBN-EN 17025:2005
CIE 121-1996
LM79-08
CIE S 025

Measurement quantities measured:

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

Electrical measurement, if not specified:

Primary values are AC with 50Htz frequency
Secondary values on SSL are DC

CCT, CRI and chromaticity coordinates: are measured in Ulbricht sphere.
If specified Main test report refer to sphere extra test report.

Light distribution are measured on gonio. If not otherwise specified, measurement is done at 50 Hz

Number of hours operated prior to measurement: if not otherwise specified, 0 hours (no aging).

Stabilization time: If not otherwise specified, a minimal stabilization time of 0.5 hour is applied; and measurement will start when it exists no more variation above 0.5% in 15 minutes

Total operating time of the product including stabilization:
45 minutes have to be added by measurement.
Minimal operating time is 75 minutes

Luminous intensity distribution: available on electronic file with
.mat format (internal Schréder format)
.ldt format (European standard)
.IES format (American standard)

Statement of uncertainties (K=2, 95% of confidence level):
Uncertainties calculated based on a typical Schréder fitting and PCBA

Intensity measurement: +/- 3%
Angle: +/- 0.5°
Flux: +/- 2.5%
Electrical DC
Power: +/- 0.25%
Voltage: +/- 0.15%
Current: +/- 0.15%
Electrical AC
Power: +/- 0.15%
Voltage: +/- 0.3%
Current: +/- 0.3%
Temperature: +/- 0.65%

	ISP2000	JETI
CCT:	+/- 5%	+/-7.5%
CRI:	+/- 2%	+/-2.75%
x/y:	+/- 2%	+/-4.6%

lm/Watt: +/-3.5%

Measuring instruments in use:

Gonio 1
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) and METAS (Federal Institute of Metrology, CH-Bern)
Photometric test distance: By default 10 meter, on request 30 meter.

Gonio 2
Type C
Manufacturer: Technoteam Bildverarbeitung, Werner-von-Siemens-Strasse 5 98693 Ilmenau, Germany
Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)
Photometric test distance: Near Field

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 and WT310
Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Thermometers
Amarell Precision
Type: Liquid in glass N63833
Calibration: traceable to LBT (Laboratoire Belge de Thermométrie)

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

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

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

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

FACTORY LOCATION(S)

Schréder 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

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

Schréder Iluminação S.A.
Rua da Fraternidade Operária, n° 3
2795-491 CARNAXIDE, OEIRAS
Portugal

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

Tungsram-Schréder Világitási Berendezések Zrt
Tópart 2
2084 PILISSZENTIVAN
Hungary

Test Report issued under the responsibility of:

TEST REPORT
IEC 60598-2-3
Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting

Report Number. .....:	**P1560-Ia**
Date of issue .....:	**2017-03-03**
Total number of pages	**45+2**
Name of Testing Laboratory preparing the Report .....:	**R-TECH**
Applicant's name.....:	**R-TECH**
Address.....:	Rue de Mons, 3,B-4000 LIEGE
Test specification:	
Standard.....:	IEC 60598-2-3:2002 (Third Edition) + A1:2011 used in conjunction with IEC 60598-1:2014 (Eighth Edition)
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No. .....:	IEC60598_2_3J
Test Report Form(s) Originator ....:	Intertek Semko AB
Master TRF .....:	2014-09

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description.....	Street lighting
Trade Mark.....	SCHREDER
Manufacturer.....	SCHREDER
Model/Type reference.....	VOLTANA 0
Ratings.....	120-240 V, 50-60 Hz, Cl. I , IP66, LED, IK08 (glass), IK08 (lenses). Version with 6 & 8 led's ; Max. 23 & max.31 W. Led: Max 1050 mA

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**		
Testing location/ address .....:			
☐	**Associated CB Testing Laboratory:**		
Testing location/ address .....:			
Tested by (name, function, signature) .....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: TMP/CTF Stage 1:**		
Testing location/ address .....:			
Tested by (name, function, signature) .....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: WMT/CTF Stage 2:**		
Testing location/ address .....:			
Tested by (name + signature) .....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☒	**Testing procedure: SMT/CTF Stage 3 or 4:**	R-Tech	
Testing location/ address .....:		Rue de Mons, 3,B-4000 LIEGE	
Tested by (name, function, signature) .....:		Laurent Maghe	
Witnessed by (name, function, signature) .:		Christian Maes	
Approved by (name, function, signature)...:		Cheuvart Geoffrey	
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment): **EU deviations** **Pictures** **Instructions**
Summary of testing: full test

Tests performed (name of test and test clause): IEC 60598-2-3:2002 (Third Edition) + A1:2011 used in conjunction with IEC 60598-1:2014 (Eighth Edition)	**Testing location:** R-tech sa Rue de Mons, 3 B-4000 LIEGE Belgium.

Summary of compliance with National Differences: Europe

List of countries addressed

☒ **The product fulfils the requirements of**

IEC 60598-2-3: 2002 (third Edition) + A1:2011 used in conjunction with IEC 60598-1: 2014 (Eighth Edition).

EN 60598-2-3: 2003 + A1:2011 used in conjunction with EN 60598-1:2014.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Test item particulars..... :	
Classification of installation and use ..... :	Class I
Supply Connection..... :	Connector
..... :	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing .....:	
Date of receipt of test item.....:	October 2016
Date (s) of performance of tests .....:	February 2017
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☐ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	
Comatelec S.A. Z.I. F-18400 SAINT FLORENT S/CHER France	Socelec S.A. Av. de Roanne, 66 Poligono Industrial "EL HENARES" 19180 MARCHAMALO (GUADALAJARA),Spain
Schréder Iluminação S.A. Apartado, 132 2790-076 CARNAXIDE,Portugal	Schréder 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
Tungsram-Schréder Világitási Berendezések Zrt Tópart 2 2084 PILISSZENTIVAN,Hungary	

General product information:

Ta following Leds current :

LED Count	Current (mA)	Power (W)	Ta (°C)	Ta with EMI filter(°C)
6	350	8	50	35
	500	10	50	30
	700	15	50	30
	1050	23	35	20
8	350	11	40	/
	500	14	40	/
	700	20	40	/
	1050	31	30	/

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

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.2 (0)	**GENERAL TEST REQUIREMENTS**		P
3.2 (0.1)	Information for luminaire design considered .....:	Standard Yes ☒ No ☐	—
3.2 (0.3)	More sections applicable.....:	Yes ☐ No ☒	—

3.4 (2)	**CLASSIFICATION**		P
3.4 (2.2)	Type of protection .....:	Class I	—
3.4 (2.3)	Degree of protection .....:	IP 66	—
3.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....:	Yes ☒ No ☐	—
3.4 (2.5)	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☒	—
3.4 (-)	Modes of installation of road or street lighting		—
	a) on a pipe	Yes ☒ No ☐	—
	b) on a mast arm	Yes ☒ No ☐	—
	c) on a post top	Yes ☒ No ☐	—
	d) on span or suspension wires	Yes ☐ No ☒	—
	e) on a wall	Yes ☐ No ☒	—

3.5 (3)	**MARKING**		
3.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.5 (3.3)	Additional information		P
	Language of instructions		P
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz	50-60 Hz	P
3.5 (3.3.3)	Operating temperature		N/A
3.5 (3.3.4)	Symbol or warning notice		N/A
3.5 (3.3.5)	Wiring diagram		N/A
3.5 (3.3.6)	Special conditions		N/A
3.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
3.5 (3.3.8)	Limitation for semi-luminaires		N/A
3.5 (3.3.9)	Power factor and supply current	0.91	P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.10)	Suitability for use indoors		N/A
3.5 (3.3.11)	Luminaires with remote control		N/A
3.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
3.5 (3.3.13)	Specifications of protective shields		N/A
3.5 (3.3.14)	Symbol for nature of supply		N/A
3.5 (3.3.15)	Rated current of socket outlet		N/A
3.5 (3.3.16)	Rough service luminaire		N/A
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		P
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
3.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
3.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
3.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		P
	Cautionary symbol		P
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
3.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		
	a) Design attitude	See attached Installation Notice	P
	b) Weight	See attached Installation Notice	P
	c) Overall dimensions	See attached Installation Notice	P
	d) Maximum projected area if applicable	See attached Installation Notice	P
	e) Cross-sectional area of wires if applicable		N/A
	f) Suitability for indoors use		N/A
	g) Dimensions of the compartment		N/A
	h) Torque setting to be applied to bolts or screws	See attached Installation Notice	P
	i) Maximum mounting height	>6 m	P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4)	**CONSTRUCTION**		
3.6 (4.2)	Components replaceable without difficulty		N/A
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	**Lampholders**		
3.6 (4.4.1)	Integral lampholder		N/A
3.6 (4.4.2)	Wiring connection		N/A
3.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
3.6 (4.4.4)	Positioning		N/A
	- pressure test (N) .....:		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....:		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
3.6 (4.4.5)	Peak pulse voltage		N/A
3.6 (4.4.6)	Centre contact		N/A
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
3.6 (4.4.8)	Lamp connectors		N/A
3.6 (4.4.9)	Caps and bases correctly used		N/A
3.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
3.6 (4.5)	**Starter holders**		
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
3.6 (4.6)	**Terminal blocks**		
	Tails	Provided with internal connector	N/A
	Unsecured blocks	Fixed	N/A
3.6 (4.7)	**Terminals and supply connections**		
3.6 (4.7.1)	Contact to metal parts		P
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
3.6 (4.7.3)	Terminals for supply conductors		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.7.3.1)	Welded method and material		
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
3.6 (4.7.4)	Terminals other than supply connection		N/A
3.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
3.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
3.6 (4.8)	**Switches**		
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
3.6 (4.9)	**Insulating lining and sleeves**		
3.6 (4.9.1)	Retainment		N/A
	Method of fixing.....:		—
3.6 (4.9.2)	Insulated linings and sleeves:		
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
3.6 (4.10)	**Double or reinforced insulation**		
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
3.6 (4.10.2)	Assembly gaps:		
	- not coincidental		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- no straight access with test probe		N/A
3.6 (4.10.3)	Retainment of insulation:		
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
3.6 (4.11)	**Electrical connections and current-carrying parts**		
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		
	- spring washer		P
	- rivets		N/A
3.6 (4.11.4)	Material of current-carrying parts		P
3.6 (4.11.5)	No contact to wood or mounting surface		P
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.6 (4.12)	**Screws and connections (mechanical) and glands**		
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part .....:	2Nm (case)	P
	Torque test: torque (Nm); part .....:	1.2Nm (drivers)	N/A
	Torque test: torque (Nm); part .....:	1.2Nm (glass)	N/A
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
3.6 (4.12.4)	Locked connections:		
	- fixed arms; torque (Nm) .....:		P
	- lampholder; torque (Nm) .....:		N/A
	- push-button switches; torque 0,8 Nm .....:		N/A
3.6 (4.12.5)	Screwed glands; force (Nm) .....:		P
3.6 (4.13)	**Mechanical strength**		
3.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:	IK08 (glass) IK08 (lenses)	P
	- other parts; energy (Nm) .....:		P
	1) live parts		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	2) linings		P
	3) protection		P
	4) covers		P
3.6 (4.13.3)	Straight test finger		P
3.6 (4.13.4)	Rough service luminaires		
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
3.6 (4.13.6)	Tumbling barrel		N/A
3.6 (4.14)	**Suspensions, fixings and means of adjusting**		
3.6 (4.14.1)	Mechanical load:		
	A) four times the weight		N/A
	B) torque 2,5 Nm		P
	C) bracket arm; bending moment (Nm) .....:		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....:		N/A
	Metal rod. diameter (mm) .....:		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
3.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....:		—
	Stress in conductors (N/mm²) .....:		N/A
	Mass (kg) of semi-luminaire .....:		—
	Bending moment (Nm) of semi-luminaire .....:		N/A
3.6 (4.14.3)	Adjusting devices:		
	- flexing test; number of cycles .....:		N/A
	- strands broken .....:		N/A
	- electric strength test afterwards		N/A
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
3.6 (4.14.5)	Guide pulleys		N/A
3.6 (4.14.6)	Strain on socket-outlets		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.15)	**Flammable materials**		
	- glow-wire test 650°C.....:	See Test Table 3.15 (13.3.2)	N/A
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		
	a) construction		P
	b) temperature sensing control	110	P
	c) surface temperature		N/A
3.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		
	No lamp control gear .....:	(compliance with Section 12)	N/A
3.6 (4.16.1)	Lamp control gear spacing:		
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		P
3.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	P
3.6 (4.17)	**Drain holes**		
	Clearance at least 5 mm		N/A
3.6 (4.18)	**Resistance to corrosion**		
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		P
3.6 (4.18.3)	- corrosion of aluminium		P
3.6 (4.19)	Igniters compatible with ballast		N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	**Protective shield**		
3.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Shield of glass if tungsten halogen lamps		N/A
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
3.6 (4.21.3)	No direct path		N/A
3.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment .....:	See Test Table 3.15 (13.3.2)	N/A
3.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
3.6 (4.23)	Semi-luminaires comply Class II		N/A
3.6 (4.24)	**Photobiological hazards**		
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		P
3.6 (4.24.2)	Retinal blue light hazard		
	Luminaires with E_{thr}:		
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2 ..:	RG2@20cm RG1@50cm RG0@500cm	P
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
3.6 (4.25)	**Mechanical hazard**		
	No sharp point or edges		P
3.6 (4.26)	**Short-circuit protection**		
3.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
3.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
3.6 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
3.6 (4.28)	**Fixing of thermal sensing control**		
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C).....:		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
3.6 (4.29)	**Luminaires with non-replaceable light source**		
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
3.6 (4.30)	**Luminaires with non-user replaceable light source**		
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
3.6 (4.31)	**Insulation between circuits**		
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3	SELV/IEC 61347-2-13	P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
3.6 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV circuits from LV supply	Double/reinforced	P
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.2)	FELV circuits		
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.3)	Other circuits		
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		
	- conductive parts are connected together		N/A
	- test according 7.2.3 of above		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
3.6 (4.32)	**Overvoltage protective devices**		
	Comply with IEC 61643-11	CB	P
	External to controlgear and connected to earth:		
	- only in fixed luminaires		P
	- only connected to protective earth		P
3.6.1 (-)	At least IP X3 or X5 respectively. IP .....:	IP66	P
	Column-integrated luminaires:		

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- parts below 2,5 m. IP .....:		N/A
	- parts above 2,5 m. IP .....:		N/A
3.6.2 (-)	Suspension on span wires		N/A
3.6.3 (-)	Means for attaching the luminaire or external parts to its support appropriate to the weight		P
3.6.3.1 (-)	Static load test		
	- drag coefficient.....:	0.2563	P
	- loaded area (m^2).....:	0.014m^2	P
	- used load (N) .....:	0.2N	P
	- measured deformation (cm/m) .....:	0cm/m	P
	- no rotation		P
3.6.4 (-)	Adjustable lampholders		N/A
3.6.5 (-)	Luminaires installed above 5 m, glass covers shall be:		
	a) glass that fractures into small pieces (test according to 3.6.5.1), or	Safety Glass	P
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or		P
	c) protected by any means to retain glass fragments		N/A
	For tunnel luminaires 3.6.5.1 apply		N/A
	Method of protection declared by the manufacturer		N/A
3.6.5.1 (-)	Protection by the use of glass that fractures into small pieces		P
	- number of particles is more than 40 .....:	48	P
3.6.5.2 (-)	Protection by the use of high impact resistant glass		P
3.6.5.2.1 (-)	Glass covers have high mechanical strength		P
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample	Glass : IK08 Lenses : IK08	P
3.6.5.2.2 (-)	Glass covers not break into large pieces		P
	- test according 3.6.5.1, number of particles is more than 20 .....:	50	P
3.6.6 (-)	Connection compartment of column-integrated luminaire		
	- provides adequate space		N/A
	- means for attachment		N/A
	- means for attachment of metal corrosion-resistant		N/A
3.6.7 (-)	Compliance with ISO standard or other .....:		N/A
3.6.8 (-)	Doors of column-integrated luminaires:		

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- corrosion-resistant		N/A
	- opening only possible for an authorized person		N/A
	- impact test 5 Nm		N/A
	- sample show no damage		N/A
3.6.9 (-)	Column-integrated luminaire:		
	- dimension of the cable entry slot (mm) .....:		N/A
	- cable path from the slot to the connection compartment (mm) .....:		N/A
	- cable path free from obstruction that might cause abrasion of the cable		N/A
3.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
3.7 (11.2)	Creepage distances and clearances .....:	See Table 3.7 (11.2)	P
	Working voltage (V) .....:	120-240 V	—
	Rated pulse voltage (kV) .....:	/	—
	Voltage form .....:	Sinusoidal ☒ Non-sinusoidal ☐	—
	PTI .....:	< 600 ☐ ≥ 600 ☒	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☐ Category III ☐	—
3.8 (7)	**PROVISION FOR EARTHING**		
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		P
	Metal parts in contact with supporting surface		P
	Resistance < 0,5 Ω .....:		P
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		P
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		P
3.8 (7.2.4)	Locking of clamping means		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance with 4.7.3		P
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
3.8 (7.2.5)	Earth terminal integral part of connector socket		P
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		P
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		P
3.8 (7.2.8)	Material of earth terminal		P
	Contact surface bare metal		P
3.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
3.8 (7.2.11)	Earthing core coloured green-yellow		P
	Length of earth conductor		N/A
3.8.1 (-)	Attachment prevented from rotation		N/A
3.9 (14)	**SCREW TERMINALS**		P
	Separately approved; component list .....:	(see Annex 1)	P
	Part of the luminaire.....:	(see Annex 3)	N/A
3.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		P
	Separately approved; component list .....:	(see Annex 1)	P
	Part of the luminaire.....:	(see Annex 4)	N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
3.10 (5.2)	**Supply connection and external wiring**		**P**
3.10 (5.2.1)	Means of connection.....:	Internal connector	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
3.10 (5.2.2)	Type of cable .....:	H07RN-F (if provided)	P
	Nominal cross-sectional area (mm²).....:	1,5 mm²	P
	Cables equal to IEC 60227 or IEC 60245		P
3.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
3.10 (5.2.5)	Type Z not connected to screws		N/A
3.10 (5.2.6)	Cable entries:		
	- suitable for introduction		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- adequate degree of protection		P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
3.10 (5.2.8)	Insulating bushings:		
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
3.10 (5.2.9)	Locking of screwed bushings		N/A
3.10 (5.2.10)	Cord anchorage:		
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
3.10 (5.2.10.3)	Tests:		
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60	P
	- torque test: torque (Nm) ..... :	0.25Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- no damage of cable or cord		P
	- function independent of electrical connection		N/A
3.10 (5.2.11)	External wiring passing into luminaire		N/A
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
3.10 (5.2.16)	Appliance inlets (IEC 60320)		P
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
3.10 (5.2.18)	Used plug in accordance with		
	- IEC 60083		N/A
	- other standard		N/A
3.10 (5.3)	**Internal wiring**		
3.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) .....:		N/A
	- temperatures.....:	(see Annex 2)	N/A
	Green-yellow for earth only		N/A
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		
	Cross-sectional area (mm²).....:		P
	Insulation thickness		P
	Extra insulation added where necessary		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		
	Adequate cross-sectional area and insulation thickness		N/A
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
3.10 (5.3.1.4)	Conductors without insulation		N/A
3.10 (5.3.1.5)	SELV current-carrying parts		P
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		P
3.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
3.10 (5.3.3)	Insulating bushings:		
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
3.10 (5.3.4)	Joints and junctions effectively insulated		N/A
3.10 (5.3.5)	Strain on internal wiring		P
3.10 (5.3.6)	Wire carriers		N/A
3.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
3.10.1 (-)	Cord anchorage if applicable		P
	- pull test: 25 times; pull (N).....:	60 N	P
	- torque test: torque (Nm).....:	0.25 Nm	P
3.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		
3.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		N/A
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
3.11 (8.2.3.a)	Class II luminaire:		
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
3.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		
	Ordinary luminaire:		
	- touch current .....:		N/A
	- no-load voltage.....:		N/A
	Other than ordinary luminaire:		
	- nominal voltage .....:		N/A
3.11 (8.2.4)	Portable luminaire have protection independent of supporting surface		N/A
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
3.11 (8.2.6)	Covers reliably secured		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.11 (8.2.7)	Discharging of capacitors ≥ 0,5 μF		N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A
3.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
3.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13		—
3.12 (12.3)	Endurance test:		P
	- mounting-position .....:	Acc. To mounting instruction	—
	- test temperature (°C) .....:	35°C	—
	- total duration (h) .....:	240 H	—
	- supply voltage: Un factor; calculated voltage (V)...:		—
	- lamp used.....:		—
3.12 (12.3.2)	After endurance test:		
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
3.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
3.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
3.12 (12.6)	Thermal test (failed lamp control gear condition):		
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un ....:		—
	- measured mounting surface temperature (°C) at 1,1 Un.....:		N/A
	- calculated mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.12 (12.6.2)	Temperature sensing control		
	- case of abnormal conditions.....:		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) .....:		N/A
	- track-mounted luminaires		N/A
3.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
3.12 (12.7.1)	Luminaire without temperature sensing control		N/A
3.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W .....:		—
	Test according to 12.7.1.1:		
	- case of abnormal conditions.....:		—
	- Ballast failure at supply voltage (V) .....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un .....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un .....:		—
	- calculated temperature of fixing point/exposed part (°C) .....:		—
	Ball-pressure test .....:	See Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		
	- case of abnormal conditions.....:		—
	- measured winding temperature (°C): at 1,1 Un .....:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un .....:		—
	- calculated temperature of fixing point/exposed part (°C) .....:		—
	Ball-pressure test .....:	See Table 3.15 (13.2.1)	N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions.....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
3.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link .....:	Yes ☐ No ☐	—
	- manual reset cut-out.....:	Yes ☐ No ☐	—
	- auto reset cut-out .....:	Yes ☐ No ☐	—
	- case of abnormal conditions.....:		—
	- highest measured temperature of fixing point/ exposed part (°C): .....:		—
	Ball-pressure test: .....:	See Table 3.15 (13.2.1)	N/A
3.12.1 (-)	Temperature reduction if for outdoor use only		N/A
3.12.2 (-)	(See above)		—
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer		N/A

3.13 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		P
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP .....:	IP66	—
	- mounting position during test.....:	Acc. to mounting instruction	—
	- fixing screws tightened; torque (Nm).....:	Acc. to mounting instruction	—
	- tests according to clauses .....:		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		P
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		P
	f) no contact with live parts (IP3X and IP4X)		P
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
3.13 (9.3)	Humidity test 48 h		P
3.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
3.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:		—
	Insulation resistance (MΩ) .....:		—
	SELV		
	- between current-carrying parts of different polarity :	>1,3 Mohm	P
	- between current-carrying parts and mounting surface .....:	>1,3 Mohm	P
	- between current-carrying parts and metal parts of the luminaire .....:	>1,3 Mohm	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:		N/A
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV		
	- between live parts of different polarity .....:	>2,6 Mohm	P
	- between live parts and mounting surface .....:	>2,6 Mohm	P
	- between live parts and metal parts.....:	>2,6 Mohm	P
	- between live parts of different polarity through action of a switch.....:		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:	>2,6 Mohm	P
	- Insulation bushings as described in Section 5 .....:		N/A
3.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with manual ignitors		N/A
	Test voltage (V) ..... :		P
	SELV		
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface ..... :		N/A
	- between current-carrying parts and metal parts of the luminaire ..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		
	- between live parts of different polarity ..... :	1480 V	P
	- between live parts and mounting surface ..... :	1480 V	P
	- between live parts and metal parts..... :	1480 V	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :	1480 V	P
	- Insulation bushings as described in Section 5 ..... :		N/A
3.14 (10.3)	Touch current or protective conductor current (mA) :	<<0,5	P

3.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		
3.15 (13.2.1)	Ball-pressure test ..... :	See Test Table 3.15 (13.2.1)	N/A
3.15 (13.3.1)	Needle-flame test (10 s)..... :	See Test Table 3.15 (13.3.1)	N/A
3.15 (13.3.2)	Glow-wire test (650°C)..... :	See Test Table 3.15 (13.3.2)	N/A
3.15 (13.4)	Proof tracking test (IEC 60112)..... :	See Test Table 3.15 (13.4)	N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	**TABLES: Creepage distances and clearances**						p
Table 11.1	**Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages**						
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
Creepage distances							
Required basic insulation, PTI ≥ 600		0,6	0,8	1,5	3	4	5,5
Measured				>2			
Required basic insulation, PTI < 600		1,2	1,6	2,5	5	8	10
Measured							
Required supplementary insulation PTI ≥ 600		-	0,8	1,5	3	4	5,5
Measured							
Required supplementary insulation PTI < 600		-	1,6	2,5	5	8	10
Measured							
Required reinforced insulation		-	3,2	5	6	8	11
Measured							
Clearances							
Required basic insulation		0,2	0,8	1,5	3	4	5,5
Measured				>2			
Required supplementary insulation		-	0,8	1,5	3	4	5,5
Measured							
Required reinforced insulation		-	1,6	3	6	8	11
Measured							

Table 11.2	**Minimum distances (mm) for non-sinusoidal pulse voltages**						
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.15 (13.2.1)	**TABLE: Ball Pressure Test of Thermoplastics**			**N/A**
Allowed impression diameter (mm) .....:				—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

3.15 (13.3.1)	**TABLE: Needle-flame test (IEC 60695-11-5)**				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

3.15 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**				**N/A**
Glow wire temperature .....:	650°C				—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) .....:					
Supplementary information:					

3.15 (13.4)	**TABLE: Proof tracking test (IEC 60112)**				**N/A**
Test voltage PTI .....:	175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Drivers	A	Meanwell	APC-8E Series	8W 50-60Hz 0,25-0,7A 200-240V Tc=75°C	IEC 61347-2-13	CB
Drivers	A	Meanwell	PLM-12 Series	12W 50-60Hz 0,35-1,05A 110-240V Tc=75°C	IEC 61347-2-13 IEC 62384	TUV
Drivers	A	Meanwell	PLM-25 Series	25W 50-60Hz 0,35-1,05A 110-240V Tc=80°C	IEC 61347-2-13 IEC 62384	TUV
Drivers	A	Meanwell	PLD-16 Series	17W 50-60Hz 0,35-1,4A 200-240V Tc=70°C	IEC 61347-2-13	CB
Drivers	A	Meanwell	PLD-25 Series	25W 50-60Hz 0.35/0.7/1.05/1.4A 100-240Vac Tc=70°C	IEC 61347-2-13	CB
Drivers	A	Meanwell	PLD-40 Series	40W 50-60Hz 0.35-1.75A 200-240Vac Tc=90°C	IEC 61347-2-13	CB
Driver	A	LG	PISE-A027M	27W 0,2-1A 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Driver	A	LG	PISE-A027A	27W 1A 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Drivers	A	Moons	PU025H Series	25W 50-60Hz 0,35-2,1A 100-240V Tc=90°C	IEC 61347-2-13	TUV
Drivers	A	PHILIPS	Xi LP/FP 22W 0,3-1,0A 230V S175 sXt	22W 50-60Hz 0,3-1,05A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP/LP 40W 0,3-1,0A 230V S175 sXt	40W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	TRIDONIC	LCI 27W	27W 50-60Hz 1A 220-240V Tc=70°C	IEC 61347-2-13	OVE
EMI filter	A	TE connectivity	Corcom 2FB3	Imax 2A Vmax = 250Vac/d Tc 50°C	IEC 60939-2	VDE
Surge protection Device	A	CITEL	MLPC1-230L-R	277 V, T85 10kA 20KV (DM) 120KV (CM)	IEC 61643-11	ENEC
VDR	A	Littelfuse	TM0V	275 Vac Tc=85°C 10kA	IEC 61051-2-2	VDE
FUSE HOLDER	A	Mersen	10x38mm CCR8-10 Series	20-32A 400V	IEC 60269-1 & -2	ENEC
FUSE HOLDER	A	ADELS	403/503 SI	400V 10A 5x20mm	IEC 60127-1 & -6	VDE
FUSE	A	Mersen	FR10 10x38mm	0.5-32A 400-500V	IEC 60269-1 & -2	ENEC
FUSE	A	Littelfuse	5x20mm 213 Series	0.2-6.3A 250V	IEC 60269-1 & -2	VDE
Terminal	A	ADELS	500 Series	0.5-4mm² 450V	EN 60998-1&2-2	VDE
Terminal	A	ADELS	900-07 & 08	0.5-4mm² 450V	EN 60998-1&2-2	VDE / UL
Terminal	A	WIELAND	ST18, GST18I	12-16A 250V 0,75-2,5mm²	EN 60998-1&2-2	VDE / UL

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Led Modules	A	LG	6 Leds LG3535 G4TOP@1050 mA 8 Leds LG3535 G4TOP @1000 mA	RG2@20cm RG1@40cm RG0@325cm	IEC/EN 62031-62471	Tested in appliance
Led Modules	A	LG	6 Leds LG3535 G4L@1050 mA	RG2@20cm RG1@50cm RG0@500cm	IEC/EN 62031-62471	Tested in appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		
	Type reference ..... :	VOLTANA-0	—
	Lamp used ..... :	6 Led's LG3535	—
	Lamp control gear used..... :	MeanWell PLM-25 @ 1050mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W)..... :		—
	Supply current (A)..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 35 °C:		
	- abnormal operating mode..... :		—
	- test 1: rated voltage ..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	35	78			80		
VDR x 3 Tc	35	52			85		
Supply wiring	35	52			90		
Led Module	35	76			85		
Terminal	35	52			110		
Internal wiring	35	52			90		

Supplementary information:
Corrected for Ta 35 °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		
	Type reference ..... :	VOLTANA-0	—
	Lamp used ..... :	6 Led's LG3535	—
	Lamp control gear used..... :	PLD-16 @ 700 mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W)..... :		—
	Supply current (A)..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 50 °C:		
	- abnormal operating mode..... :		—
	- test 1: rated voltage ..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	50	70			70		
VDR x 3 Tc	50	60			85		
Supply wiring	50	60			90		
Led Module	50	75			85		
Terminal	50	60			110		
Internal wiring	50	60			90		

Supplementary information:
Corrected for Ta 50 °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		
	Type reference ..... :	VOLTANA-0	—
	Lamp used ..... :	8 Led's LG3535	—
	Lamp control gear used..... :	LCI 27W @ 1000mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W)..... :		—
	Supply current (A)..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 30 °C:		
	- abnormal operating mode..... :		—
	- test 1: rated voltage ..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	30	64			70		
SPD Tc	30	53			85		
Supply wiring	30	53			90		
Led Module	30	80			85		
Terminal	30	53			110		
Internal wiring	30	53			90		

Supplementary information:
Corrected for Ta 30°C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		
	Type reference ..... :	VOLTANA-0	—
	Lamp used ..... :	8 Led's LG3535	—
	Lamp control gear used..... :	Philips 40W @ 1050mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W)..... :		—
	Supply current (A)..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 35 °C:		
	- abnormal operating mode..... :		—
	- test 1: rated voltage ..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	30	84			90		
SPD Tc	30	53			85		
Supply wiring	30	53			90		
Led Module	30	74			85		
Terminal	30	53			110		
Internal wiring	30	53			90		

Supplementary information:
Corrected for Ta 35°C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**TABLE: Temperature measurements, thermal tests of Section 12**		
	Type reference ..... :	VOLTANA-0	—
	Lamp used ..... :	6 Led's LG3535	—
	Lamp control gear used..... :	Moons @ 1050mA (MeanWell @ 350mA)	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W)..... :		—
	Supply current (A)..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 20 °C (35°C):		
	- abnormal operating mode..... :		—
	- test 1: rated voltage ..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	20 (35°C)	42 (57)			90 (75)		
SPD Tc	20 (35°C)	33 (38)			85		
Supply wiring	20 (35°C)	33 (38)			90		
Led Module	20 (35°C)	74 (45)			85		
Terminal	20 (35°C)	33 (38)			110		
Internal wiring	20 (35°C)	33 (38)			90		
EMI filter	(35°C)	(45)			50		

Supplementary information:
Corrected for Ta 20°C (35°C)

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	**Screw terminals (part of the luminaire)**		N/A
(14)	**SCREW TERMINALS**		N/A
(14.2)	Type of terminal .....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²).....:		—
(14.3.3)	Conductor space (mm) .....:		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread).....:		N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) .....:		N/A
	Torque (Nm) .....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 4	**Screwless terminals (part of the luminaire)**		N/A
(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal .....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A

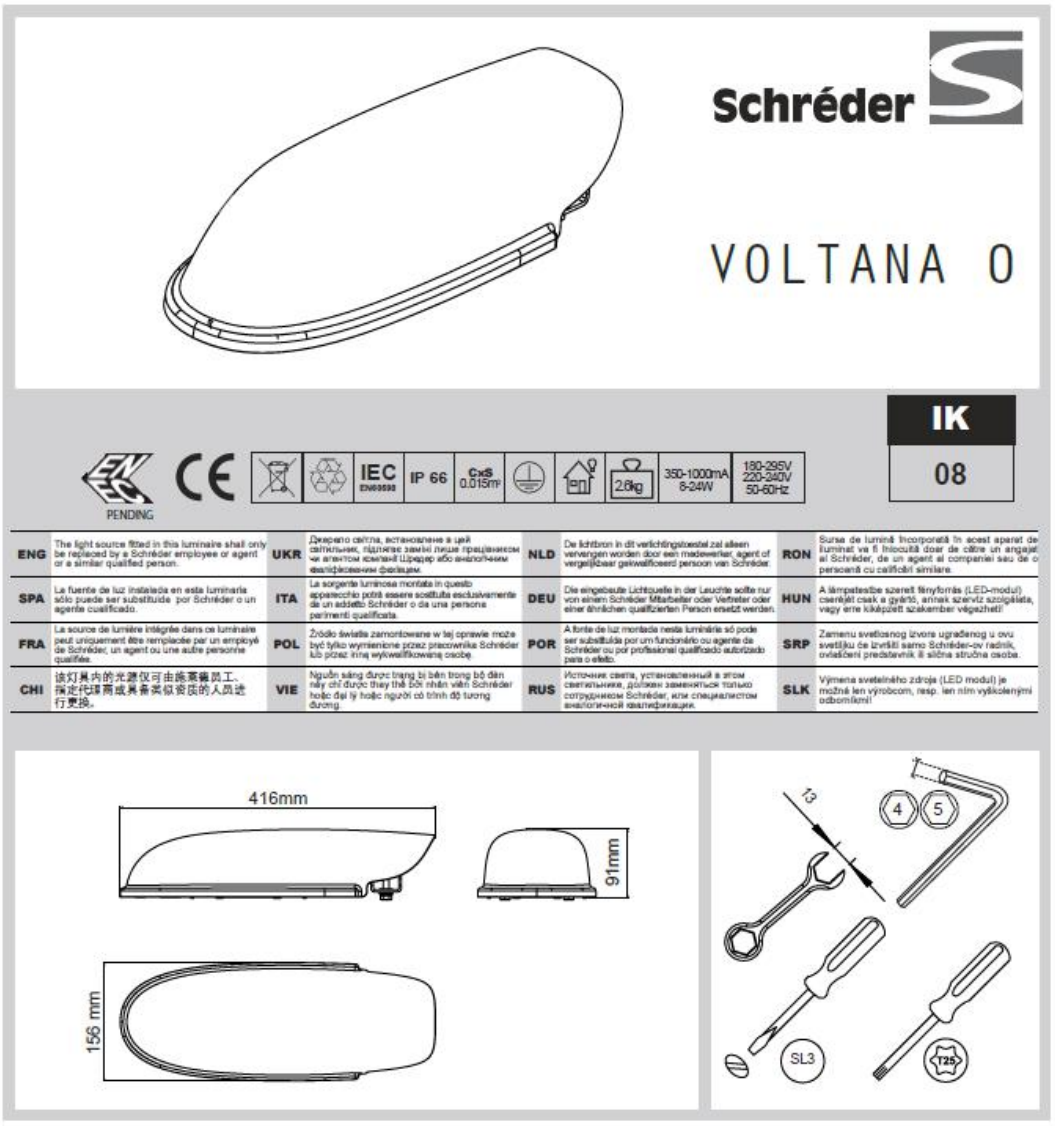
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples) .....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples) .....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples) .....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....:		N/A
(15.6)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

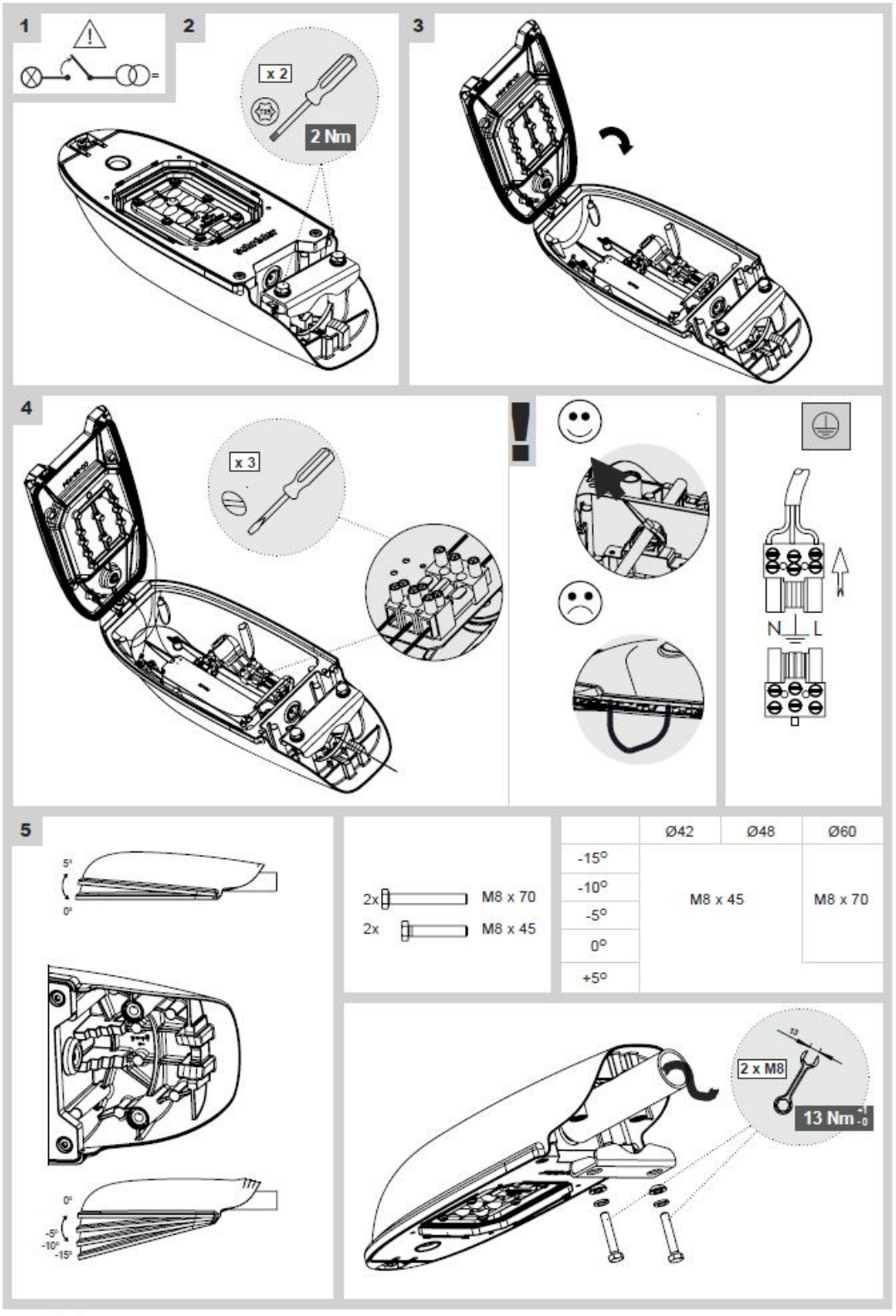
(15.6.3.1)	**TABLE: Contact resistance test**										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
Supplementary information:											

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

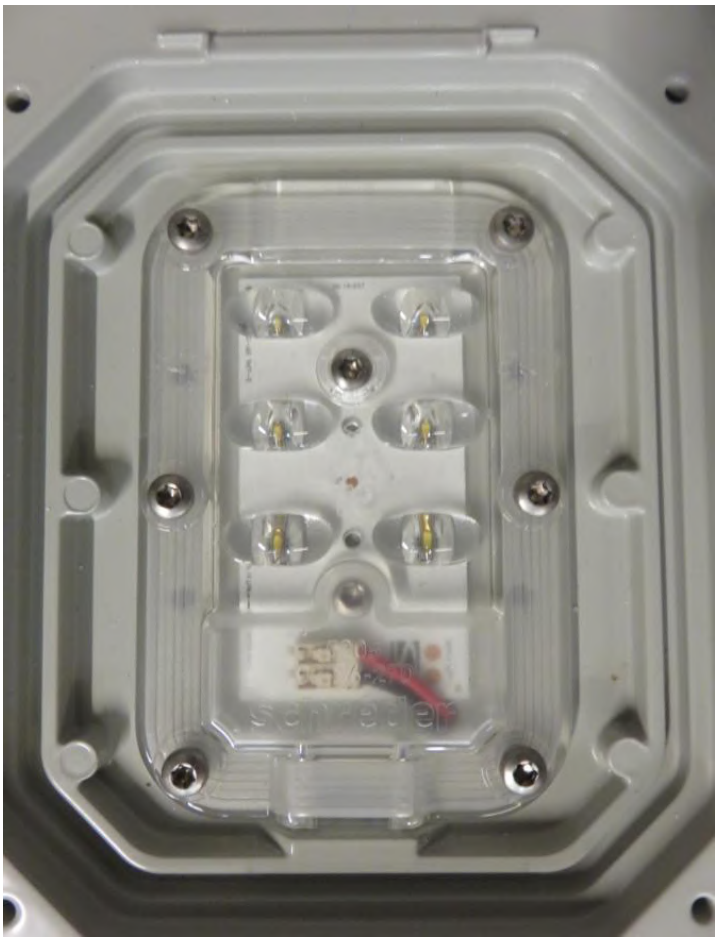
Installation notice and Pictures



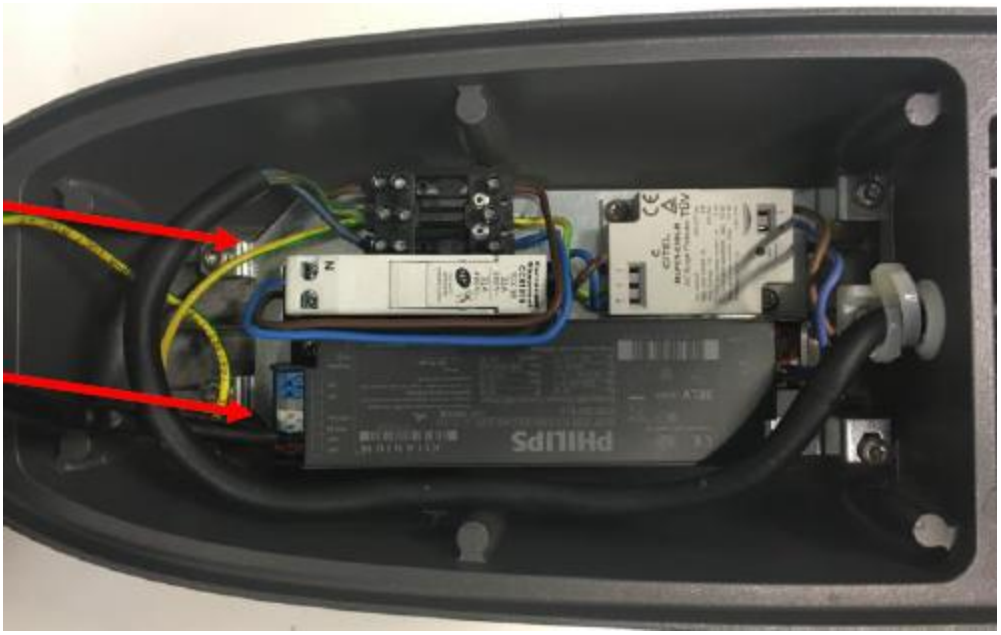
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



IEC60598_2_3K - ATTACHMENT			
Clause	Requirement – Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-3
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
LUMINAIRES
PART 2: PARTICULAR REQUIREMENTS
SECTION 3: LUMINAIRES FOR ROAD AND STREET LIGHTING

Differences according to ..... : EN 60598-2-3:2003 + A1:2011 used in conjunction with EN 60598-1:2015

Annex Form No. ..... : EU_GD_IEC60598_2_3K

Annex Form Originator ..... : IMQ S.p.A.

Master Annex Form..... : 2016-12

	CENELEC COMMON MODIFICATIONS (EN)		**P**

3.5 (3)	**MARKING**		**P**
3.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A

3.6 (4)	**CONSTRUCTION**		
3.6 (4.11.6)	Electro-mechanical contact systems		N/A

3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
3.10 (5.2.1)	Connecting leads		N/A
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
3.10 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A

3.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		
3.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		N/A

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A

IEC60598_2_3K - ATTACHMENT			
Clause	Requirement – Test	Result - Remark	Verdict
(5.2.1)	CY, DK, FI, GB: type of plug		
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
	GB: Requirements according to United Kingdom Building Regulation		N/A

14/05/2019

Schréder
Experts in lightability™

VOLTANA 0

5136

Optic	5136
Protector	Flat glass
Source	8 Samsung LH351C
Matrix	425502

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 familiy

- 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 Owlet 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
- Roundabout
- Residential road
- Urban road

Information for 1000 lm matrix

Efficacy (%)	86.5	**G Class (EN 13201-2)**	G3	**Aperture 90-270°**	30 - 13
DLOR (%)	86.5	**G* (EN 13201 2015)**	G*2	**I 70-80-90-95 (cd)**	550 - 98 - X - X
ULOR (%)	0.0	**Imax (cd)**	554	**CIE flux code N 1→5 (%)**	50.4 - 79.8 - 97.6 - 100.0 - 86.5
ULR (%)	0.0	**Aperture 0-180°**	77 - 77		

Photometrical characteristics

LED count	Colour code	Current (mA)	Luminaire power (W)	Source flux (lm)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Peak (cd)	BUG Rating	Voltage (V)
			Ambient temp = 25°						
8	NW 740	350	10	1520	1315	132	842	B1 U0 G0	230
8	NW 740	500	14	2096	1814	130	1161	B1 U0 G1	230
8	NW 740	700	19	2810	2432	128	1557	B1 U0 G1	230
8	NW 740	1000	28	3760	3254	116	2084	B1 U0 G1	230
8	NW 740	1050	29	3861	3341	115	2139	B1 U0 G1	230
8	NW 740	1250	37	4362	3775	102	2417	B1 U0 G1	230
8	WW 730	350	10	1440	1246	125	798	B1 U0 G0	230
8	WW 730	500	14	1986	1718	123	1100	B1 U0 G1	230
8	WW 730	700	19	2663	2304	121	1475	B1 U0 G1	230
8	WW 730	1000	28	3563	3083	110	1974	B1 U0 G1	230
8	WW 730	1050	29	3658	3165	109	2027	B1 U0 G1	230
8	WW 730	1250	37	4133	3576	97	2290	B1 U0 G1	230

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

Summary

CONCEPT

Family of 6 road LED luminaires

Recommended installlation height: between 4.00 and 12.00m

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

HOUSING & FINISH

- Housing in high-pressure, die-cast aluminium, polyester powder coated
- Colour: RAL 7038

INSTALLATION

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

OPTICAL UNIT

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

LED lumen depreciation

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

ELECTRICAL

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

STANDARDS & CERTIFICATIONS

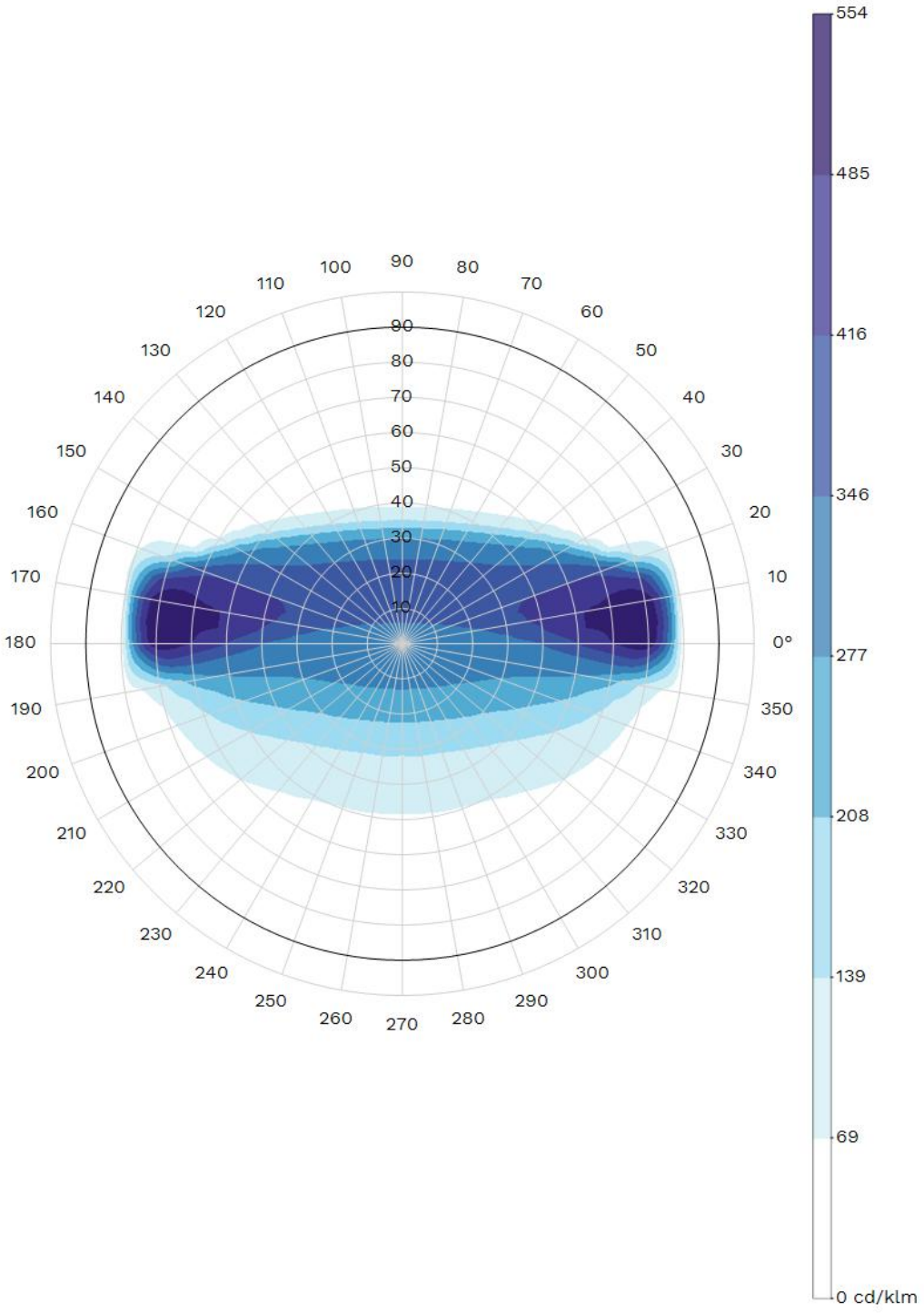
- CE
- ENEC
- LM79-80
- ROHS
- Certified for 3G vibration
- All measurements in ISO17025 accredited laboratory

OPTIONS

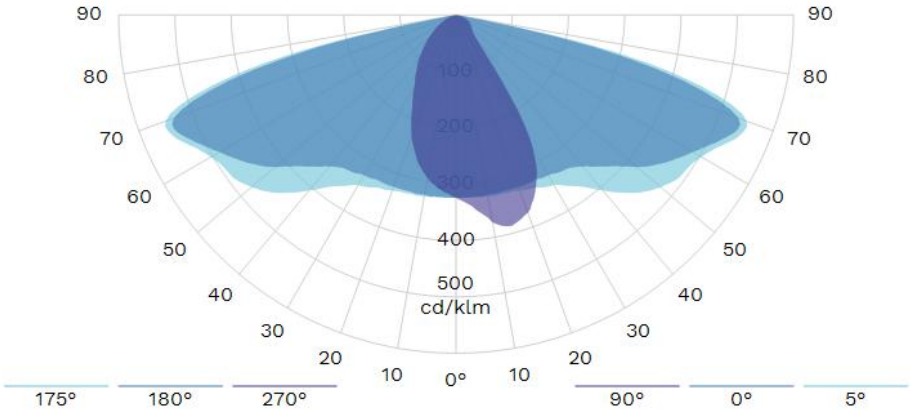
- Other RAL or AKZO colours
- Back Light control system
- OWLET remote management
- Custom dimming profile

- Photocell

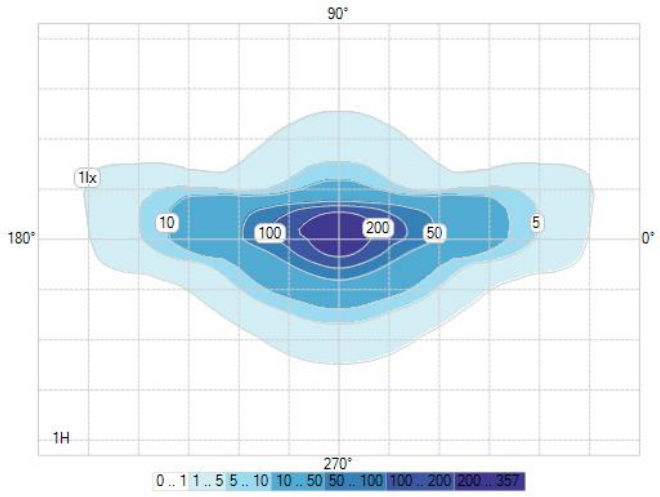
Hypergon view



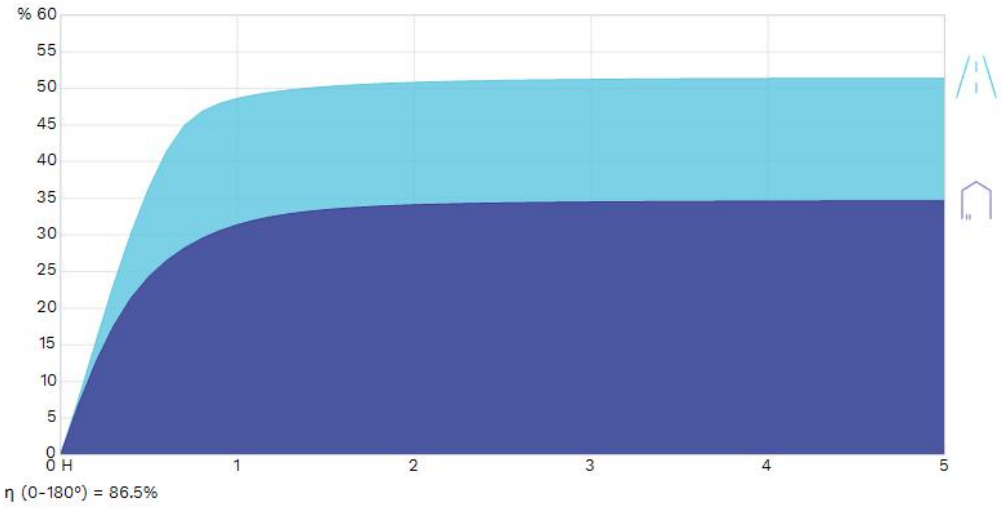
Polar/Cartesian diagram



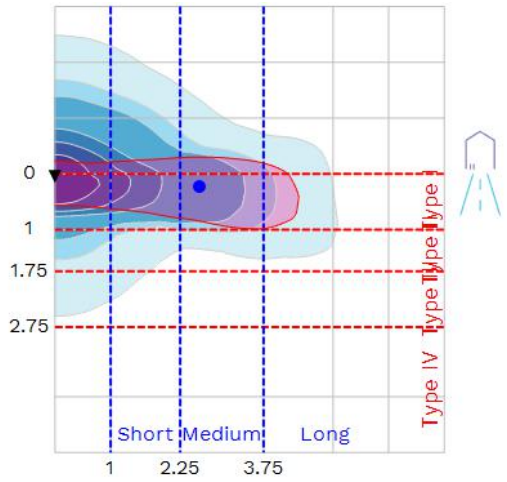
Isolux



K-Curve

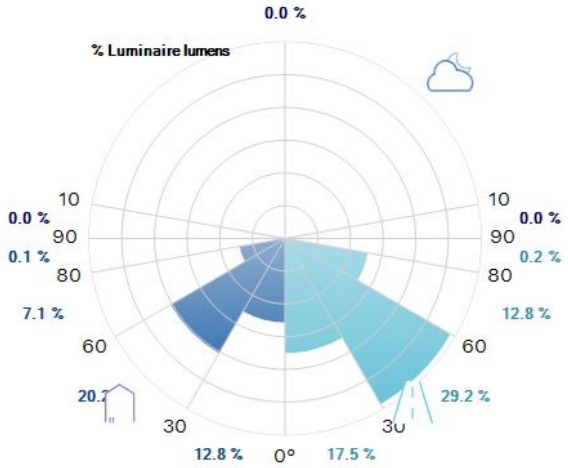


IES Roadway Classification / Nema Classification

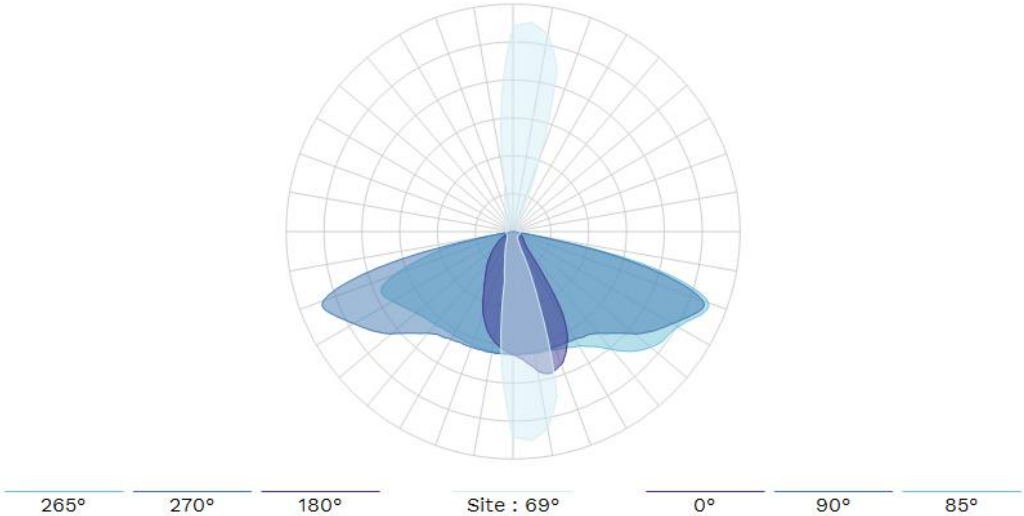


I - Medium

Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



http://www.schreder.com

VOLTANA

ILUMINAT CU LEDURI, POTRIVIT ORICUI

LED

owlet

Lenso Flex 2

EFICIENTIZAREA COSTURILOR

PERFORMANȚĂ RIDICATĂ

BENEFICII REMARCABILE

NU NECESITĂ ÎNTREȚINERE

Schréder

VOLTANA

CEA MAI NOUĂ, RENTABILĂ ŞI PERFORMANTĂ GAMĂ DE APARATE DE ILUMINAT, CARE ÎŞI ACOPERĂ INVESTIȚIA ÎN TIMP

POSIBILITATEA 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 şi îmbunătățesc nivelul de iluminat.

INVESTIȚII MINIME

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

VOLTANA **0** VOLTANA **1** VOLTANA **2** VOLTANA **3** VOLTANA **4** VOLTANA **5**

ZONE PIETONALE

Străzi, alei şi piste \de biciclete

STRADAL

Străzi rezidențiale

Spații comune, zone comerciale din mediul urban

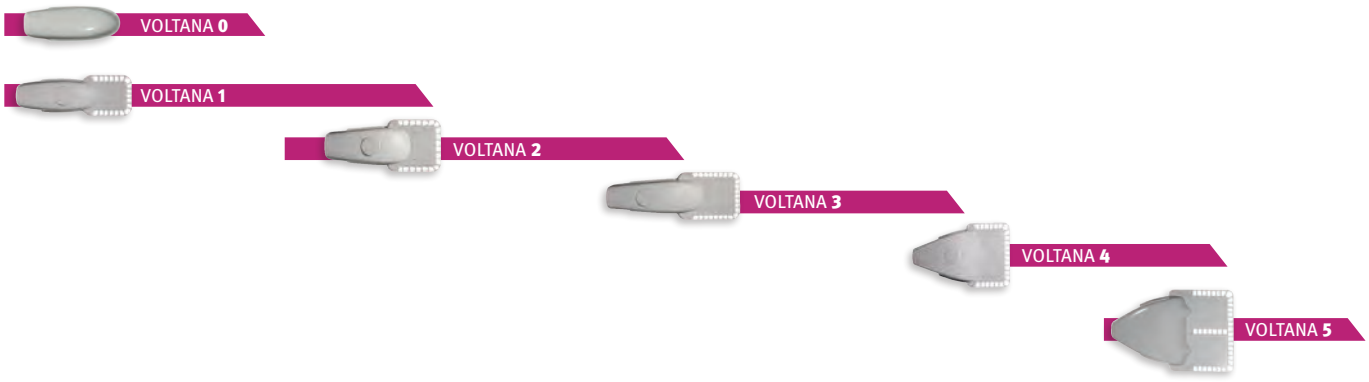
CĂI DE CIRCULAȚIE

Căi de circulație din mediul rural

Căi de circulație din mediul urban

substitut HID

20/50W	70W	100W	150W	250W



ALTE MEDII ÎN CARE VOLTANA OFERĂ BENEFICII-CHEIE PENTRU CLIENT


FACILITĂȚI DE TRANSPORT


ZONE INDUSTRIALE


ZONE COMERCIALE


FACILITĂȚI SPORTIVE

PERFORMANT

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

› Sistem cu **eficienţă 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:

› **Distribuţii luminoase adaptate** atât pentru zonele şi căile de circulație foarte înguste, cât şi pentru cele foarte largi
› Numeroase **variante de intensitate luminoasă,** mulțumită celor 6 dimensiuni disponibile şi numeroşilor curenți conductori
› Numeroase **opțiuni de control**
› Proiectat atât pentru montaj lateral, cât şi 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 creşte durata de viață a componentelor
› **Protecție termică integrată,** cu facilități de reducere a fluxului, în caz de supraîncălzire
› **Protecţie la supratensiuni** (4kV standard, 10 kV opțional) pentru a proteja aparatul de iluminat de vârfurile de tensiune
› **Nivelul ridicat de etanşeitate** (IP 66) previne distrugerea componentelor & pierderea performanței
› **Materiale robuste** - aluminiu, oțel galvanizat şi sticlă securizată, pentru un nivel ridicat de rezistență la impact (IK 08)
› **Certificat pentru vibraţii 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 ŞI 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** (aluminiu, oțel şi sticlă)
› **Profil destinat protejării mediului** (PEP) pentru scăderea amprentei ecologice
› **Emisii de CO_2 reduse** (economie şi 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 şi pentru conducătorii auto
› Opțional, iluminat la cerere, pentru a oferi lumină atunci când şi acolo unde este cu adevărat necesară
› **Mai puține interferențe în trafic**, datorită faptului că nu este necesară întreținerea şi datorită posibilității de monitorizare
› Contribuie la **administrarea eficientă a finanțelor** şi 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
› **Uşor 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 ŞI PENTRU **ÎMBUNĂTĂȚIREA MANAGEMENTULUI OPERAȚIONAL**

› Disponibil cu profil **DALI** 1-10 V sau **profil de reducere** personalizat
› **Flux Luminos Constant** (CLO), pentru compensarea automată a deprecierii fluxului
› Poate funcționa într-o **rețea independentă** limitată sau în **rețeaua unui oraş**, 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

* indisponibil pentru Voltana 0

CARACTERISTICI - CHEIE

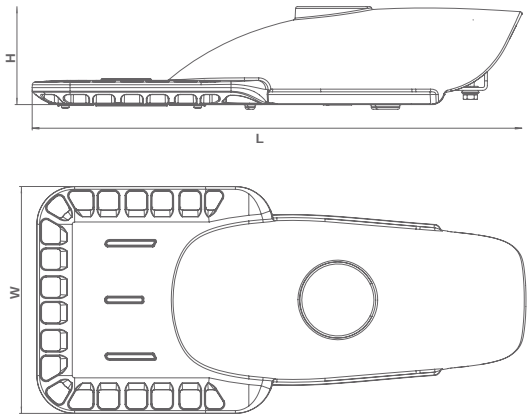
	Voltana 0	Voltana 1	Voltana 2	Voltana 3	Voltana 4	Voltana 5
Flux luminos standard (gamă) (*)	700 - 2,500lm	800 - 3,000lm	1,800 - 6,100lm	2,700 - 9,200lm	3,700 - 12,700lm	7,500 - 25,200lm
Consum de energie (W) (*)	8 - 30W	10 - 31W	20 - 56W	28 - 82W	36 - 110W	70 - 215W
Flux rezidual pe durata de viață @ tq 25°C	@100,000h Curent până la 700mA: up to 95% | Curent de la 701mA până la 1A: până la 90%					
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 (policarbonat pentru unele variante ale Voltana o)					
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

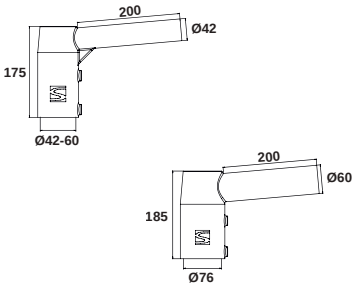
(**) conform standardului IEC - EN 60598 (doar Voltana o este disponibil cu Clasa I) – (***) conform standardului IEC - EN 62262

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

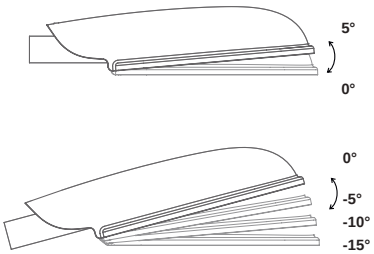


ADAPTOR VÂRF DE STÂLP

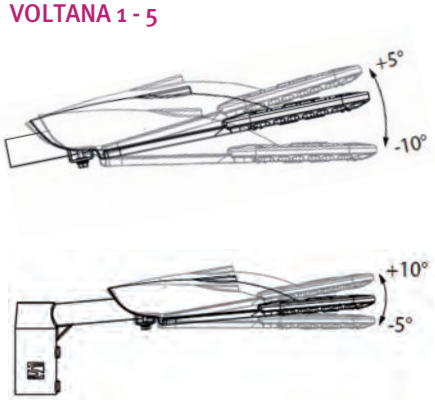


REGLAJE UNGHI ÎNCLINARE

VOLTANA o

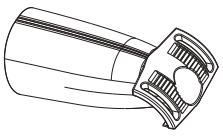


VOLTANA 1 - 5



MONTAJ UNIVERSAL

(OPȚIONAL PENTRU VOLTANA 0-1-2-3-4)



Ø 32 - 48mm

Ø 42 - 60mm

Ø 76mm

ÎNLOCUIȚI-VĂ ACTUALUL SISTEM DE ILUMINAT ŞI 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 creşte semnificativ economiile de energie, oferind, în acelaşi timp, siguranță şi confort pentru toți utilizatorii şi îmbunătățind managementul operațional al întregului sistem.

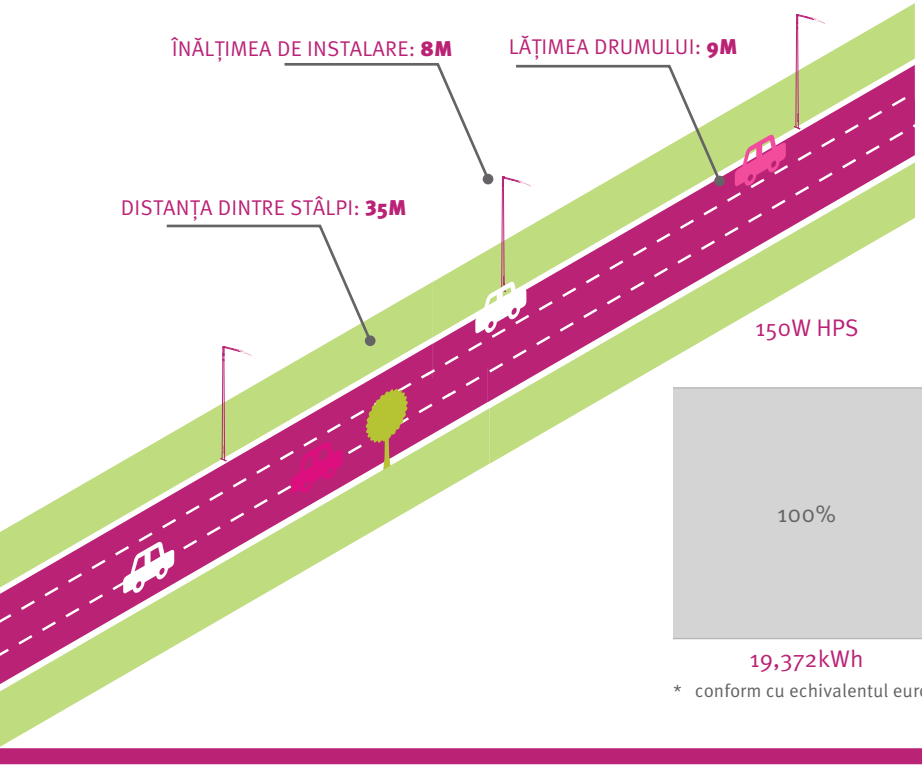
zone pietonale P5-P2		zone pietonale P1		căi de circulație clasificate M6-M5		căi de circulație clasificate M4		căi de circulație clasificate M3		căi de circulație clasificate M2	
aparat HPS 70W	Voltana 1	aparat HPS 100W	Voltana 2	aparat HPS 100W	Voltana 2	aparat HPS 150W	Voltana 3	aparat HPS 150W	Voltana 4	aparat HPS 250W	Voltana 5
78W(*)	economii de 67% / 26W(*)	110W(*)	economii de 56% / 48W(*)	110W(*)	economii de 56% / 48W(*)	167W(*)	economii de 58% / 70W(*)	167W(*)	economii de 45% / 92W(*)	280W(*)	economii de 35% / 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 şi economii de energie de pană la 79%.



ONSUM ANUAL DE CURENT PENTRU UN KILOMETRU (4.000 ORE/AN)

150W HPS	Voltana 3 24 LEDuri 1A	Voltana 3 24 LEDS 1A + dimming
100%	economii la energie de 58% (sau poluare cu 5.17t eq CO2 mai puțin pe an*) / 42%	economii la energie de 79% (sau poluare cu 7.02t eq CO2 mai puțin pe an*) / 21%
19,372kWh	8,120kWh	4,100kWh

* conform cu echivalentul european de 0.46kg eq Co2/kWh

SIGURANȚĂ

STARE DE BINE

DEZVOLTARE DURABILĂ

ECONOMII

SOLUȚII

Schréder

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16/05/2019

Lumen maintenance report

LED information

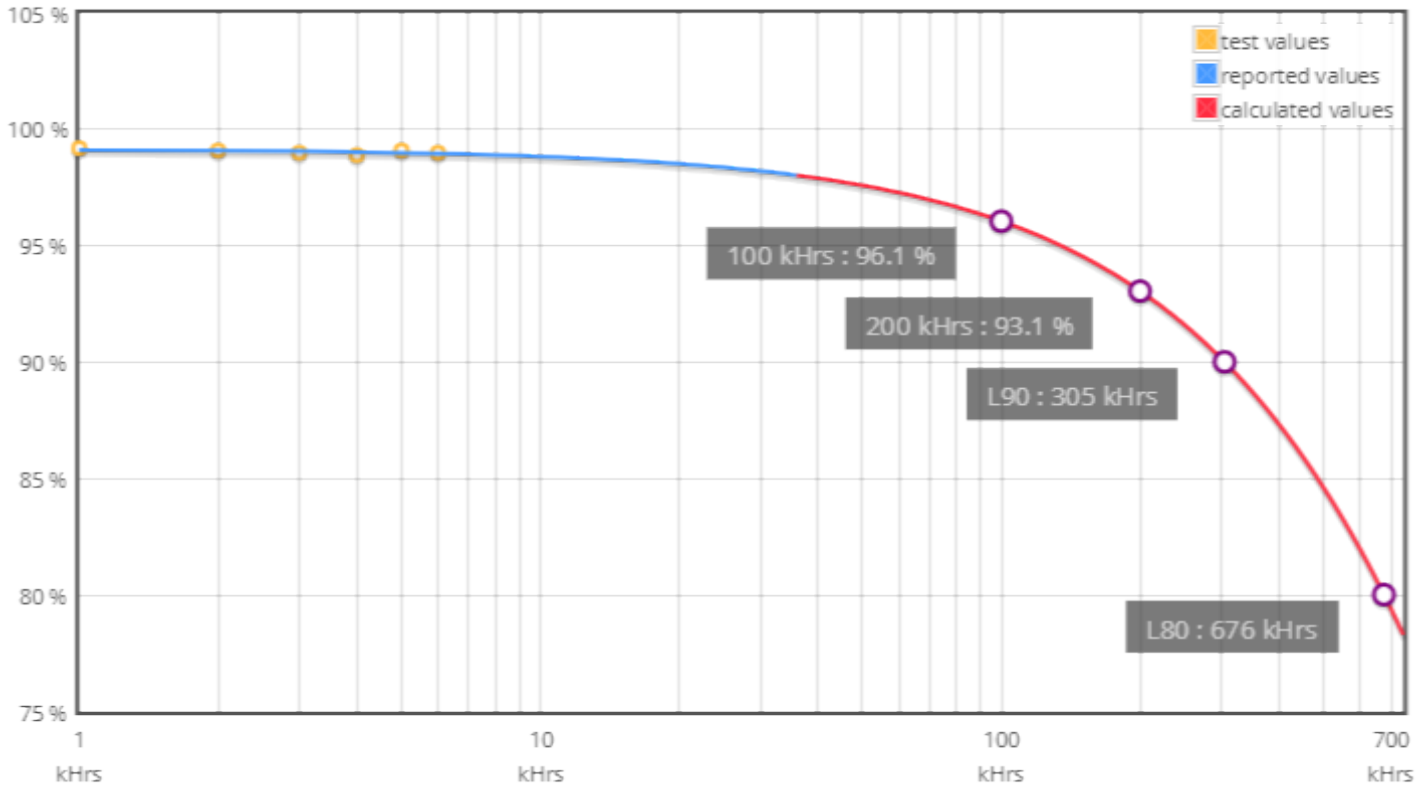
LED type	LH351C
LED current	700 mA
Ts	55°C
Description	SLED-18-015

Projection data

Test duration	6000 hrs	**α**	3.172E-007
Time used for projection	1000 to 6000hrs	**β**	0.992

L (%)	Time (kHrs)
80.0	677
90.0	305
93.1	200
96.1	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.

16/05/2019

Lumen maintenance report

LED information

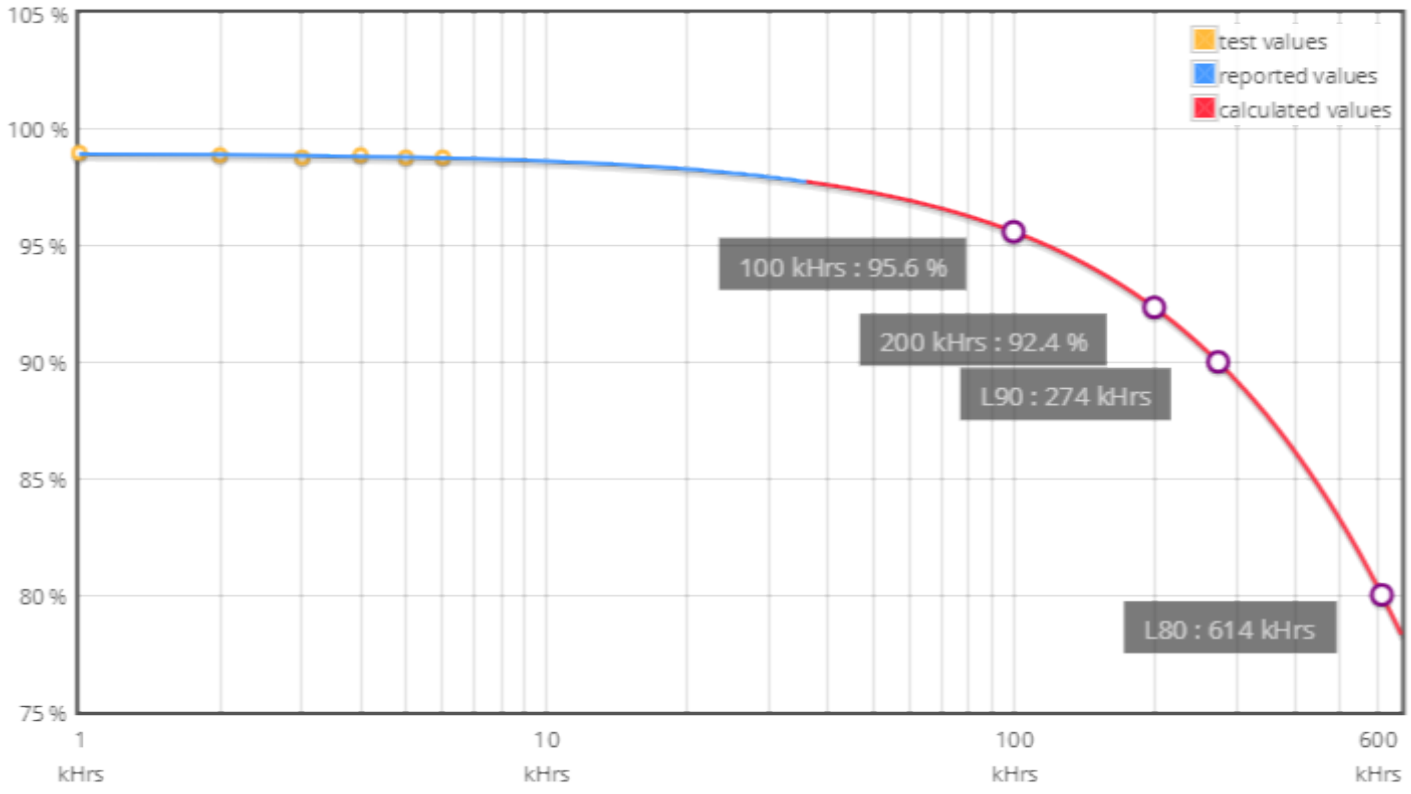
LED type	LH351C
LED current	700 mA
Ts	105°C
Description	SLED-18-015

Projection data

Test duration	6000 hrs	**α**	7.237E-007
Time used for projection	1000 to 6000hrs	**β**	0.989

L (%)	Time (kHrs)
80.0	293
85.6	200
90.0	130
92.0	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.

ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE
ORGANISM INDEPENDENT PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
SOCIETATE CU RĂSPUNDERE LIMITATĂ
SPLAIUL UNIRII Nr. 313, CORP M-1, D3-14, 030138, BUCUREŞTI, ROMÂNIA,
J40/3946/2009; Tel. : +40 21 589 33 05 Tel/Fax : +40 21 346 49 35; http://www.oicpe.ro
LICPE

LABORATORUL DE ÎNCERCĂRI PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
Testing Laboratory for Electrical Products Certification

RAPORT DE ÎNCERCĂRI

TEST REPORT

Nr. 98 / 20.03.2019
Pag. 1 / 6

Exemplar nr. 1 din 2

ÎNCERCAREA SOLICITATĂ Required Test	**Verificarea gradului de protecţie asigurat prin carcase împotriva impacturilor mecanice din exterior – IK10 conform SR EN 62262:2004, cap. 5, cap. 6 şi cap. 7**
PRODUSUL Equipment	**CORP DE ILUMINAT CU LED-uri tip VOLTANA2 16L – Cod VOLTA2-000037**
PRODUCĂTOR Manufacturer	**TUNGSRAM-Schréder Zrt., Ungaria**
CLIENT (nume, adresă, cerere) Customer (name, address, order)	**SCHRÉDER ROMANIA S.R.L** **Cluj-Napoca / 400228, Str. Corneliu Coposu, Nr. 167A** **Cerere nr. 76/08.03.2019**
MANAGER LABORATOR Laboratory Manager	**Ing. Niculae LICSANDRU**
DIRECTOR TEHNIC OICPE OICPE Technical Director	**Ing. Dragoş ROSMETENIUC**

ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY · OICPE · SOCIETATE CU RĂSPUNDERE LIMITATĂ

DATELE TEHNICE ALE PRODUSULUI:

CORP DE ILUMINAT CU LED-uri tip VOLTANA2 16L – Cod VOLTA2-000037

- Tensiune nominală	: 230 V~
- Frecvenţa nominală	: 50 Hz
- Putere consumată	: 56 W
- Sursa alimentare	: model
- Factor de putere	: > 0,97
- Sursă de lumină	: 1 modul LED cu 16 LED-uri : 2 module a câte 8 lentile tip 5136 – PMMA (producător Schréder)
- Grad protecție	: IP 66
- Rezistenţa la impact	: IK10
- Temperatura ambiantă maximă nominală (t_a)	: + 55 ^{0}C
- Clasa de protecţie	: I
- Dispersor carcasă	: sticlă securizată tratată termic cu grosimea de 5mm
- Carcasă	: Aluminiu turnat sub presiune
- Masă	: 4,56 kg
- Dimensiuni de gabarit	: [518 x 240 x 109] mm
- Înălțimea de montare	: 4 - 12 m
- Utilizare	: Iluminat public (zone pietonale, străzi rezidențiale, zone comune, străzi comerciale în zonele urbane)

Lot / Serie / An fabricație	: ..... / 2019
Felul produsului	: serie curentă
Data primirii produsului	: 28.03.2019
Perioada încercărilor	: 28.03.2018
Modul de prelevare:	: conform procedurii PG-11, OICPE
Număr de produse încercate	: 1 bucată

Responsabil de încercări	**Ing. Daniel DRAGNEA**	

OPINII ŞI INTERPRETĂRI:

Rezultatele încercării pentru verificarea rezistenței la impact mecanic exterior IK10, din prezentul Raport de Încercări, atestă conformitatea produsului „CORP DE ILUMINAT CU LED-uri tip VOLTANA2-16L – Cod VOLTA2-000037 " cu cerinţele cap. 5; 6 și 7 din SR EN 62262:2004.

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei
	GRAD DE PROTECŢIE ÎMPOTRIVA IMPACTURILOR MECANICE		
5	**PRESCRIPŢII GENERALE PENTRU ÎNCERCĂRI**		
5.1	**Condiţii atmosferice pentru încercări**		
	Dacă nu este specificat altfel în standardul particular de produs, încercările trebuie efectuate în condiţii atmosferice standard pentru încercările definite în CEI 60068-1: - domeniul de temperaturi: de la 15 °C până la 35 °C; - presiune atmosferică: de la 86 kPa până la 106 kPa (de la 860 mbar până la 1060 mbar)	 Măsurat : 16,5 °C Măsurat : 962 mbar	 P P
5.2	**Carcase supuse încercării**		
	Fiecare carcasă supusă încercării trebuie să fie curată şi în stare nouă, completă şi cu toate părţile la locul lor, dacă nu este prevăzut altfel în standardul particular de produs.	1 bucată CORP DE ILUMINAT CU LED-uri VOLTANA2 16L – Cod VOLTA2-000037, curat și în stare nouă complet și cu toate părţile la locul lor.	P
5.3	**Prevederi indicate în standardul particular de produs**		
	Standardul particular de produs trebuie să prevadă: - defiţia pentru «carcasă» aşa cum se aplică la tipul particular de echipament; - mijlocul de încercare (de exemplu ciocanul pendular, ciocanul cu resort sau ciocanul vertical, a se vedea articolul 7); - numărul de eşantioane supuse la încercări; - condiţiile de montaj, asamblarea şi poziţionarea eşantioanelor, de exemplu prin utilizarea unei suprafeţe artificiale (tavan, podea sau perete) cu scopul de a simula condiţiile destinate de serviciu, atât cât este posibil; - precondiţionarea care trebuie utilizată, dacă se aplică; - dacă încercarea se efectuează sub tensiune; - dacă încercarea se efectuează cu părţile mobile în mişcare; - numărul de impacturi şi punctele lor de aplicare (a se vedea 6.4). În absenţa unor astfel de precizări în standardul particular de produs, trebuie aplicate condiţiile din acest standard.	Standardul particular de produs SR EN 60598-2-3:2004 + A1:2012 + AC:2015 prevede condiţiile în care trebuie să se realizeaze verificarea gradului de protecţie la impacturi mecanice. N = 1 (un) impact S-au aplicat condiţiile din standardul SR EN 60598-2-3:2004 + A1:2012 + AC:2015 art. 3.6.5.2.1 referitor la numărul de impacturi.	P P P
6	**ÎNCERCĂRI PENTRU VERIFICAREA PROTECŢIEI ÎMPOTRIVA IMPACTURILOR MECANICE**		
6.1	Încercarea specificată în acest standard este încercare de tip.	Încercare de tip IK 10	P
6.2	Verificarea protecţiei împotriva impacturilor mecanice se efectuează prin aplicarea de lovituri carcasei de încercat. Articolul 7 descrie dispozitivele care se utilizează pentru această încercare.	A se vedea articolul 7 din prezentul RI	P
6.3	În timpul încercării, carcasa trebuie montată pe un suport rigid şi în conformitate cu instrucţiunile de utilizare ale fabricantului. Se consideră că un suport este suficient de rigid dacă deplasarea sa este mai mică sau cel mult egală cu 0,1 mm sub efectul unei lovituri aplicate direct şi a cărei	Corp de iluminat cu LED-uri VOLTANA 2 – 16L – Cod VOLTA2-000037 montat pe suport rigid.	P

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei
	energie corespunde gradului de protecție. Pot fi specificate montaje și suporturi alternative în standardul particular de produs, adecvate produsului.		
6.4	Numărul de impacturi (lovituri) trebuie să fie de cinci pe fiecare față expusă, dacă nu este specificat altfel în standardul particular de produs. Loviturile trebuie distribuite normal pe fețele carcasei (sau carcaselor) de încercat. În niciun caz nu trebuie aplicate mai mult de trei lovituri în jurul aceluiași punct al carcasei. Standardul particular de produs trebuie să specifice punctele pentru aplicarea loviturilor.	Corpul de iluminat VOLTANA 2-16L – Cod VOLTA2-000037 a fost pregătit pentru încercarea la impact mecanic. Numărul de impacturi aplicate - 1 impact în zona centrală a dispersorului conform SR EN 60598-2-3:2004 + A1:2012 + AC:2015 art. 3.6.5.2.1 (Vezi Fig. 1 și Fig. 2 din Anexă).	P
6.5	**Evaluarea încercării**		
	Standardul particular de produs trebuie să specifice criteriile pe care se bazează acceptarea sau respingerea carcasei, și în particular: - deteriorările admise; - criteriul de verificare privind menținerea securității și siguranței echipamentului.	Dispersorul carcasei din sticlă securizată tratată termic a rezistat la impactul central aplicat - IK 10 (Vezi Fig. 3 - Anexă)	P
7	**APARATE DE ÎNCERCARE**		
	Încercările trebuie realizate prin utilizarea unia din aparatele de încercare descrise în CEI 60068-2-75. Standardele particulare de produs trebuie să specifice tipurile de aparate de încercare care sunt adecvate.	Produsul a fost încercat conform testului Ehc: Ciocan vertical, descris în SR EN 60068-2-75:2015 Pentru IK 10: - Dispozitivul corespunde cu figura A.3 din SR EN 60068-2-75:2015 - Greutate ciocan: 5 kg - Înălțime: 400 mm. - Energie de impact: 20 J	P

Mod de îndeplinire a cerinţei:

P - Cerinta este îndeplinită
NP - Cerinta nu este îndeplinită
NA - Cerinta nu este aplicabilă acestui tip de produs

INCERTITUDINI DE MĂSURARE

Denumire încercare (Punct RI)	Mărimea măsurată/ calculată	Aparat de măsură /tip/serie sau inventar	Certificat de etalonare/emitent	Incertitudinea extinsă [U]	Factor de extindere [k]
Impact mecanic (cod IK) 5, 6 și 7	Masă	Aparat de cântărit cu funcționare neautomată/R1/ CAS Tip EP-10 Seria 96070397	CE460/2017/ IPROEB Bistrița (LE 018)	2,9 g	2
	Dimensiuni	Ruletă de măsurare S3489 A34W	01.01-911/2017/ INM (CIPM MRA)	0,22 mm	2
	Temperatură/ umiditate	Higrometru electronic cu traductor electrochimic seria 41843	2224/ 2017 METROMAT Braşov (LE 008)	0,5 °C/ 2,6 % rH	2

Incertitudinea atribuită este incertitudinea extinsă obţinută prin multiplicarea incertitudinii standard cu factorul de extindere k = 2, şi a fost estimate în conformitate cu SR Ghid ISO/CEI 98-3:2010. Valoarea măsurandului se află în intervalul de valori desemnat cu o probabilitate de 95,45 %.

Articol din DN	Cerinţă conform SR EN 62262:2004	Rezultate	Mod de îndeplinire a cerinţei

ANEXĂ

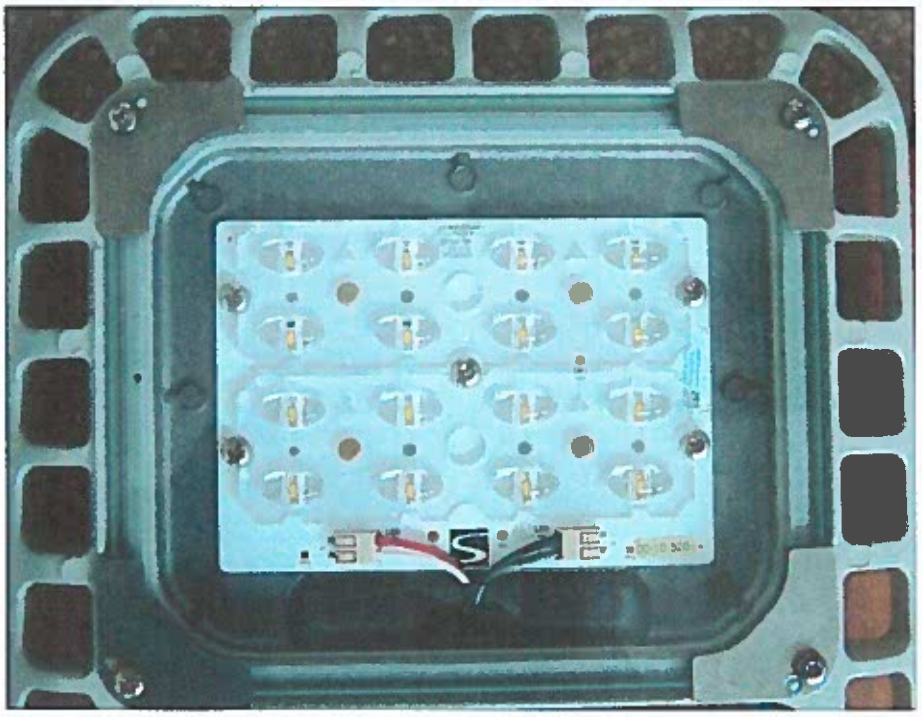


Fig. 1 – Corpul de iluminat VOLTANA2 16L – Cod VOLTA2-000037 înainte de verificarea la impact (IK 10)

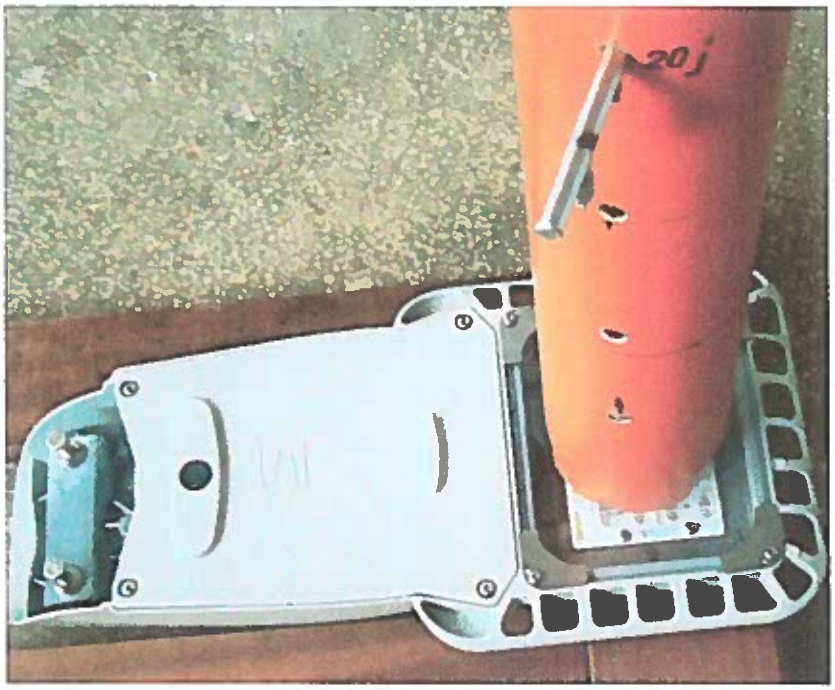


Fig. 2 – Corpul de iluminat VOLTANA2 16L – Cod VOLTA2-000037 pregătit pentru verificarea impact (IK 10)

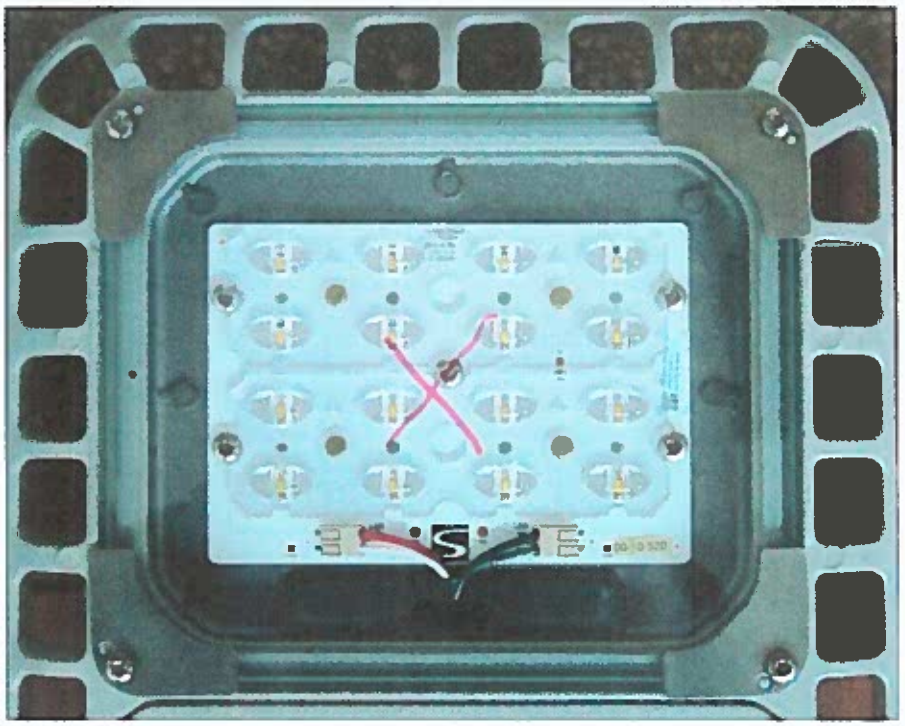


Fig. 3 – Corpul de iluminat VOLTANA2 16L – Cod VOLTA2-000037 după verificarea la impact (IK 10) – dispersorul din sticlă securizată tratată termic a rezistat la impactul mecanic

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 Schréder 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

Traducere din limba engleză

Laborator teste
RAPORT DE TEST FIZIC

R-Tech
Rue de Mons 3 - B-4000 Liège - Belgia
Tel. :+32 4 224 71 40 - Fax :+32 4 224 25 90
Membră a Schréder Group

Subiect: **VOLTANA- 2 16 Led @ 1A**
Eşantion nr:

Scopul testului: **Test nivel etanşeitate IP66 conform standardului IEC/EN 60598-1**

Observaţii:
Cerere de efectuare test nr.: P-D14696
Dosar nr.: P-F14058

CERINŢELE TESTULUI:

Operator: BOMBIL Patrick

Pregătire: test de rezistenţă

Test	Rezultat
IP6X : -Aparatul de iluminat pornit până la T° stabilă -Talc în suspensie (suflantă pornită) -După 1', aparatul este închis -Talc 3 ore	VALIDAT.
IPX6 : -Aparatul de iluminat pornit până la T° stabilă -Aparatul de iluminat închis şi pus imediat sub jet de apă -Φ furtun 12,5 mm -Presiunea apei: 1 kg/cm2 -Distanţa de pulverizare: 3 m -Durata testului: 3 minute	VALIDAT

CONCLUZII:

VOLTANA-2 16 Led @ 1A a trecut testul IP66 conform Standard IEC/EN 60598-1.

Duplicat pentru: M. Thijs
LAB 23.09.2014
J.P. Harchies
(Semnătură indescifrabilă)

//P-14E696

Ref. Certif. No.
BE-7919

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Street lighting
Name and address of the applicant	R-Tech rue de Mons, 3 4000 LIEGE Belgium
Name and address of the manufacturer	Schreder S.A. rue de Lusambo, 67 1190 BRUXELLES Belgium
Name and address of the factory Note: *When more than one factory, please report on page 2*	☒ Additional information on page 2 Schréder do Brasil Iluminação Ltda. Rua Iracema Lucas, 415 Distrito Industrial Vinhedo 13280-000 SAO PAULO Brazil
Ratings and principal characteristics	120-240 V, 50-60 Hz, 350, 500, 700, 1000 mA (LED), class II, IP66, IK08 VOLTANA 1 : 8 LED's, ta : max. 55°C VOLTANA 2 : 16 LED's, ta : max. 55°C VOLTANA 3 : 24 LED's, ta : max. 55°C VOLTANA 4 : 32 LED's, ta : max. 55°C VOLTANA 5 : 64 LED's, ta : max. 55°C
Trademark (if any)	SCHREDER
Customer's Testing Facility (CTF) Stage used	CTF Stage 2
Model / Type Ref.	VOLTANA 1, VOLTANA 2, VOLTANA 3, VOLTANA 4, VOLTANA 5
Additional information (if necessary may also be reported on page 2)	☐ Additional information on page 2 /
A sample of the product was tested and found to be in conformity with	IEC 60598-1:2014, IEC 60598-2-3:2002, IEC 60598-2-3:2002/AMD1:2011 National differences: EU Group Differences
As shown in the Test Report Ref. No. which forms part of this Certificate	P1540-44-IIb

This CB Test Certificate is issued by the National Certification Body

SGS Belgium N.V. - Division SGS-CEBEC
Business Riverside Park, Avenue Internationalelaan 55 Build. D, BE-1070 BRUSSEL,
Belgium

Date: 2017-10-09

Signature: Calogero Lana

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

Additional factory

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
China

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

Schréder Iluminação S.A.
Rua da Fraternidade Operária, n° 3
2795-491 CARNAXIDE, OEIRAS
Portugal

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

Tungsram-Schréder Világitási Berendezések Zrt
Tópart 2
2084 PILISSZENTIVAN
Hungary

This CB Test Certificate is issued by the National Certification Body

SGS Belgium N.V. - Division SGS-CEBEC
Business Riverside Park, Avenue Internationalelaan 55 Build. D, BE-1070 BRUSSEL,
Belgium

Date: 2017-10-09

Signature: Calogero Lana

LICENCE

No. 20504 replaces No.20459

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: 13/10/2017

ir. C. Lana,
Certification Manager

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

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 II
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

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

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 618719/13.

Remarks

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

Conclusion

The examination proved that all test requirements were met.

Checked by, project leader : Christian Maes - 13/10/2017

Department Manager, Product Certification :

Certification Manager : 2017-10-13

FACTORY LOCATION(S)

Schréder 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

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

Schréder Iluminação S.A.
Rua da Fraternidade Operária, n° 3
2795-491 CARNAXIDE, OEIRAS
Portugal

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

Tungsram-Schréder Világitási Berendezések Zrt
Tópart 2
2084 PILISSZENTIVAN
Hungary

Test Report issued under the responsibility of:

TEST REPORT
IEC 60598-2-3
Luminaires
Part 2: Particular requirements
Section 3: Luminaires for road and street lighting

Report Number. .....:	**P1540-44-IIb**
Date of issue .....:	**2017-10-09**
Total number of pages.....	**49+2**
Name of Testing Laboratory preparing the Report.....:	**SGS BELGIUM division SGS CEBEC**
Applicant's name.....:	**R-TECH**
Address .....:	Rue de Mons, 3,B-4000 LIEGE
Test specification:	
Standard .....:	IEC 60598-2-3:2002 (Third Edition) + A1:2011 used in conjunction with IEC 60598-1:2014 (Eighth Edition)
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC60598_2_3J
Test Report Form(s) Originator.....:	Intertek Semko AB
Master TRF.....:	2014-09

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description	Street lighting
Trade Mark	SCHREDER
Manufacturer.....	SCHREDER
Model/Type reference.....	VOLTANA 1, VOLTANA 2, VOLTANA 3, VOLTANA 4 & VOLTANA 5.
Ratings	120-240 V, 50-60 Hz, Cl. II , IP66, LED, IK08 Version with 64, 32, 24, 16, 8 led's Led: 350-500-700-1000 mA

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☐	**CB Testing Laboratory:**		
Testing location/ address.....:			
☐	**Associated CB Testing Laboratory:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: TMP/CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: WMT/CTF Stage 2:**		
Testing location/ address.....:		R-TECH, Rue de Mons, 3,B-4000 LIEGE	
Tested by (name + signature) .....:		Marc Abry	
Witnessed by (name, function, signature) .:		Christian Maes	
Approved by (name, function, signature)...:		Laurent Maghe	
☒	**Testing procedure: SMT/CTF Stage 3 or 4:**	R-Tech	
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):
Report integrated ledmodule
EU deviations
Pictures
Instructions

Summary of testing: full test

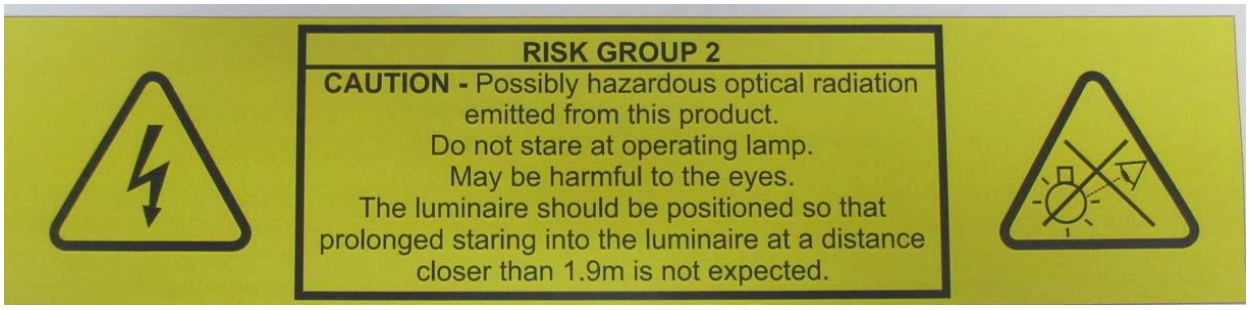
Tests performed (name of test and test clause):	**Testing location:**
IEC 60598-2-3:2002 (Third Edition) + A1:2011 used in conjunction with IEC 60598-1:2014 (Eighth Edition)	R-tech sa Rue de Mons, 3 B-4000 LIEGE Belgium.

Summary of compliance with National Differences: Europe
List of countries addressed

☒ **The product fulfils the requirements of**
IEC 60598-2-3: 2002 (third Edition) + A1:2011 used in conjunction with IEC 60598-1: 2014 (Eighth Edition).
EN 60598-2-3: 2003 + A1:2011 used in conjunction with EN 60598-1:2015

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars.....:	
Classification of installation and use.....:	
Supply Connection.....:	
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	September 2017
Date (s) of performance of tests.....:	September 2017

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☐ point is used as the decimal separator.

Drivers Meanwell PLM-12(E)-350 has been added based on report P1540-44-II.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :

Comatelec S.A. Z.I. F-18400 SAINT FLORENT S/CHER France	Socelec S.A. Av. de Roanne, 66 Poligono Industrial "EL HENARES" 19180 MARCHAMALO (GUADALAJARA),Spain
Schréder Iluminação S.A. Apartado, 132 2790-076 CARNAXIDE,Portugal	Schréder 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
Tungsram-Schréder Világitási Berendezések Zrt Tópart 2 2084 PILISSZENTIVAN,Hungary	

General product information:

Ta following drivers in use :

	Current (mA)	Ta Philips (°C)	Ta LG (°C)
Vol1	350	/*	55
	500	/*	55
	700	/*	55
	1000	/*	45
Vol2	350	40	55
	500	40	55
	700	40	55
	1000	/*	50
Vol3	350	55	55
	500	55	55
	700	55	55
	1000	35	45
Vol4	350	55	55
	500	50	55
	700	50	55
	1000	40	35
Vol5	350	50	55
	500	50	55
	700	50	45
	1000	40	35

* no Philips drivers available

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.2 (0)	**GENERAL TEST REQUIREMENTS**		P
3.2 (0.1)	Information for luminaire design considered ..... :	Standard Yes ☒ No ☐	—
3.2 (0.3)	More sections applicable..... :	Yes ☐ No ☒	—

3.4 (2)	**CLASSIFICATION**		P
3.4 (2.2)	Type of protection ..... :	Class II	—
3.4 (2.3)	Degree of protection..... :	IP 66 (without external cable)	—
3.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ..... :	Yes ☒ No ☐	—
3.4 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—
3.4 (-)	Modes of installation of road or street lighting		—
	a) on a pipe	Yes ☒ No ☐	—
	b) on a mast arm	Yes ☒ No ☐	—
	c) on a post top	Yes ☒ No ☐	—
	d) on span or suspension wires	Yes ☐ No ☒	—
	e) on a wall	Yes ☐ No ☒	—

3.5 (3)	**MARKING**		
3.5 (3.2)	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.5 (3.3)	Additional information		P
	Language of instructions		P
3.5 (3.3.1)	Combination luminaires		N/A
3.5 (3.3.2)	Nominal frequency in Hz	50-60 Hz	P
3.5 (3.3.3)	Operating temperature		N/A
3.5 (3.3.4)	Symbol or warning notice		N/A
3.5 (3.3.5)	Wiring diagram		N/A
3.5 (3.3.6)	Special conditions		N/A
3.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
3.5 (3.3.8)	Limitation for semi-luminaires		N/A
3.5 (3.3.9)	Power factor and supply current	0.91	P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.10)	Suitability for use indoors		N/A
3.5 (3.3.11)	Luminaires with remote control		N/A
3.5 (3.3.12)	Clip-mounted luminaire – warning		N/A
3.5 (3.3.13)	Specifications of protective shields		N/A
3.5 (3.3.14)	Symbol for nature of supply		N/A
3.5 (3.3.15)	Rated current of socket outlet		N/A
3.5 (3.3.16)	Rough service luminaire		N/A
3.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments		P
3.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
3.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
3.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
3.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		P
	Cautionary symbol		P
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
3.5 (3.4)	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		
	a) Design attitude	See attached Installation Notice	P
	b) Weight	See attached Installation Notice	P
	c) Overall dimensions	See attached Installation Notice	P
	d) Maximum projected area if applicable	See attached Installation Notice	P
	e) Cross-sectional area of wires if applicable		N/A
	f) Suitability for indoors use		N/A
	g) Dimensions of the compartment		N/A
	h) Torque setting to be applied to bolts or screws	See attached Installation Notice	P
	i) Maximum mounting height	>6 m	P
3.6 (4)	**CONSTRUCTION**		
3.6 (4.2)	Components replaceable without difficulty		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	**Lampholders**		
3.6 (4.4.1)	Integral lampholder		N/A
3.6 (4.4.2)	Wiring connection		N/A
3.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
3.6 (4.4.4)	Positioning		N/A
	- pressure test (N) ..... :		—
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) ..... :		—
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
3.6 (4.4.5)	Peak pulse voltage		N/A
3.6 (4.4.6)	Centre contact		N/A
3.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
3.6 (4.4.8)	Lamp connectors		N/A
3.6 (4.4.9)	Caps and bases correctly used		N/A
3.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
3.6 (4.5)	**Starter holders**		
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
3.6 (4.6)	**Terminal blocks**		
	Tails	Provided with internal connector	N/A
	Unsecured blocks	Fixed	N/A
3.6 (4.7)	**Terminals and supply connections**		
3.6 (4.7.1)	Contact to metal parts		P
3.6 (4.7.2)	Test 8 mm live conductor		P
	Test 8 mm earth conductor		P
3.6 (4.7.3)	Terminals for supply conductors		P
3.6 (4.7.3.1)	Welded method and material		
	- stranded or solid conductor		N/A
	- spot welding		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
3.6 (4.7.4)	Terminals other than supply connection		N/A
3.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
3.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
3.6 (4.8)	**Switches**		
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
3.6 (4.9)	**Insulating lining and sleeves**		
3.6 (4.9.1)	Retainment		N/A
	Method of fixing ..... :		—
3.6 (4.9.2)	Insulated linings and sleeves:		
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C) ..... :		N/A
3.6 (4.10)	**Double or reinforced insulation**		
3.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation		N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
3.6 (4.10.2)	Assembly gaps:		
	- not coincidental		N/A
	- no straight access with test probe		N/A
3.6 (4.10.3)	Retainment of insulation:		
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
3.6 (4.11)	**Electrical connections and current-carrying parts**		
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		
	- spring washer		P
	- rivets		N/A
3.6 (4.11.4)	Material of current-carrying parts		P
3.6 (4.11.5)	No contact to wood or mounting surface		P
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.6 (4.12)	**Screws and connections (mechanical) and glands**		
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :	2Nm (case)	P
	Torque test: torque (Nm); part..... :	1.2Nm (drivers)	N/A
	Torque test: torque (Nm); part..... :	1.2Nm (glass)	N/A
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
3.6 (4.12.4)	Locked connections:		
	- fixed arms; torque (Nm) ..... :		P
	- lampholder; torque (Nm) ..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
3.6 (4.12.5)	Screwed glands; force (Nm)..... :		P
3.6 (4.13)	**Mechanical strength**		
3.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm) ..... :	0,5 Nm	P
	- other parts; energy (Nm)..... :	0,7 Nm	P
	1) live parts		P
	2) linings		P
	3) protection		P
	4) covers		P
3.6 (4.13.3)	Straight test finger		P
3.6 (4.13.4)	Rough service luminaires		

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
3.6 (4.13.6)	Tumbling barrel		N/A
3.6 (4.14)	**Suspensions, fixings and means of adjusting**		
3.6 (4.14.1)	Mechanical load:		
	A) four times the weight		N/A
	B) torque 2,5 Nm		P
	C) bracket arm; bending moment (Nm)..... :		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) ..... :		N/A
	Metal rod. diameter (mm) ..... :		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
3.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) ..... :		—
	Stress in conductors (N/mm²) ..... :		N/A
	Mass (kg) of semi-luminaire ..... :		—
	Bending moment (Nm) of semi-luminaire ..... :		N/A
3.6 (4.14.3)	Adjusting devices:		
	- flexing test; number of cycles..... :		N/A
	- strands broken ..... :		N/A
	- electric strength test afterwards		N/A
3.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
3.6 (4.14.5)	Guide pulleys		N/A
3.6 (4.14.6)	Strain on socket-outlets		N/A
3.6 (4.15)	**Flammable materials**		
	- glow-wire test 650°C ..... :	See Test Table 3.15 (13.3.2)	N/A
	- spacing ≥30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- no fiercely burning material		P
	- thermal protection		N/A
	- electronic circuits exempted		N/A
3.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		
	a) construction		P
	b) temperature sensing control	110	P
	c) surface temperature		N/A
3.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		
	No lamp control gear ..... :	(compliance with Section 12)	N/A
3.6 (4.16.1)	Lamp control gear spacing:		
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		P
3.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	P
3.6 (4.17)	**Drain holes**		
	Clearance at least 5 mm		N/A
3.6 (4.18)	**Resistance to corrosion**		
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		P
3.6 (4.18.3)	- corrosion of aluminium		P
3.6 (4.19)	Igniters compatible with ballast		N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	**Protective shield**		
3.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
3.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
3.6 (4.21.3)	No direct path		N/A
3.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment..... :	See Test Table 3.15 (13.3.2)	N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
3.6 (4.23)	Semi-luminaires comply Class II		N/A
3.6 (4.24)	**Photobiological hazards**		
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		P
3.6 (4.24.2)	Retinal blue light hazard		
	Luminaires with E_{thr} :		
	a) Fixed luminaires		P
	- distance x m, borderline between RG1 and RG2 .. :	RG1@400mm	P
	- marking and instruction according 3.2.23		P
	b) Portable and handheld luminaires		
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
3.6 (4.25)	**Mechanical hazard**		
	No sharp point or edges		P
3.6 (4.26)	**Short-circuit protection**		
3.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
3.6 (4.26.2)	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
3.6 (4.27)	**Terminal blocks with integrated screwless earthing contacts**		
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
3.6 (4.28)	**Fixing of thermal sensing control**		
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C) ..... :		—
	100 cycles between t min and t max		N/A
	Temperature sensing control still in position		N/A
3.6 (4.29)	**Luminaires with non-replaceable light source**		
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
3.6 (4.30)	**Luminaires with non-user replaceable light source**		
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		P
	Minimum two fixing means		P
3.6 (4.31)	**Insulation between circuits**		
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3	SELV/IEC 61347-2-13	P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
3.6 (4.31.1)	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV circuits from LV supply	Double/reinforced	P
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.2)	FELV circuits		

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
3.6 (4.31.3)	Other circuits		
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		
	- conductive parts are connected together		N/A
	- test according 7.2.3 of above		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
3.6 (4.32)	**Overvoltage protective devices**		
	Comply with IEC 61643-11	CB	P
	External to controlgear and connected to earth:		
	- only in fixed luminaires		P
	- only connected to protective earth		P
3.6.1 (-)	At least IP X3 or X5 respectively. IP .....:	IP66	P
	Column-integrated luminaires:		
	- parts below 2,5 m. IP .....:		N/A
	- parts above 2,5 m. IP .....:		N/A
3.6.2 (-)	Suspension on span wires		N/A
3.6.3 (-)	Means for attaching the luminaire or external parts to its support appropriate to the weight		P
3.6.3.1 (-)	Static load test		
	- drag coefficient.....:	1.225Kg/m³	P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- loaded area (m²).....:	0.34m²	P
	- used load (N).....:	675.7N	P
	- measured deformation (cm/m) .....:	1.2cm/m	P
	- no rotation		P
3.6.4 (-)	Adjustable lampholders		N/A
3.6.5 (-)	Luminaires installed above 5 m, glass covers shall be:		
	a) glass that fractures into small pieces (test according to 3.6.5.1), or	Safety Glass	P
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or		P
	c) protected by any means to retain glass fragments		N/A
	For tunnel luminaires 3.6.5.1 apply		N/A
	Method of protection declared by the manufacturer		N/A
3.6.5.1 (-)	Protection by the use of glass that fractures into small pieces		P
	- number of particles is more than 40.....:	52	P
3.6.5.2 (-)	Protection by the use of high impact resistant glass		P
3.6.5.2.1 (-)	Glass covers have high mechanical strength		P
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample	IK08	P
3.6.5.2.2 (-)	Glass covers not break into large pieces		P
	- test according 3.6.5.1, number of particles is more than 20 .....:	48	P
3.6.6 (-)	Connection compartment of column-integrated luminaire		
	- provides adequate space		N/A
	- means for attachment		N/A
	- means for attachment of metal corrosion-resistant		N/A
3.6.7 (-)	Compliance with ISO standard or other .....:		N/A
3.6.8 (-)	Doors of column-integrated luminaires:		
	- corrosion-resistant		N/A
	- opening only possible for an authorized person		N/A
	- impact test 5 Nm		N/A
	- sample show no damage		N/A
3.6.9 (-)	Column-integrated luminaire:		
	- dimension of the cable entry slot (mm).....:		N/A
	- cable path from the slot to the connection compartment (mm) .....:		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- cable path free from obstruction that might cause abrasion of the cable		N/A
3.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		P
3.7 (11.2)	Creepage distances and clearances ..... :	See Table 3.7 (11.2)	P
	Working voltage (V) ..... :	250 V	—
	Rated pulse voltage (kV) ..... :	/	—
	Voltage form ..... :	Sinusoidal ☒ Non-sinusoidal ☐	—
	PTI ..... :	< 600 ☐ ≥ 600 ☒	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☐ Category III ☐	—
3.8 (7)	**PROVISION FOR EARTHING**		
3.8 (7.2.1 + 7.2.3)	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω ..... :		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
3.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
3.8 (7.2.4)	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
3.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
3.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
3.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
3.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
3.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
3.8.1 (-)	Attachment prevented from rotation		N/A
3.9 (14)	**SCREW TERMINALS**		P
	Separately approved; component list..... :	(see Annex 1)	P
	Part of the luminaire ..... :	(see Annex 3)	N/A
3.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		P
	Separately approved; component list..... :	(see Annex 1)	P
	Part of the luminaire ..... :	(see Annex 4)	N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
3.10 (5.2)	**Supply connection and external wiring**		**P**
3.10 (5.2.1)	Means of connection ..... :	Internal connector	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A
3.10 (5.2.2)	Type of cable..... :	H07RN-F (if provided)	P
	Nominal cross-sectional area (mm²) ..... :	1,5 mm²	P
	Cables equal to IEC 60227 or IEC 60245		P
3.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
3.10 (5.2.5)	Type Z not connected to screws		N/A
3.10 (5.2.6)	Cable entries:		
	- suitable for introduction		P
	- adequate degree of protection		P
3.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
3.10 (5.2.8)	Insulating bushings:		
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
3.10 (5.2.9)	Locking of screwed bushings		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.10 (5.2.10)	Cord anchorage:		
	- covering protected from abrasion		P
	- clear how to be effective		P
	- no mechanical or thermal stress		P
	- no tying of cables into knots etc.		P
	- insulating material or lining		P
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
3.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
3.10 (5.2.10.3)	Tests:		
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) ..... :	60	P
	- torque test: torque (Nm) ..... :	0.25Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		N/A
3.10 (5.2.11)	External wiring passing into luminaire		N/A
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
3.10 (5.2.14)	Mains plug same protection		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A
3.10 (5.2.16)	Appliance inlets (IEC 60320)		P
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
3.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
3.10 (5.2.18)	Used plug in accordance with		
	- IEC 60083		N/A
	- other standard		N/A
3.10 (5.3)	**Internal wiring**		
3.10 (5.3.1)	Internal wiring of suitable size and type		P
	Through wiring		
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) ..... :		N/A
	- temperatures ..... :	(see Annex 2)	N/A
	Green-yellow for earth only		N/A
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		
	Cross-sectional area (mm²)..... :		P
	Insulation thickness		P
	Extra insulation added where necessary		N/A
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		
	Adequate cross-sectional area and insulation thickness		N/A
3.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
3.10 (5.3.1.4)	Conductors without insulation		N/A
3.10 (5.3.1.5)	SELV current-carrying parts		P
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		P
3.10 (5.3.2)	Sharp edges etc.		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
3.10 (5.3.3)	Insulating bushings:		
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
3.10 (5.3.4)	Joints and junctions effectively insulated		N/A
3.10 (5.3.5)	Strain on internal wiring		P
3.10 (5.3.6)	Wire carriers		N/A
3.10 (5.3.7)	Wire ends not tinned		P
	Wire ends tinned: no cold flow		N/A
3.10.1 (-)	Cord anchorage if applicable		P
	- pull test: 25 times; pull (N) .....:	60 N	P
	- torque test: torque (Nm) .....:	0.25 Nm	P

3.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		
3.11 (8.2.1)	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		P
	Lamp and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		N/A
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
3.11 (8.2.3.a)	Class II luminaire:		
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
3.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		
	Ordinary luminaire:		
	- touch current ..... :		N/A
	- no-load voltage..... :		N/A
	Other than ordinary luminaire:		
	- nominal voltage ..... :		N/A
3.11 (8.2.4)	Portable luminaire have protection independent of supporting surface		N/A
3.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
3.11 (8.2.6)	Covers reliably secured		P
3.11 (8.2.7)	Discharging of capacitors $\geq$ 0,5 μF		N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A

3.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
3.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 3.13		—
3.12 (12.3)	Endurance test:		P
	- mounting-position..... :	Acc. To mounting instruction	—
	- test temperature (°C) ..... :	35°C	—
	- total duration (h) ..... :	240 H	—
	- supply voltage: Un factor; calculated voltage (V)... :		—

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- lamp used..... :		—
3.12 (12.3.2)	After endurance test:		
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
3.12 (12.4)	Thermal test (normal operation)	(see Annex 2)	P
3.12 (12.5)	Thermal test (abnormal operation)	(see Annex 2)	P
3.12 (12.6)	Thermal test (failed lamp control gear condition):		
3.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—
	- case of abnormal conditions ..... :		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .... :		—
	- measured mounting surface temperature (°C) at 1,1 Un..... :		N/A
	- calculated mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
3.12 (12.6.2)	Temperature sensing control		
	- case of abnormal conditions ..... :		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
3.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
3.12 (12.7.1)	Luminaire without temperature sensing control		N/A
3.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W ..... :		—
	Test according to 12.7.1.1:		
	- case of abnormal conditions ..... :		—

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- Ballast failure at supply voltage (V) ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test .....:	See Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test ..... :	See Table 3.15 (13.2.1)	N/A
3.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
3.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link..... :	Yes ☐ No ☐	—
	- manual reset cut-out ..... :	Yes ☐ No ☐	—
	- auto reset cut-out ..... :	Yes ☐ No ☐	—
	- case of abnormal conditions ..... :		—
	- highest measured temperature of fixing point/ exposed part (°C): ..... :		—
	Ball-pressure test: ..... :	See Table 3.15 (13.2.1)	N/A
3.12.1 (-)	Temperature reduction if for outdoor use only		N/A
3.12.2 (-)	(See above)		—

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer		N/A
3.13 (9)	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		P
3.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 3.12		P
3.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		—
	- classification according to IP..... :	IP66	—
	- mounting position during test ..... :	Acc. to mounting instruction	—
	- fixing screws tightened; torque (Nm) ..... :	Acc. to mounting instruction	—
	- tests according to clauses..... :		—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		P
	b) no talcum in dust-tight luminaire		P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		P
	d) i) For luminaires without drain holes – no water entry		P
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		P
	f) no contact with live parts (IP 2X)		P
	f) no entry into enclosure (IP 3X and IP 4X)		P
	f) no contact with live parts (IP3X and IP4X)		P
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
3.13 (9.3)	Humidity test 48 h		P
3.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
3.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø ..... :		—
	Insulation resistance (MΩ) ..... :		—
	SELV		
	- between current-carrying parts of different polarity :		N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and mounting surface..... :		N/A
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		
	- between live parts of different polarity ..... :	>4 Mohm	P
	- between live parts and mounting surface ..... :	>4 Mohm	P
	- between live parts and metal parts ..... :	>4 Mohm	P
	- between live parts of different polarity through action of a switch..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :	>4 Mohm	P
	- Insulation bushings as described in Section 5 .....:		N/A
3.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V) ..... :		P
	SELV		
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface..... :		N/A
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
	Other than SELV		
	- between live parts of different polarity ..... :	1500V	P
	- between live parts and mounting surface ..... :	1500V	N/A
	- between live parts and metal parts ..... :	1500V	P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts of different polarity through action of a switch ..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
3.14 (10.3)	Touch current or protective conductor current (mA) :	<<0,5	P

3.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		
3.15 (13.2.1)	Ball-pressure test ..... :	See Test Table 3.15 (13.2.1)	N/A
3.15 (13.3.1)	Needle-flame test (10 s) ..... :	See Test Table 3.15 (13.3.1)	N/A
3.15 (13.3.2)	Glow-wire test (650°C) ..... :	See Test Table 3.15 (13.3.2)	N/A
3.15 (13.4)	Proof tracking test (IEC 60112) ..... :	See Test Table 3.15 (13.4)	N/A

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	**TABLES: Creepage distances and clearances**	p
Table 11.1	**Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages**	

RMS working voltage (V) not exceeding	50	150	250	500	750	1000
Creepage distances						
Required basic insulation, PTI ≥ 600	0,6	0,8	1,5	3	4	5,5
Measured			>2			
Required basic insulation, PTI < 600	1,2	1,6	2,5	5	8	10
Measured						
Required supplementary insulation PTI ≥ 600	-	0,8	1,5	3	4	5,5
Measured			>2			
Required supplementary insulation PTI < 600	-	1,6	2,5	5	8	10
Measured						
Required reinforced insulation	-	3,2	5	6	8	11
Measured			>7			
Clearances						
Required basic insulation	0,2	0,8	1,5	3	4	5,5
Measured			>2			
Required supplementary insulation	-	0,8	1,5	3	4	5,5
Measured						
Required reinforced insulation	-	1,6	3	6	8	11
Measured			>4			

Table 11.2	**Minimum distances (mm) for non-sinusoidal pulse voltages**						
Rated pulse voltage (peak kV)	2,0	2,5	3,0	4,0	5,0	6,0	8,0
Required clearances	1,0	1,5	2	3	4	5,5	8
Measured							
Rated pulse voltage (peak kV)	10	12	15	20	25	30	40
Required clearances	11	14	18	25	33	40	60
Measured							
Rated pulse voltage (peak kV)	50	60	80	100	-	-	-
Required clearances	75	90	130	170	-	-	-
Measured							

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

3.15 (13.2.1)	**TABLE: Ball Pressure Test of Thermoplastics**		**N/A**
Allowed impression diameter (mm) ..... :			—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Supplementary information:			

3.15 (13.3.1)	**TABLE: Needle-flame test (IEC 60695-11-5)**				N/A
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:					

3.15 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**				**N/A**
Glow wire temperature ..... :	650°C				—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (ta); (s)	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Any flame or glowing of the sample extinguished within 30 s of withdrawing the glow-wire, and any burning or molten drop did not ignite the underlying parts (Yes/No) ..... :					
Supplementary information:					

3.15 (13.4)	**TABLE: Proof tracking test (IEC 60112)**				**N/A**
Test voltage PTI ..... :	175 V				—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Supplementary information:					

ANNEX 1	**TABLE: Critical components information**	

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Drivers	B	LG Innotek	LLP 110W 1A (LG PISE A110A) 68-110V	V in 120-277V AC Max 110W Vout:68-110Vdc tc:80°C	IEC/ EN 613472-13	CB
Drivers	B	LG Innotek	LLP 55W 1A (LG PISE A55A) 44-55V	V in 120-277V AC Max 55W Vout:44-55-Vdc tc:80°C	IEC/ EN 613472-13	CB
Drivers	B	LG Innotek	LG PISE A027A	V in 120-277V AC Max 27W Vout:22-27-Vdc tc:80°C	IEC/ EN 613472-13	CB
Drivers	B	Tridonic	LCI 27W 1-10V	220-240V 50/60Hz tc 70°C	IEC/ EN 613472-13	CB
Driver	A	LG	PISE-A040D	40W 0.35-0.7A 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Driver	A	LG	PISE-A040A	40W 0.35/0.5/0.7 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Driver	A	LG	PISE-A075A	75W 0.35/0.5/0.7 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Driver	A	LG	PISE-A075D	75W 0.35-0.7A 120-277V 50-60Hz Tc=80°C	IEC 61347-2-13	CB / UL
Drivers	A	LG	PISE-A150D	150W 50/60Hz 0.35-07A 120-277V Tc=80°C	IEC 61347-2-13	CB / UL
Drivers	A	LG	PISE-A150A	150W 50/60Hz 0.35/0.5/0.7 120-277V Tc=80°C	IEC 61347-2-13	CB / UL
Drivers	A	PHILIPS	Xi FP 40W 0,3-1,0A SNLDAE 230V S175 sXt	40W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP 40W 0,2-0,7A SNLDAE 230V S175 sXt	40W 50-60Hz 0,2-0,7A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 40W 0,3-1,0A S1 230V S175 sXt	40W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 40W 0,2-0,7A S1 230V S175 sXt	40W 50-60Hz 0,2-0,7A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 70W 0,2-0,7A SL 230V C150 sXt	70W 50-60Hz 0,2-0,7A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP 75W 0,2-0,7A SNLDAE 230V S240 sXt	75W 50-60Hz 0,2-0,7A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP 75W 0,3-1,0A SNLDAE 230V S240 sXt	75W 50-60Hz 0,3-1,05A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 75W 0,3-1,0A S1 230V S240 sXt	75W 50-60Hz 0,3-1,05A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 75W 0,2-0,7A S1 230V S240 sXt	75W 50-60Hz 0,2-0,7A 198-264V Tc=85°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 150W 0,3-1,0A SL 230V S240 sXt	150W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Drivers	A	PHILIPS	Xi LP 150W 0,3-1,0A SL 230V S240 sXt	150W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP 150W 0,3-1,0A SNLDAE 230V S240 sXt	150W 50-60Hz 0,3-1,05A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi LP 150W 0,2-0,7AA SL 230V S240 sXt	150W 50-60Hz 0,2-0,7A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	PHILIPS	Xi FP 150W 0,2-0,7A SNLDAE 230V S240 sXt	150W 50-60Hz 0,2-0,7A 198-264V Tc=90°C	IEC 61347-2-13	CB
Drivers	A	Meanwell	PLM-12-350 PLM-12E-350	12W 50-60Hz 0.35A 110-240Vac Tc=75°C Ta=50°C	IEC 61347-2-13	CB
Control Device	A	Owlet	LuCo ADP	110-277V 50/60 Hz Tmax = 80°C	IEC/EN 61347	CB / UL
Control Device	A	Owlet	LuCo NXP	110-277V 50/60 Hz Tmax = 80°C	IEC/EN 61347	CB / UL
Control Device	A	Owlet	LuCo P7	110-277V 50/60 Hz Tmax = 75°C	IEC/EN 61347	CB / UL
Control Device	A	Owlet	Shorting Cap	Luco P7 Empty Body	IEC/EN 61347	Test report P-E16059
Connection Device	A	TE	TE NEMA Socket 7-pin	Power contacts: 15A 480V Dimming contacts: 0.10A 10V	IEC 61347-1 IEC 61347-2-11	CB
FUSE HOLDER	A	Mersen	10x38mm CCR8-10 Series	20-32A 400V	IEC 60269-1 & -2	ENEC
FUSE HOLDER	A	CAMDENBOSS	CFTBN 5x20mm	13A 250V	IEC 60269-1 & -2	VDE / UL
FUSE	A	Mersen	FR10 10x38mm	0.5-32A 400-500V	IEC 60269-1 & -2	ENEC
FUSE	A	Littlefuse	5x20mm 213 Series	0.2-6.3A 250V	IEC 60269-1 & -2	VDE
VDR	A	Littlefuse	TM0V	275 Vac 10kA 20KV (DM)	IECQ-CECC E 1274/F	VDE
ESD	A	Vishay	VR 37	0,5W 2MΩ	DIN EN 60085	VDE
Surge protection Device	A	Vossloh	SPC3/230/10K/i	100-277V 50/60Hz 10kA 20KV (DM) 120KV (CM) Tc=80°C	IEC 61643-11	DEKRA
Surge protection Device(alt)	A	Cirprotec	NSS-10-C12-P NSS-10/230-D-LCF-P	max 320V 50-60 Hz 10kA 20KV (DM) 120KV (CM) Tc=80°C	IEC 61643-11	DEKRA
Terminal	A	WIELAND	GST18i S B	16A/250V 2.5mm²	EN 60998-1&2-2	VDE / UL
Terminal	A	ADELS	LK980-01	2.5mm², 450V 24A	EN 60998-1&2-2	VDE / UL
Terminal	A	ADELS	900-07/Q	0.5-4mm² 450V	EN 60998-1&2-2	VDE / UL
Terminal	A	ADELS	AC-166 ST(D)/3	0.5-2,5mm² 250-400V	EN 60998-1&2-2	VDE / UL
Terminal	A	WAGO	222 Series	0.08-2.5mm² 20A/400V	EN 60998-1&2-2	ENEC / UL
Terminal	A	WAGO	221 Series	0.2-4mm² 32A/450V	EN 60998-1&2-2	ENEC / UL
Terminal	A	WAGO	Connector 2 pole 294 model	24A/500V 0.5-2.5mm²	EN 60998-1&2-2	ENEC
Cable Gland	A	Hummel	HSK-K	IP68-10bar M20x1,5	DIN EN 62444	VDE / UL

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Led Modules	A	LG	8 Leds G4TOP @1000 mA 16 Leds G4TOP @1000 mA 24 Leds G4TOP @1000 mA 32 Leds G4TOP @1000 mA	RG	IEC/EN 62031-62471	Tested in appliance
Led Modules	A	LG	8 Leds G4 @1000 mA 16 Leds G4 @1000 mA 24 Leds G4 @1000 mA 32 Leds G4 @1000 mA	RG	IEC/EN 62031-62471	Tested in appliance
Led Modules (Voltana)	A	LG	8 Leds G4L @1000 mA 16 Leds G4L @1000 mA 24 Leds G4L @1000 mA 32 Leds G4L @1000 mA	RG	IEC/EN 62031-62471	Tested in appliance
Led Modules	A	Schréder	2x12 Leds XP-G2 @700 mA 2x16 Leds XP-G2 @700 mA 24 Leds XP-G2 @700 mA 32 Leds XP-G2 @700 mA	RG0	IEC/EN 62031-62471	Tested in appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-1	—
	Lamp used..... :	8 Led's LG3535	—
	Lamp control gear used..... :	Tridonic 27W @ 1000 mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 45 °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	45	68			70		
Supply wiring	45	57			90		
Led Module	45	73			85		
Terminal	45	57			110		
Internal wiring	45	57			90		

Supplementary information:
Corrected for Ta 45 °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-1	—
	Lamp used..... :	8 Led's XPL	—
	Lamp control gear used..... :	MeanWell PLD-40 @ 1400 mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 55 °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	55	87			90		
Supply wiring	55	64			90		
Led Module	55	106			130		
Terminal	55	64			110		
Internal wiring	55	64			90		

Supplementary information:
Corrected for Ta 55 °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-1	—
	Lamp used..... :	8 Led's LG3535	—
	Lamp control gear used..... :	Philips 40W @ 700 mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 55 °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	55	78			90		
Supply wiring	55	64			90		
Led Module	55	74			85		
Terminal	55	64			110		
Internal wiring	55	64			90		

Supplementary information:
Corrected for Ta 55 °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-2	—
	Lamp used..... :	16 Led's LG3535	—
	Lamp control gear used..... :	Xitanium 40W @ 700 mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 40 °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage ..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage ..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	40	86			90		
Supply wiring	40	50			90		
Led Module	40	65			85		
Terminal	40	50			110		
Internal wiring	40	50			90		

Supplementary information:
Corrected for Ta 40°C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-3	—
	Lamp used..... :	24 Led's LG3535	—
	Lamp control gear used..... :	Xitanium 150W@1000 (700) mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 35 (55) °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	35 (55)	61 (84)			90		
Supply wiring	35 (55)	46 (64)			90		
Led Module	35 (55)	80 (85)			85		
Terminal	35 (55)	46 (64)			110		
Internal wiring	35 (55)	46 (64)			90		

Supplementary information:
Corrected for Ta 35 (55) °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-4	—
	Lamp used..... :	32 Led's LG3535	—
	Lamp control gear used..... :	Xitanium 150W @1000 (700) mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 40 (50) °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	40 (50)	88 (86)			90		
Supply wiring	40 (50)	55 (61)			90		
Led Module	40 (50)	81 (79)			85		
Terminal	40 (50)	55 (61)			110		
Internal wiring	40 (50)	55 (61)			90		

Supplementary information:
Corrected for Ta 40 (50) °C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	TABLE: Temperature measurements, thermal tests of Section 12		
	Type reference ..... :	VOLTANA-5	—
	Lamp used..... :	64 Led's LG3535	—
	Lamp control gear used..... :	Xitanium 150W @1000 (700) mA	—
	Mounting position of luminaire ..... :	Horizontal	—
	Supply wattage (W) ..... :		—
	Supply current (A) ..... :		—
	Calculated power factor..... :		—
	Table: measured temperatures corrected for ta = 35 (50) °C:		
	- abnormal operating mode ..... :		—
	- test 1: rated voltage..... :		—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage..... :		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :		—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage..... :		—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :		—

Temperature measurements, (°C)

Part	Ambient	Clause 12.4 – normal				Clause 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Convertor Tc	35 (50)	81 (85)			90		
Supply wiring	35 (50)	52 (61)			90		
Led Module	35 (50)	82 (80)			85		
Terminal	35 (50)	52 (61)			110		
Internal wiring	35 (50)	52 (61)			90		

Supplementary information:
Corrected for Ta 35 (50)°C

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 3	**Screw terminals (part of the luminaire)**		N/A
(14)	**SCREW TERMINALS**		N/A
(14.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²).....:		—
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) .....:		N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) .....:		N/A
	Torque (Nm).....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 4	**Screwless terminals (part of the luminaire)**		N/A
(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared conductors		N/A

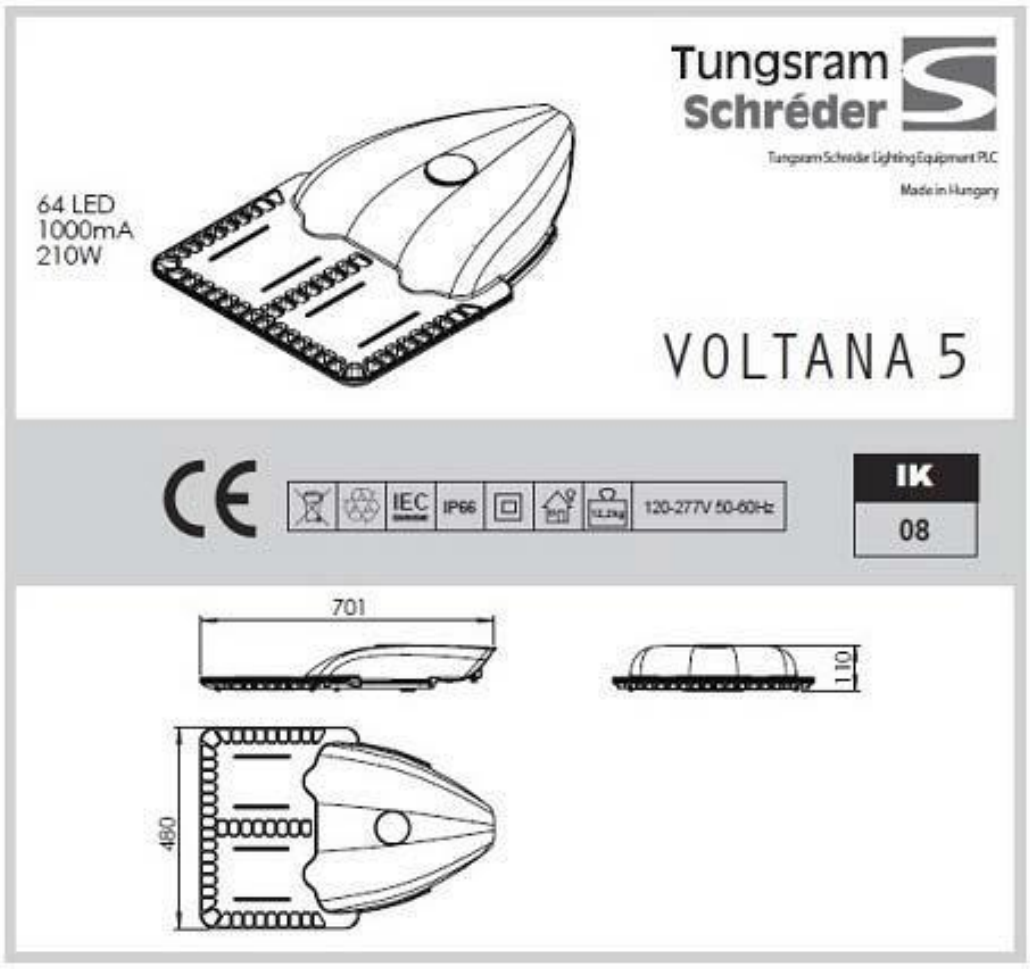
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples) .....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples) .....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples).....:		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples).....:		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples).....:		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) .....:		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....:		N/A
(15.6)	Terminals external wiring		N/A
	Terminal size and rating		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A

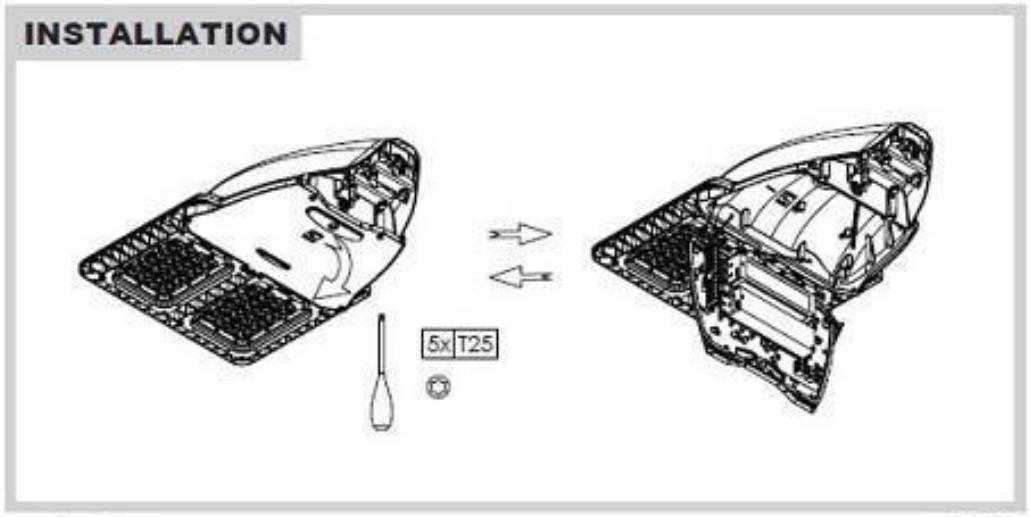
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

(15.6.3.1)	**TABLE: Contact resistance test**									N/A
	Voltage drop (mV) after 1 h									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) ..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

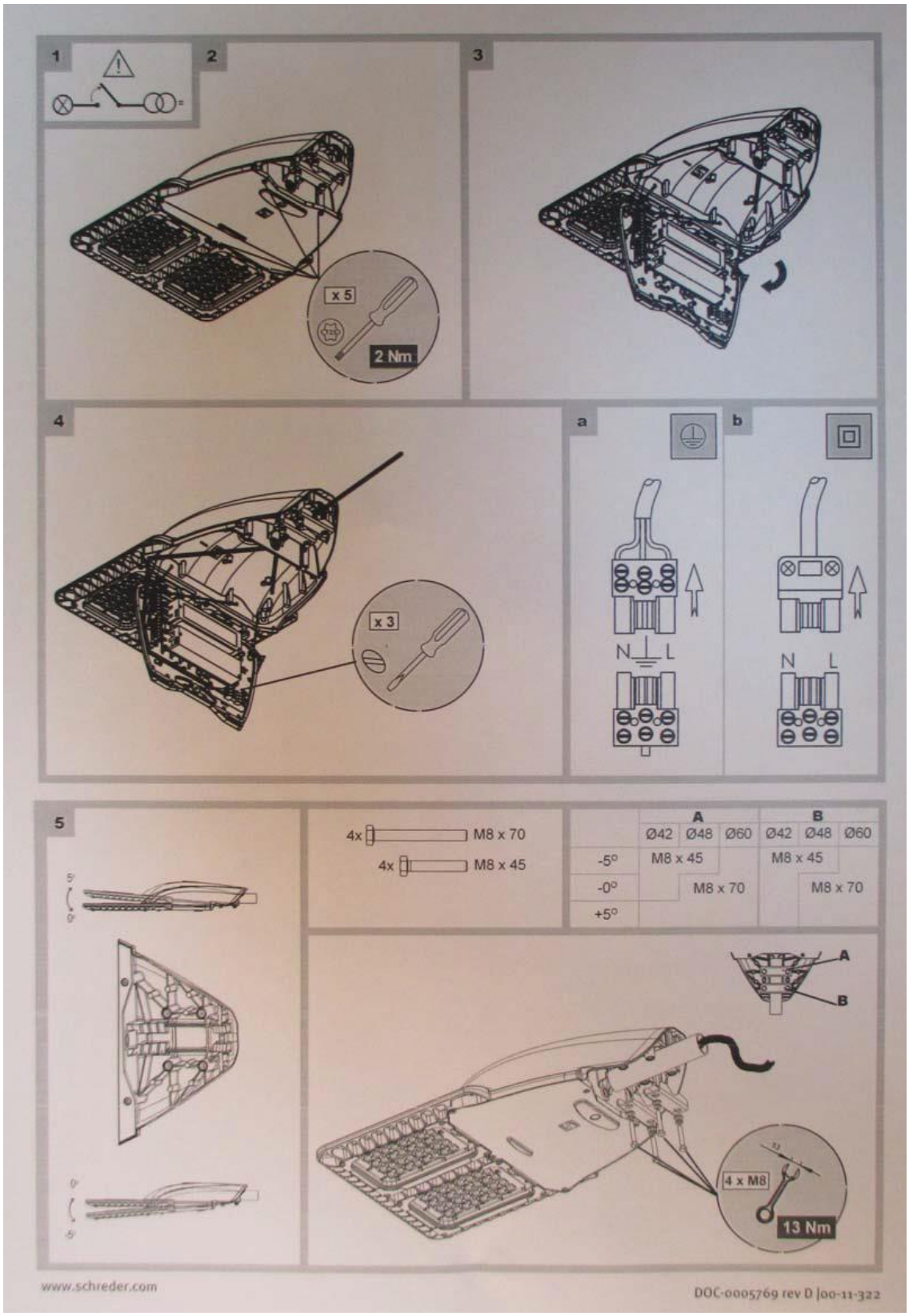
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

Installation Notice and pictures



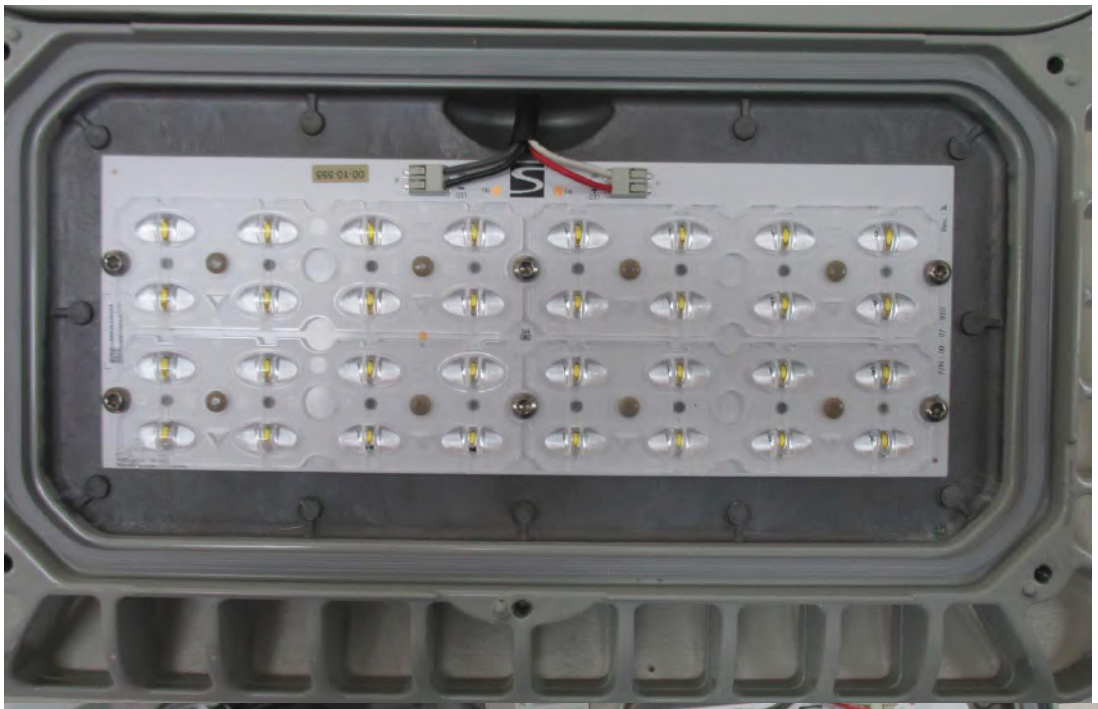


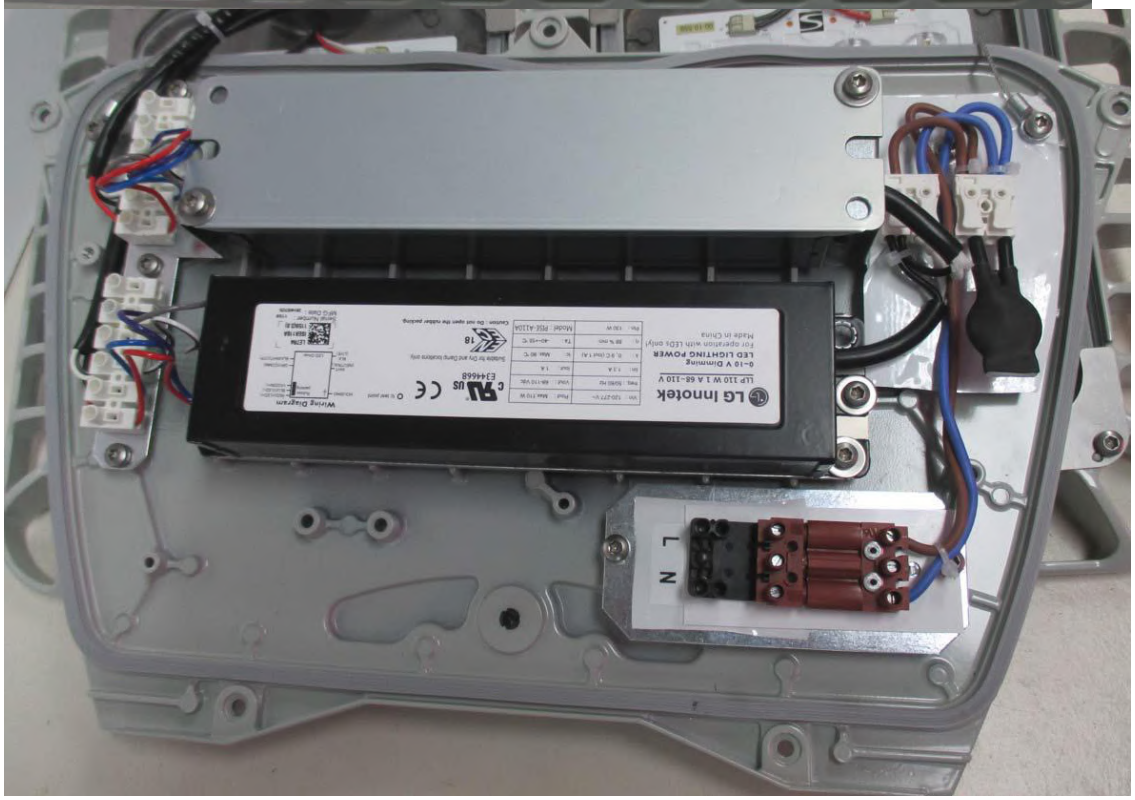
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



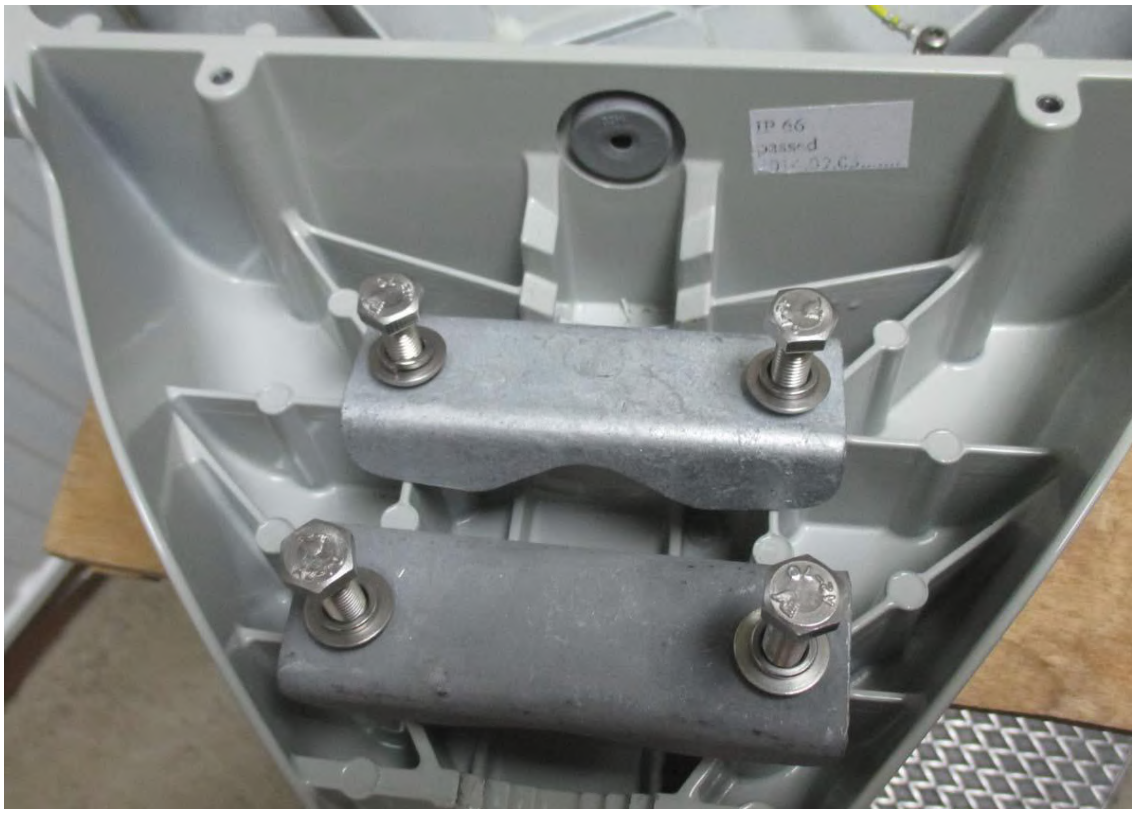
IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict





IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict



IEC60598_2_3K - ATTACHMENT			
Clause	Requirement – Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-2-3
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
LUMINAIRES
PART 2: PARTICULAR REQUIREMENTS
SECTION 3: LUMINAIRES FOR ROAD AND STREET LIGHTING

Differences according to ..... : EN 60598-2-3:2003 + A1:2011 used in conjunction with EN 60598-1:2015

Annex Form No. ..... : EU_GD_IEC60598_2_3K

Annex Form Originator ..... : IMQ S.p.A.

Master Annex Form..... : 2016-12

	CENELEC COMMON MODIFICATIONS (EN)		**P**
3.5 (3)	**MARKING**		
3.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		N/A
3.6 (4)	**CONSTRUCTION**		
3.6 (4.11.6)	Electro-mechanical contact systems		N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		
3.10 (5.2.1)	Connecting leads		N/A
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
3.10 (5.2.2)	Cables equal to EN 50525		N/A
	Replace table 5.1 – Supply cord		N/A
3.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		
3.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		N/A
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		
(3.3)	DK: power supply cords of class I luminaires with label		N/A
(4.5.1)	DK: socket-outlets		N/A

IEC60598_2_3K - ATTACHMENT			
Clause	Requirement – Test	Result - Remark	Verdict
(5.2.1)	CY, DK, FI, GB: type of plug		N/A
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		
(4 & 5)	FR: Shuttered socket-outlets 10/16A		N/A
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		
	- 850°C for luminaires in stairways and horizontal travel paths		N/A
	- 650°C for indoor luminaires		N/A
	GB: Requirements according to United Kingdom Building Regulation		N/A

LED Flux measurement

FORM-L-41 ED1 REV 2

226 - TEST

NBN EN ISO/IEC 17025 : 2005

Date : **16-01-19**

Operator : **FCE**

Filename : **2019_64.xml**

LEDs

Trademark : **Samsung**

Entry number : **39R006-4**

Type : **LH351C**

Power (Catalogue) : **0,00** W

Flux : **0** lm/LED

BIN Description : **40-70M-4-TB-RB**

Part number : **Unknown**

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

Number of LEDs : **16**

Lenses

Trademark : **None**

Type : **None**

Power & Print

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

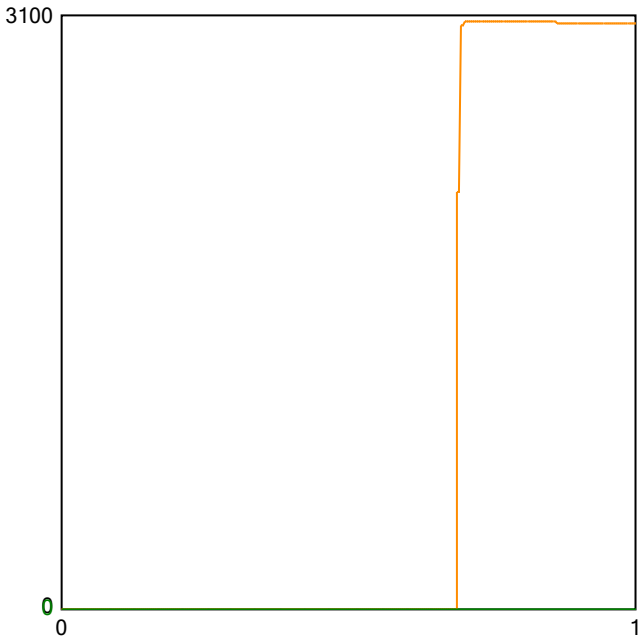
Print description : **00-71-627 A - Voltana 2**

Active ☐

Picture

Sphere photometric measurement

Maximum flux : **3074** lumens



Operating condition

Position in sphere : 

Ambient sphere T ° : **24,3**

Electrical measurement

- Secondary electrical measurement

Voltage : **44,90** V

Current : **0,350** A

Power : **15,70** Watt

→ LEDs light efficiency at 25° :

195,9 lm/W

192,1 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 Samsung LH351C - pcb N°4

Comment :

FORM-L-41 ED1 REV 2

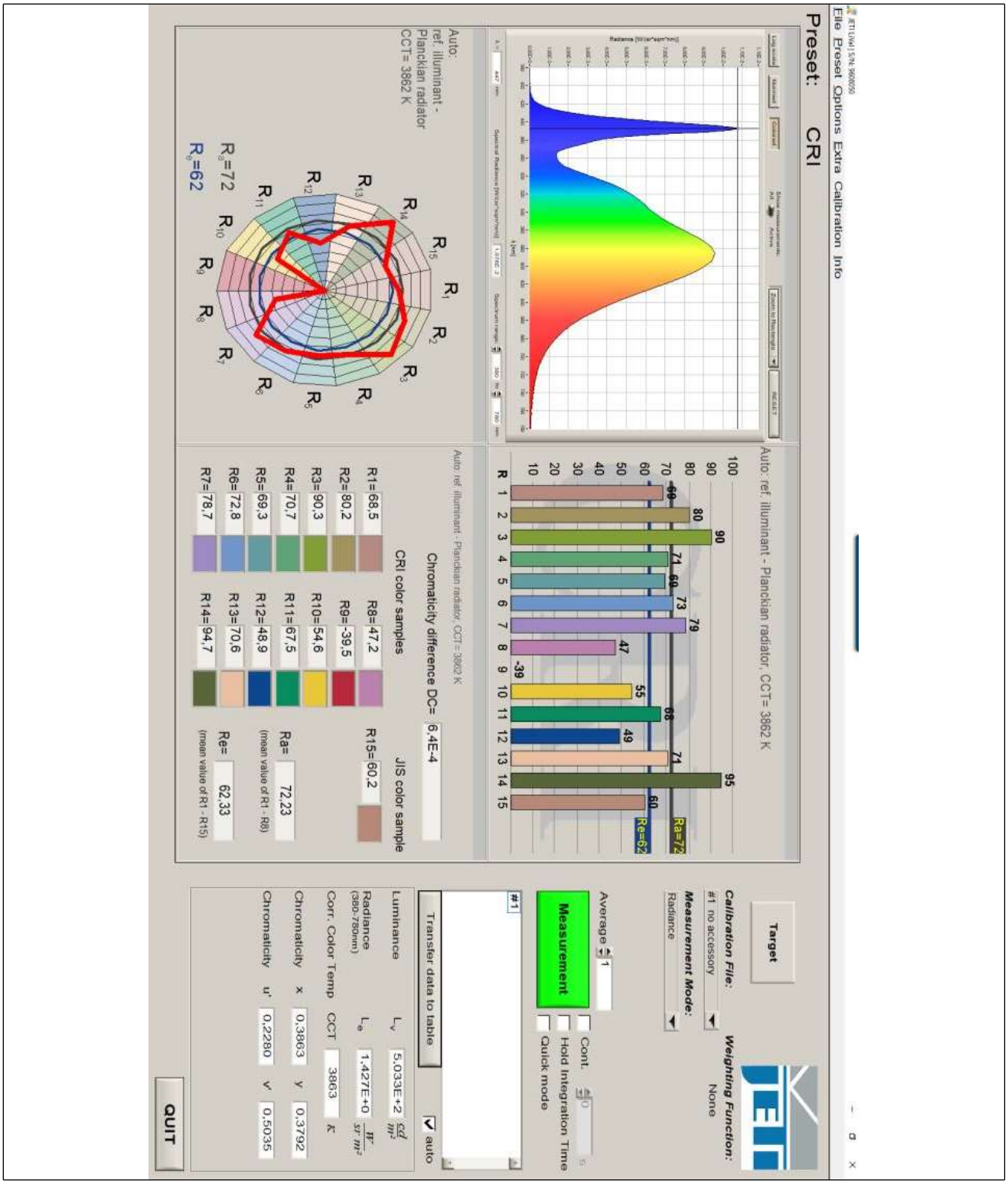
226 - TEST

Approved by :

Colorimetry

226 - TEST

NBN EN ISO/IEC 17025 : 2005



RTECH-PHOTOMETRY LABORATORY

LED

Testreport : Measurement of luminous intensity distribution related to the standard
NBN-EN 13032-1; NBN-EN 13032-4; CIE 121-1996; CIE S 025/E; 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 Schréder group.

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source

Type	BIN	Trademark	Reference	# LEDs	Reflector
LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136

Master	Reflector	No
-	Schreder Led assembly Narrow Assembled 0.0°	5136

Protector Refractor Lens

Protector Glass Extra Clear Flat Smooth

Lens Gaggione 5136 PMMA

Laboratory observation

VOLTANA 2 with 16 SAMSUNG LH351C
Used flux for efficiency matrix calculation = 3074 lm - CCT = 3863 K - CRI = 72,23 (see sphere test report 2019/64 on appendix).

Purpose	Sample date	Sample #
DOC	08-01-2019	39R006

Observation

DOC VOLTANA 2 with lenses 5136

Flux coefficient multiplicator (only for efficiency matrix):
From 350 to 500 mA : 1,380
From 350 to 700 mA : 1,840
From 350 to 1000 mA : 2,453

Fixture powered with driver Osram OT40/120-277/1A0 4DIM LT2E for matrix @350/500/700mA
Fixture powered with driver Philips Xitanium LP 75W 0,3 - 1,0A SNLDAE 230V C133 sXt for matrix @1000mA

Notes

This report concerns type tests on one or a series of specimens.

Asked by	Measured by	Approved by	Appendix		
RCA	BMA	RLABO	1	226-TEST NBN EN ISO/IEC 17025 : 2005	42457

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**424571** Φ 0-90° = 2662lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @350 mA

Light losses due to thermal stabilization: 1 %

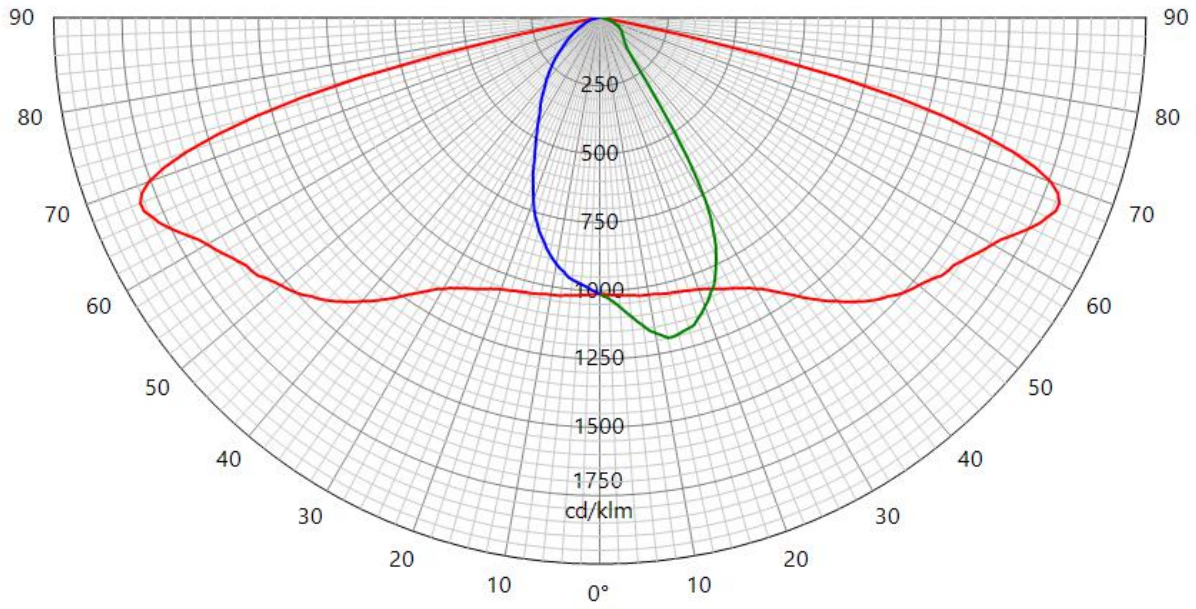
Electrical measurement on LED (#1) : Voltage = 44.68 V Current = 0.350 A Power = 15.61 W

Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.091 A Power = 18.91 W PF = 0.902

Total luminaire power = 18.91 W : Lm/Watt = 140.75 lm/W

Driver #1 : See observations for driver details - pcb : 00-71-627 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	1815	68	S	1011	25.1°	30-01-2019
90	1199	13	D			
270	1011	0	G			



42457

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**424572** η 0-90° = 86.6% - 90-180° = 0.0%		Relative measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA		

Observation

Matrix in efficiency @350 mA

Light losses due to thermal stabilization: 1 %

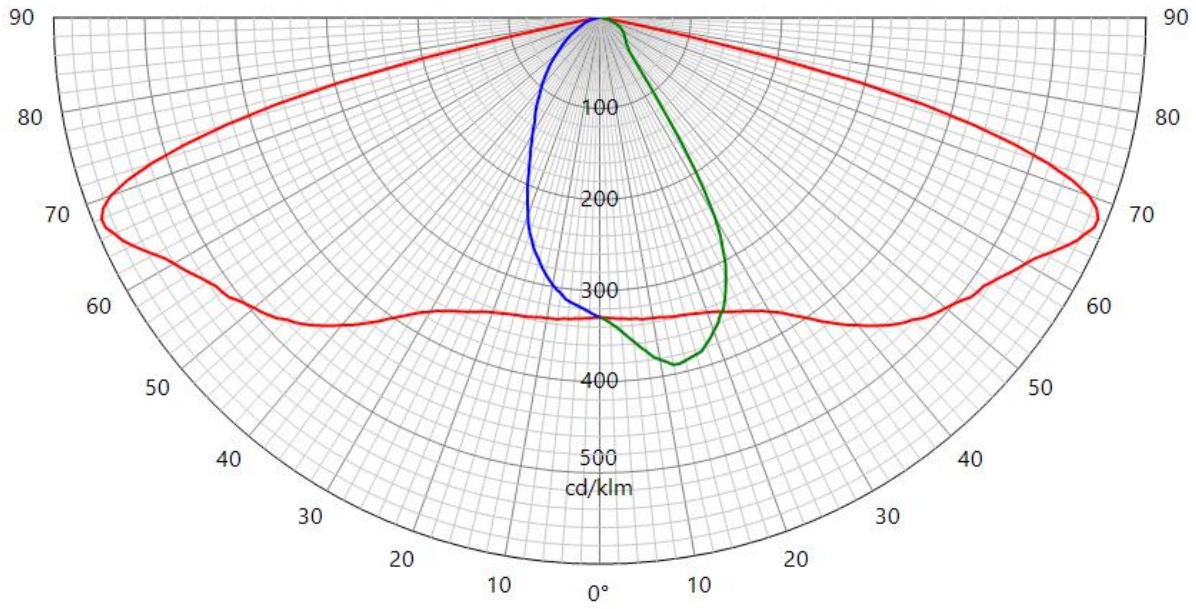
Electrical measurement on LED (#1) : Voltage = 44.68 V Current = 0.350 A Power = 15.61 W

Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.091 A Power = 18.91 W PF = 0.902

Total luminaire power = 18.91 W

Driver #1 : See observations for driver details - pcb : 00-71-627 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	590	68	S	329	25.1°	30-01-2019
90	390	13	D			
270	329	0	G			



42457

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136
Reflector	Schreder Led assembly Narrow Assembled 0.0°				No	5136
Matrices	**424573**	Φ 0-90° = 3673lm - 90-180° = 0lm				Absolute measurement
Protector Refractor Lens	Protector	Glass Extra Clear Flat Smooth - VOLTANA 2				
	Lens	16 x Gaggione 5136 PMMA				

Observation

Matrix in total flux @500 mA

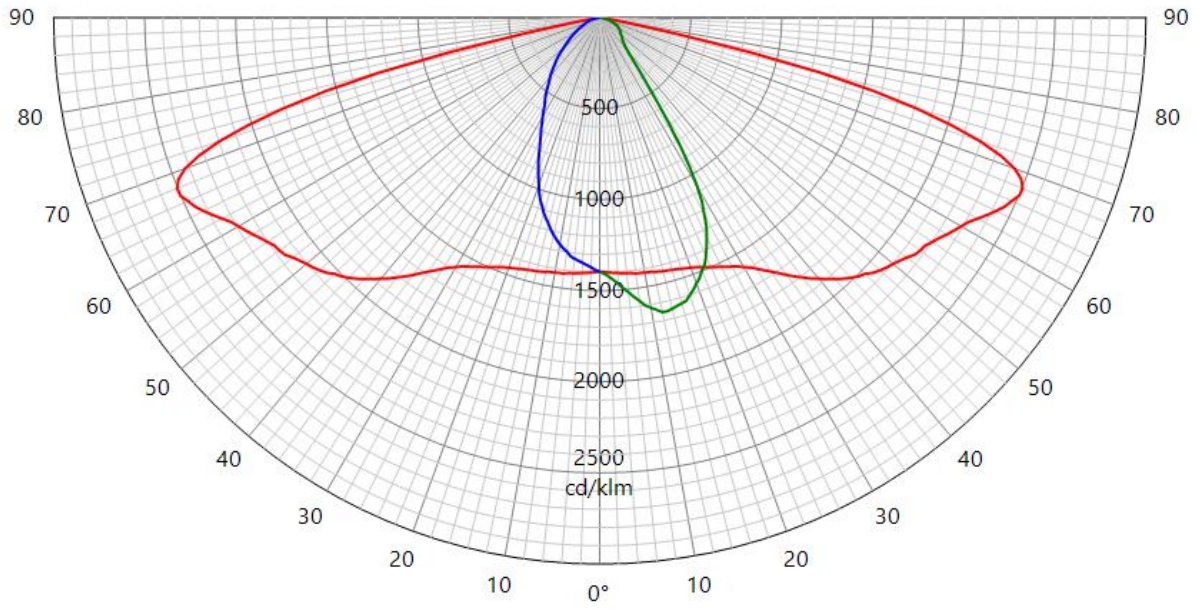
Light losses due to thermal stabilization: 1,5 %

Electrical measurement on LED (#1) :	Voltage = 45.54 V	Current = 0.500 A	Power = 22.74 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.120 A	Power = 26.40 W	PF = 0.954

Total luminaire power = 26.40 W : Lm/Watt = 139.13 lm/W

Driver #1 : See observations for driver details - pcb : 00-71-627 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	2504	68	S	1396	25.1°	30-01-2019
90	1654	13	D			
270	1396	0	G			



42457

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**424574** Φ 0-90° = 4897lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @700 mA

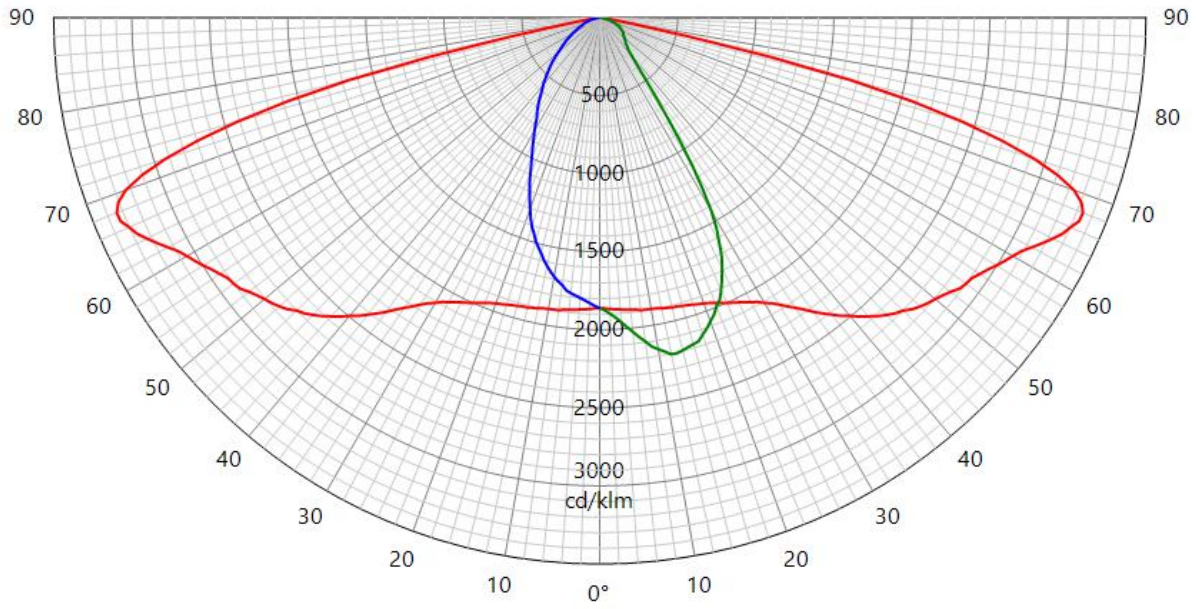
Light losses due to thermal stabilization: 2,6 %

Electrical measurement on LED (#1) :	Voltage = 46.53 V	Current = 0.700 A	Power = 32.52 W	
Electrical measurement on driver (#1) :	Voltage = 230.00 V	Current = 0.165 A	Power = 36.87 W	PF = 0.973

Total luminaire power = 36.87 W : Lm/Watt = 132.83 lm/W

Driver #1 : See observations for driver details - pcb : 00-71-627 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	3339	68	S			
90	2206	13	D	1861	25.1°	30-01-2019
270	1861	0	G			



42457

LUMINOUS INTENSITY DIAGRAM

Origin	Production	Luminaire	Inclination	Request #
TUNGSRAM-Schréder Zrt. Hungary	TUNGSRAM-Schréder Zrt. Hungary	VOLTANA 2	0°	FD39014

Source	Type	BIN	Trademark	Reference	# LEDs	Reflector
	LED	40-70M-4-TB-RB	Samsung	LH351C	16	5136

Reflector	Schreder Led assembly Narrow Assembled 0.0°	No	5136
Matrices	**424575** Φ 0-90° = 6529lm - 90-180° = 0lm		Absolute measurement
Protector Refractor Lens	Protector Glass Extra Clear Flat Smooth - VOLTANA 2 Lens 16 x Gaggione 5136 PMMA		

Observation

Matrix in total flux @1000 mA

Light losses due to thermal stabilization: 3,6 %

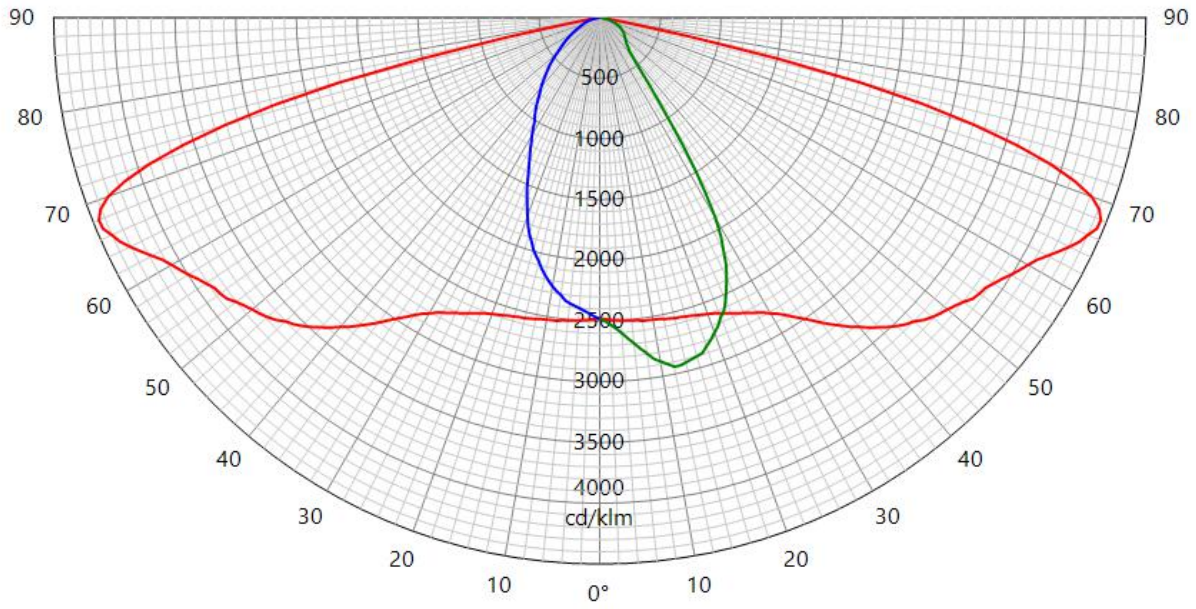
Electrical measurement on LED (#1) : Voltage = 47.84 V Current = 1.000 A Power = 47.84 W

Electrical measurement on driver (#1) : Voltage = 230.00 V Current = 0.236 A Power = 53.37 W PF = 0.982

Total luminaire power = 53.37 W : Lm/Watt = 122.34 lm/W

Driver #1 : See observations for driver details - pcb : 00-71-627 A

Plane	I Peak	Peak position	Index	I zero	Laboratory ambiant t°	Measurement date
5 - 175	4452	68	S	2481	25.1°	30-01-2019
90	2941	13	D			
270	2481	0	G			



42457

CONFORMITY STATEMENT

Measurement fulfil Standards:

NBN-EN 13032-1
NBN-EN 13032-4
NBN-EN 17025:2005
CIE 121-1996
LM79-08
CIE S 025

Measurement quantities measured:

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

Electrical measurement, if not specified:

Primary values are AC with 50Htz frequency
Secondary values on SSL are DC

CCT, CRI and chromaticity coordinates: are measured in Ulbricht sphere.
If specified Main test report refer to sphere extra test report.

Light distribution are measured on gonio. If not otherwise specified, measurement is done at 50 Hz

Number of hours operated prior to measurement: if not otherwise specified, 0 hours (no aging).

Stabilization time: If not otherwise specified, a minimal stabilization time of 0.5 hour is applied; and measurement will start when it exists no more variation above 0.5% in 15 minutes

Total operating time of the product including stabilization:
45 minutes have to be added by measurement.
Minimal operating time is 75 minutes

Luminous intensity distribution: available on electronic file with
.mat format (internal Schréder format)
.ldt format (European standard)
.IES format (American standard)

Statement of uncertainties (K=2, 95% of confidence level):
Uncertainties calculated based on a typical Schréder fitting and PCBA

Intensity measurement: +/- 3%
Angle: +/- 0.5°
Flux: +/- 2.5%
Electrical DC
Power: +/- 0.25%
Voltage: +/- 0.15%
Current: +/- 0.15%
Electrical AC
Power: +/- 0.15%
Voltage: +/- 0.3%
Current: +/- 0.3%
Temperature: +/- 0.65%

	ISP2000	JETI
CCT:	+/- 5%	+/-7.5%
CRI:	+/- 2%	+/-2.75%
x/y:	+/- 2%	+/-4.6%

lm/Watt: +/-3.5%

Measuring instruments in use:

Gonio 1
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) and METAS (Federal Institute of Metrology, CH-Bern)
Photometric test distance: By default 10 meter, on request 30 meter.

Gonio 2
Type C
Manufacturer: Technoteam Bildverarbeitung, Werner-von-Siemens-Strasse 5 98693 Ilmenau, Germany
Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)
Photometric test distance: Near Field

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 and WT310
Calibration: traceable to BIPM (Bureau International des Poids et Mesures F-Sèvres)

Thermometers
Amarell Precision
Type: Liquid in glass N63833
Calibration: traceable to LBT (Laboratoire Belge de Thermométrie)

16/05/2019

Schréder
Experts in lightability™

VOLTANA 2

5136

Optic	5136
Protector	Flat glass
Source	16 Samsung LH351C
Matrix	424572

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

The ultimate, cost-effective, performing family of luminaires that pays for itself

- 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 Owlet 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
- Roundabout
- Residential road
- Urban road

Information for 1000 lm matrix

Efficacy (%)	86.6	**G Class (EN 13201-2)**	G3	**Aperture 90-270°**	28 - 11
DLOR (%)	86.6	**G* (EN 13201 2015)**	G*3	**I 70-80-90-95 (cd)**	572 - 50 - X - X
ULOR (%)	0.0	**Imax (cd)**	590	**CIE flux code N 1→5 (%)**	50.9 - 80.3 - 98.2 - 100.0 - 86.6
ULR (%)	0.0	**Aperture 0-180°**	76 - 76		

Photometrical characteristics

LED count	Colour code	Current (mA)	Luminaire power (W)	Source flux (lm)	Luminaire output flux (lm)	Luminaire efficacy (lm/W)	Peak (cd)	BUG Rating	Voltage (V)
			Ambient temp = 25°						
16	NW 740	350	18	3040	2632	146	1795	B1 U0 G1	230
16	NW 740	500	26	4195	3632	140	2477	B1 U0 G1	230
16	NW 740	700	37	5594	4843	131	3302	B2 U0 G1	230
16	NW 740	1000	53	7457	6457	122	4402	B2 U0 G1	230
16	NW 740	1050	58	7737	6699	116	4568	B2 U0 G1	230
16	WW 730	350	18	2880	2494	139	1700	B1 U0 G1	230
16	WW 730	500	26	3974	3441	132	2346	B1 U0 G1	230
16	WW 730	700	37	5299	4588	124	3128	B2 U0 G1	230
16	WW 730	1000	53	7065	6117	115	4171	B2 U0 G1	230
16	WW 730	1050	58	7330	6346	109	4327	B2 U0 G1	230

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

Summary

CONCEPT

Family of 6 road LED luminaires

Recommended installlation height: between 4.00 and 12.00m

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

HOUSING & FINISH

- Housing in high-pressure, die-cast aluminium, polyester powder coated
- Colour: RAL 7038

INSTALLATION

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

OPTICAL UNIT

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

LED lumen depreciation

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

ELECTRICAL

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

STANDARDS & CERTIFICATIONS

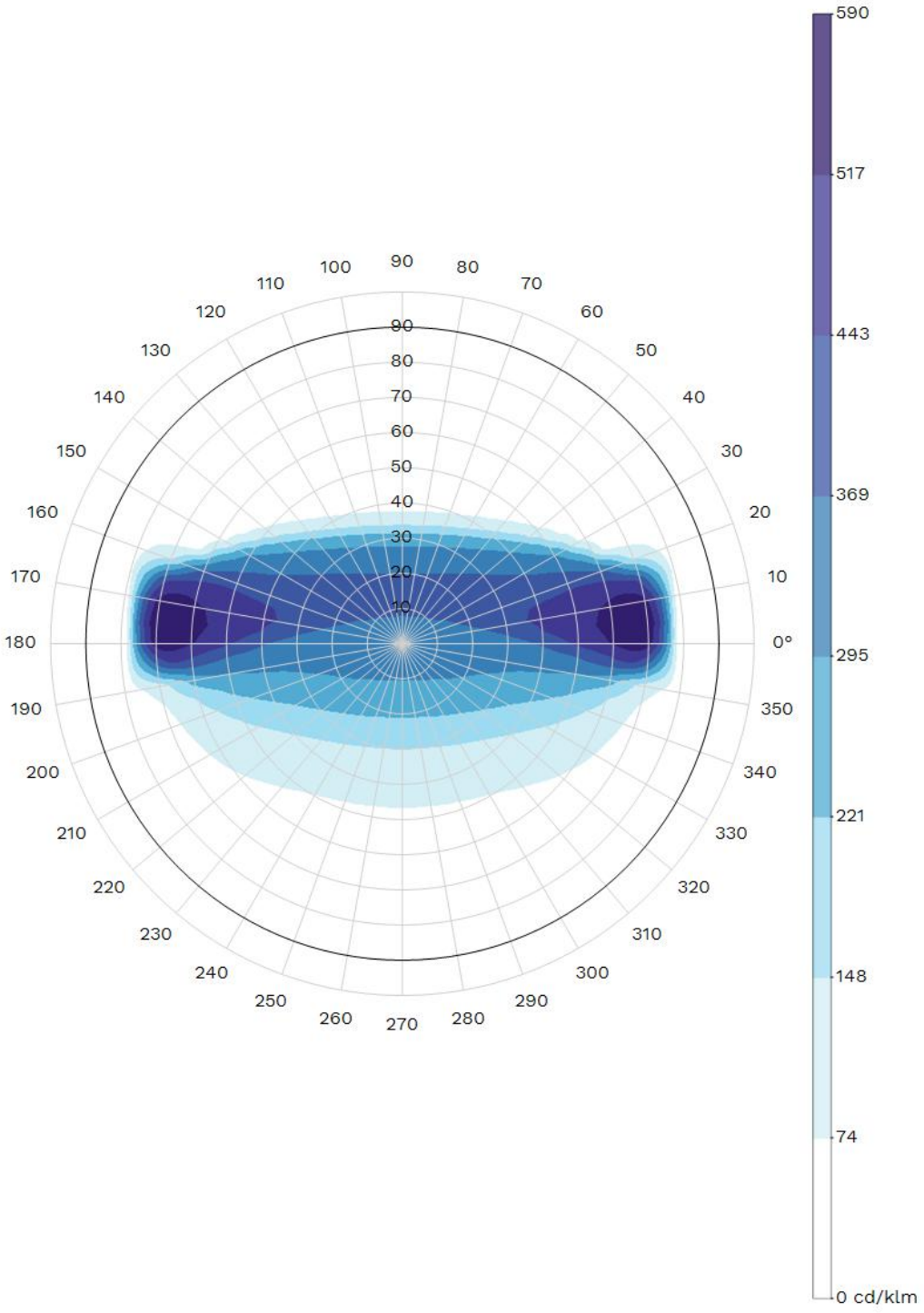
- CE
- ENEC
- LM79-80
- ROHS
- Certified for 3G vibration
- All measurements in ISO17025 accredited laboratory

OPTIONS

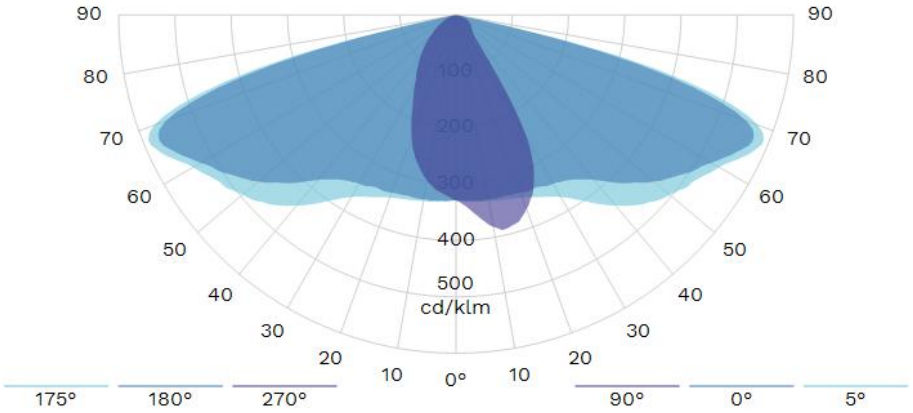
- Other RAL or AKZO colours
- Back Light control system
- OWLET remote management
- Custom dimming profile

- Photocell

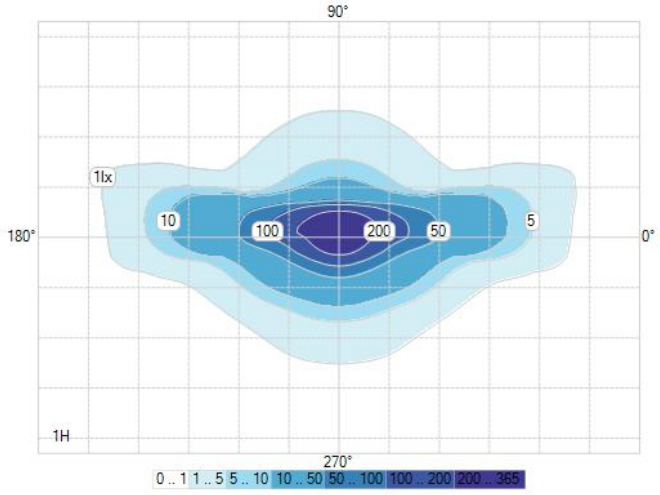
Hypergon view



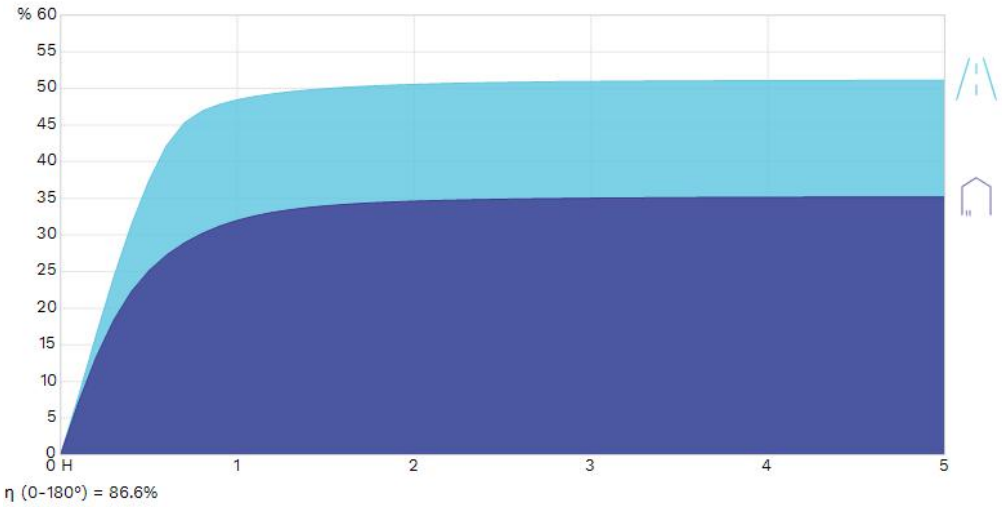
Polar/Cartesian diagram



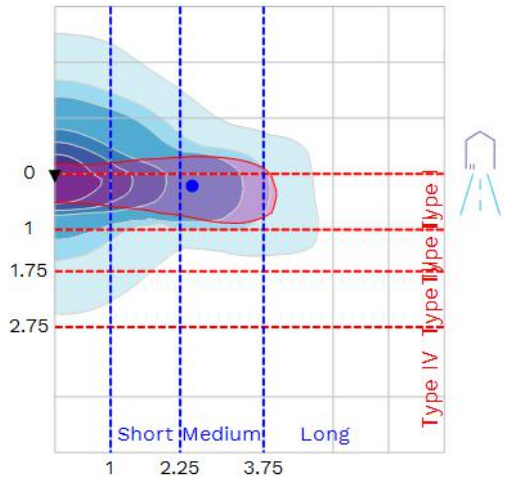
Isolux



K-Curve

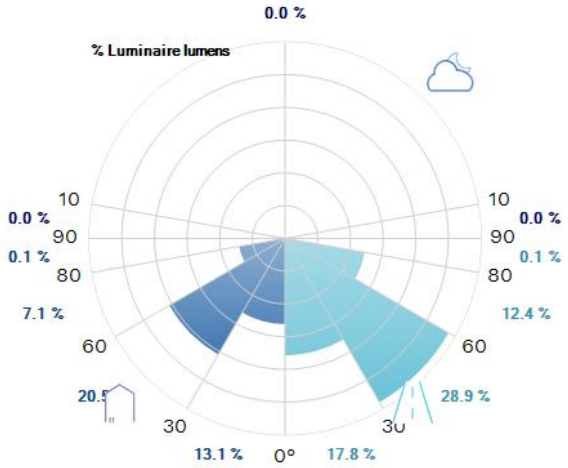


IES Roadway Classification / Nema Classification

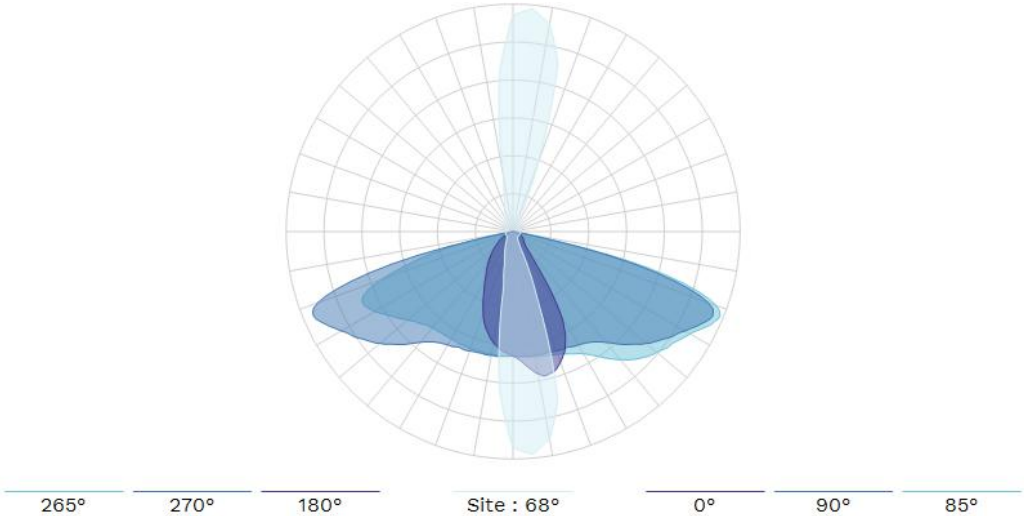


I - Medium

Luminaire classification system (LCS)



Intensity diagram in max Cone and in CPlane



http://www.schreder.com

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LICENCE

to use the ENEC+ Mark

ENEC+ Licence No.: 20281

Under the conditions given in the "Rules concerning the use of the CEBEC mark" complemented by the ENEC+ Agreement under contract 1173/2, the licence to use the ENEC+ Mark with suffix 02, as shown above, has been issued to:

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

For the product:

Road and street lighting

Trade name(s):

SCHREDER

Type(s)/Model(s):

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

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

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

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

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

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

Date: 2017-04-13

Signature:
Name: Calogero LANA
Position: Certification Manager

SGS Belgium NV – Division SGS CEBEC, Riverside Business Park, Avenue Internationalelaan 55, Building D, BE-1070 Brussels
Tel. +32 2 556 00 20 – cebec.info@sgs.com

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 Schréder Group

Subject: **VOLTANA-2 16 Led's**
Sample n°: P-E14361

Test purpose: **Electrical measurements @ 1A**

Remarks:
Test request n°: P-D14674
Folder n°: P-F14058

TEST CONDITIONS:

Operator: CLOSSET Frédérick

Driver: LG Innotek PISE-A055A, 1A driver

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

Power Supply:
Elgar Tw 3500-4
Supply voltage: 230 V 50 Hz

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

CONCLUSIONS:

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

Duplicate to: Mr M. Thijs
LAB 16/09/2014
J.P. Harchies

//P-14E674

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 Schréder 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