Test Report issued under the responsibility of:

TÜVRheinland®

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

Report Number.....:	CN244NBW 001
Date of issue .....:	2024-08-09
Total number of pages.....	48 pages (not include attachments)
Name of Testing Laboratory preparing the Report.....:	**TÜV Rheinland (GuangDong) Ltd.**
Applicant's name .....:	HeiSolar Energy Co., Ltd.
Address .....:	Building 17, No. A3, Fourth Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, Guangdong P.R. China
Test specification:	
Standard.....:	IEC 60598-2-3:2002, IEC 60598-2-3:2002/AMD1:2011 used in conjunction with IEC 60598-1:2020
Test procedure.....:	CB Scheme
Non-standard test method.....:	N/A
TRF template used.....:	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. .....:	IEC60598_2_3M
Test Report Form(s) Originator....:	Intertek Semko AB
Master TRF .....:	2021-11-11

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved IECEE 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.
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Test item description ..... :	Solar Street Light
Trade Mark(s) ..... :	HeiSolar®
Manufacturer ..... :	Shenzhen Angelila Optoel lectronics Co., Ltd Address: 4/F, Building B, Hongchengrui Industrial Park, Tangwei Community, Gongming Street, Guangming New District, Shenzhen, 518000 Guangdong P.R China
Model/Type reference ..... :	FC-10, FC-20, FC-30, FC-40, FC-50, FC-60, FC-80, FC-100, FC-120, W-20, W-40, W-60, W-80, W-100
Ratings ..... :	See 'General product information'

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	**TÜV Rheinland (GuangDong) Ltd.**	
Testing location/ address ..... :		No.199 Kezhu Road, Science City, Guangzhou Development Zone, Luogang District, Guangzhou, 510663, China	
Tested by (name, function, signature) ..... :		Dere Zhang, PE	
Approved by (name, function, signature) .. :		Ken Ou, Authorizer	
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address ..... :			
Tested by (name, function, signature) ..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address ..... :			
Tested by (name + signature) ..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
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):

Attachment 1: Additional requirements for LED module according to IEC 62031:2018, totally 1 pages;

Attachment 2: Additional requirements for miscellaneous electronic circuits according to IEC 61347-2-11:2001 + A1:2017, totally 3 pages;

Attachment 3: Blue light hazard to light sources and luminaires of IEC/TR 62778:2014, totally 2 pages;

Attachment 4: Additional requirements for controller according to IEC 61058-1:2016, totally 1 page;

Attachment 5: Additional requirements for battery supplied electronic controlgear according to IEC 61347-2-7:2011+A1:2017+A2:2021 & IEC 61347-1:2015+A1, totally 3 pages;

Attachment 6: Photo documentation, totally 44 pages.

Summary of testing:

Tests performed (name of test and test clause):

1. Models FC-60, FC-120, W-100 were selected to do full tests.
2. Requirements for integral LED module had been considered according to IEC 62031:2018.

   Blue light hazard safety according to IEC TR 62778 was checked. Tests were performed on model FC-60, FC-120, W-100 evaluated as RG1.
3. The requirements for control device according to IEC 61347-2-11:2001+A1:2017 and IEC 61347-1:2015+A1:2017 were considered.

Testing location:

TÜV Rheinland (GuangDong) Ltd.

No.199 Kezhu Road, Science City, Guangzhou Development Zone, Luogang District, Guangzhou, 510663, China

Summary of compliance with National Differences (List of countries addressed):

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.

(Representative)

HeiSolar® **FC Series Solar Street Light**	
Model: FC-60	Led Power: 60W (5050)
Mono Solar panel: 120W 16VDC	Lumen: 10800lm
LiFePO4 Lithium battery: 36AH 12.8VDC	CCT: 6000K
ta: 50°C Made In China	IP66   

Location: Attached on the external surface of lamp body

LiFePO4 battery: 12.8V 36AH Max. Ambient temperature:60°C Installed date: xxxxxx Manufactured date: xxxxxx Used date: xxxxxx	HeiSolar®  

Location: Attached on the external surface of battery pack

Solar panel input

Battery pack input

Location: Attached on the external surface near input connector of lamp body

Remark:

1. Above label is representative only, other models are the same design, except model name and ratings.
2. The height of letters and numbers was not less than 2mm.
3. The height of the other graphical symbols (including IP66) was not less than 5mm.

Test item particulars..... :	--
Classification of installation and use..... :	Class III, for outdoor 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 .....:	2024-04-15
Date (s) of performance of tests.....:	2024-04-15 to 2024-08-09

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.

Clause numbers between brackets refer to clauses in IEC 60598-1

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) .....:	Shenzhen Angelila Optoel lectronics Co., Ltd 4/F, Building B, Hongchengrui Industrial Park, Tangwei Community, Gongming Street, Guangming New District, Shenzhen, 518000 Guangdong P.R China

General product information and other remarks:

1. The products covered by this report are LED street lights, outdoor use.
2. All models in same series have the similar construction, main difference are size, LED quantity and battery pack.
3. All products can be controlled by IR remote control.
4. Models in series 1 and 2 with sensor, models in series 3 without sensor.
5. Models FC-40, FC-50, FC-60 have two alternative way to install.
6. Models in series 3 have two alternative lamp body.
7.Battery pack of models in series 2 and 3 are installed in stand base.
8. Models in same series have same control device, and models in series 2 and 3 have same control device.
9. Ratings: Class III, IP66, ta: 50°C, CCT: 3000K/4000K/6000K. For more details, refer to the model list:

Model list

Series No.	Model No.	Solar panel model No./ rating	Battery pack	Battery cells	LED module		Size (mm)	Weight (kg)	Max projected area (m^2)	Maximum mounting height (m)
					Lamp body #1	Alternative lamp body #2				
1	FC-10	JCN-PC70W-16; 16VDC, 70W, 4.37A	12.8V, 12Ah	3.2V, 6Ah, 8pcs	5050, 36pcs, 10W	---	Solar: 785*610*77 Lamp body: 690*270*230	10.5	Solar: 0.48 Lamp body: 0.186	5
	FC-20	JCN-PC70W-16; 16VDC, 70W, 4.37A	12.8V, 12Ah	3.2V, 6Ah, 8pcs	5050, 36pcs, 20W	---	Solar: 785*610*77; Lamp body: 690*270*230	13.05	Solar: 0.48 Lamp body: 0.186	6
	FC-30	JCN-PC70W-16; 16VDC, 70W, 4.37A	12.8V, 18Ah	3.2V, 6Ah, 12pcs	5050, 36pcs, 30W	---	Solar: 785*610*77; Lamp body: 690*270*230	15.05	Solar: 0.49 Lamp body: 0.186	8
	FC-40	JCN-PC80W-18; 18VDC, 80W,4.44A	12.8V, 24Ah	3.2V, 6Ah, 16pcs	5050, 36pcs, 40W	---	Solar: 770*635*77; Lamp body: 690*270*230	16.5	Solar: 0.49 Lamp body: 0.186	9
	FC-50	JCN-MC110W-16; 16VDC, 110W, 6.87A	12.8V, 30Ah	3.2V, 6Ah, 20pcs	5050, 36pcs, 50W	---	Solar: 830*820*77; Lamp body: 690*270*230	18.45	Solar: 0.69 Lamp body: 0.186	9
	FC-60	JCN-MC120W-16; 16VDC, 120W, 7.5A	12.8V, 36Ah	3.2V, 6Ah, 24pcs	5050, 36pcs, 60W	---	Solar: 830*835*77; Lamp body: 690*270*230	20	Solar: 0.70 Lamp body: 0.186	10
Seires 2	FC-80	JCN-PC160W-36; 36VDC, 160W, 4.44A	25.6V, 24Ah	3.2V, 6Ah, 32pcs	5050, 36pcs, 80W	---	Solar: 1300*750*90; Lamp body: 690*270*230; Battery pack: 530*210*100	25	Solar: 0.98 Lamp body: 0.186	11

	FC-100	G12M200W-36; 36VDC, 200W, 5.56A	25.6V 36Ah	3.2V, 6Ah, 48pcs	5050, 36pcs, 100W	---	Solar: 1650*790*90; Lamp body: 690*270*230; Battery pack: 530*210*100	30	Solar: 1.31 Lamp body: 0.186	12
	FC-120	JCN-MC260W-36; 36VDC, 260W, 7.22A	25.6V, 42Ah	3.2V, 6Ah, 56pcs	5050, 36pcs, 120W	---	Solar: 1520*930*90; Lamp body: 690*270*230 Battery pack: 530*210*100	35	Solar: 1.42 Lamp body: 0.186	12
Series 3	W-20	G12M35W-36; 36VDC, 35W, 0.98A (4pcs)	12.8V, 30Ah	3.2V, 6Ah, 20pcs	5050, 36pcs, 20W	3030, 90pcs, 30W	Solar: 1160*200*200; Lamp body: Max. 690*270*230; Battery pack: 530*210*100	18	Solar: 0.232 Lamp body: 0.18	9
	W-40	G12M35W-36; 36VDC, 35W, 0.98A (4pcs)	12.8V, 36Ah	3.2V, 6Ah, 24pcs	5050, 36pcs, 40W	3030, 90pcs, 40W	Solar: 1160*200*200; Lamp body: Max. 690*270*230; Battery pack: 530*210*100	22	Solar: 0.232 Lamp body: 0.18	10
	W-60	G12M40W-36; 36VDC, 40W, 1.11A (4pcs)	25.6V, 24Ah	3.2V, 6Ah, 32pcs	5050, 36pcs, 60W	3030, 90pcs, 60W	Solar: 1280*200*200; Lamp body: Max. 690*270*230; Battery pack: 530*210*100	26	Solar: 0.256 Lamp body: 0.18	11
	W-80	G12M45W-36; 36VDC, 45W, 1.25A (4pcs)	25.6V, 36Ah	3.2V, 6Ah, 48pcs	5050, 36pcs, 80W	3030, 90pcs, 80W	Solar: 1400*200*200; Lamp body: Max. 690*270*230; Battery pack: 530*210*100	28	Solar: 0.280 Lamp body: 0.18	12
	W-100	G12M50W-36; 36VDC, 50W, 1.39A (4pcs)	25.6V, 42Ah	3.2V, 6Ah, 56pcs	5050, 36pcs, 100W	3030, 90pcs, 100W	Solar: 1520*200*200; Lamp body: Max. 690*270*230; Battery pack: 530*210*100	32	Solar: 0.304 Lamp body: 0.18	12

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.2 (0)	**GENERAL TEST REQUIREMENTS**		—
3.2 (0.3)	More sections applicable .....:	Yes ☐ No ☒ Section/s:	—
3.2 (0.5)	Components	(see Annex 1)	—
3.2 (0.7)	**Information for luminaire design in light sources standards**		—
3.2 (0.7.2)	Light source safety standard .....:	IEC 62031	—
	Luminaire design in the light source safety standard		—
3.4 (2)	**CLASSIFICATION OF LUMINAIRES**		**P**
3.4 (2.2)	Type of protection .....:	Class III	P
3.4 (2.3)	Degree of protection.....:	IP65	P
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**		**P**
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		N/A
3.5 (3.3.3)	Operating temperature		P
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

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Clause	Requirement + Test	Result - Remark	Verdict
3.5 (3.3.9)	Power factor and supply current		N/A
3.5 (3.3.10)	Suitability for use indoors		N/A
3.5 (3.3.11)	Luminaires with remote control		P
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	DC	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	Type Z for series 2-3	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	Non-user replaceable light sources for series 1-2 and series 3 with alternative lamp body; Non replaceable light sources for other models	P
3.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
3.5 (3.3.23)	Luminaires without control gear provided with necessary information for selection of appropriate component		N/A
3.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
3.5 (3.3.25)	Luminaires employing light sources emitting UV on mains wiring, information provided		N/A
3.5 (3.3.26)	Wall mounted luminaire using external flexible cable or cord longer than 0.3 m, information provided		N/A
3.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test		P
	Label attached		P
3.5 (-)	Additional information in instruction leaflet		P
	a) Design attitude	See user manual	P
	b) Weight	See user manual	P
	c) Overall dimensions	See user manual	P
	d) Maximum projected area if applicable	See user manual	P

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Clause	Requirement + Test	Result - Remark	Verdict
	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 user manual	P
	i) Maximum mounting height	See user manual	P
3.6 (4)	**CONSTRUCTION**		**P**
3.6 (4.2)	Components replaceable without difficulty		P
3.6 (4.3)	Wireways smooth and free from sharp edges		P
3.6 (4.4)	**Lampholders**		**N/A**
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**		**N/A**
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
3.6 (4.6)	**Terminal blocks**		**N/A**
	Tails		N/A
	Unsecured blocks		N/A
3.6 (4.7)	**Terminals and supply connections**		**P**

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.7.1)	Contact to metal parts		P
3.6 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
3.6 (4.7.3)	Terminals for supply conductors		N/A
3.6 (4.7.3.1)	Welded method and material		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.6.2		N/A
	- electrical test according to 15.6.3		N/A
	- heat test according to 15.6.3.2.3 and 15.6.3.2.4		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**		P
	- adequate rating		**P**
	- adequate fixing	Fixed by structure	P
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		P
3.6 (4.9)	**Insulating lining and sleeves**		**P**
3.6 (4.9.1)	Retainment		P
	Method of fixing.....:	Fixed by structure	P
3.6 (4.9.2)	Insulated linings and sleeves:		P
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		P
	b) Ageing test. Temperature (°C).....:		N/A
3.6 (4.10)	**Double or reinforced insulation**		**N/A**
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
3.6 (4.10.2)	Assembly gaps:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- not coincidental		N/A
	- no straight access with test probe		N/A
3.6 (4.10.3)	Retainment of insulation:		N/A
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
3.6 (4.10.4)	Protective impedance device		N/A
	Basic and supplementary insulation bridged by resistor(s) or appropriate capacitor		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
3.6 (4.11)	**Electrical connections and current-carrying parts**		**P**
3.6 (4.11.1)	Contact pressure		P
3.6 (4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
3.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- 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		P
3.6 (4.12)	**Screws and connections (mechanical) and glands**		**P**
3.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part.....:	Mounting screw all models: 29Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed glass: 2.0Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed LED lens: 0.5Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed enclosure of lampbody: 2.5Nm	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Torque test: torque (Nm); part.....:	Screw fixed solar panel for series 1-2: 8.0Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed battery pack for series 2-3: 0.6Nm	P
	Torque test: torque (Nm); part.....:	Screw fixed solar panel for series 3: 1.2Nm	P
3.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
3.6 (4.12.4)	Locked connections:		P
	- fixed arms; torque (Nm).....:		N/A
	- lampholder; torque (Nm).....:		N/A
	- push-button switches; torque 0,8 Nm.....:		N/A
3.6 (4.12.5)	Screwed glands; force (Nm).....:	Plastic; 3.25Nm	P
3.6 (4.13)	**Mechanical strength**		**P**
3.6 (4.13.1)	Impact tests:		P
	- fragile parts; energy (Nm).....:	Glass cover; 0.5Nm	P
	- other parts; energy (Nm).....:	Lens, plastic cover and metal enclosure: 0.7Nm	P
	1) live parts	No live part	N/A
	2) linings		N/A
	3) protection		P
	4) covers		P
3.6 (4.13.2)	Metal parts have adequate mechanical strength		P
3.6 (4.13.3)	Straight test finger		N/A
3.6 (4.13.4)	Rough service luminaires		N/A
	- 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**		**P**
3.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	FC-60: 4 x Max. 20kg= 80kg; FC-120: 4 x Max. 35kg= 140kg; W-100: 4 x Max. 32kg= 128kg	P
	B) torque 2,5 Nm		P

IEC 60598-2-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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 .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
3.6 (4.14.3)	Adjusting devices:		P
	- flexing test; number of cycles.....:	45 cycles	P
	- strands broken .....:	0%	P
	- electric strength test afterwards		P
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**		**P**
	- glow-wire test 650°C.....:	See Test Table 3.15 (13.3.2)	P
	- 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		N/A
	a) construction		N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
3.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		**P**
	No lamp control gear .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
3.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
3.6 (4.16.2)	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
3.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
3.6 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
3.6 (4.18)	**Resistance to corrosion**		**P**
3.6 (4.18.1)	- rust-resistance		P
3.6 (4.18.2)	- season cracking in copper		N/A
3.6 (4.18.3)	- corrosion of aluminium		P
3.6 (4.19)	Ignitors compatible with ballast		N/A
3.6 (4.20)	Rough service vibration		N/A
3.6 (4.21)	**Protective shield**		N/A
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
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**		**P**
3.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
3.6 (4.24.2)	Retinal blue light hazard		P
	Class of risk group assessed according to IEC/TR 62778 .....:	RG1	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with E_{thr} :		N/A
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2...:		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- 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**		**P**
	No sharp point or edges		P
3.6 (4.26)	**Short-circuit protection**		**N/A**
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
	Supply source ES1 PSE		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**		**N/A**
	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**		**N/A**
	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

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.29)	**Luminaires with non-replaceable light source**		**P**
	Not possible to replace light source		P
	Live part not accessible after parts have been opened by hand or tools		P
3.6 (4.30)	**Luminaires with non-user replaceable light source**		**P**
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	At least one fixing means requiring use of tool	No live part	N/A
3.6 (4.31)	**Insulation between circuits**		**N/A**
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
	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 or PELV circuits		N/A
	Used SELV/PELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV/PELV circuits from LV supply		N/A
	Insulating of SELV/PELV circuits from other non SELV/PELV circuits		N/A
	Insulating of SELV/PELV circuits from FELV		N/A
	Insulating of SELV/PELV circuits from other SELV/PELV circuits		N/A
	SELV/PELV circuits insulated from accessible parts according Table X.1		N/A
	Plugs not able to make any electrical contact with 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		N/A
	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 make any electrical contact with socket-outlets of other voltage systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	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:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3		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**		**N/A**
	Comply with IEC 61643-11		N/A
	External to controlgear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A
3.6 (4.33)	**Luminaire powered via information technology communication cabling**		**N/A**
	Requirements for Class III luminaire		N/A
	Rated voltage within the range of ES1 and does not exceed maximum voltage of used connector		N/A
	Luminaire does not create any hazard from overvoltage	(see Annex 2)	N/A
3.6 (4.34)	**Electromagnetic fields (EMF)**		**P**
	No harmful electromagnetic fields		P
3.6 (4.35)	**Protection against moving fan blades**		**N/A**
	Test with a standard test finger		N/A
	Test with test probe acc. to Figure 13 (IEC 61032) for portable luminaire		N/A
	Blades rounded with radius ≥ 0.5 mm and:		N/A
	-hardness less than D60 Shore		N/A
	-peripheral speed less than 15 m/s		N/A
	-input power of fan ≤ 2 W at rated voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.6 (4.36)	**Track-mounted luminaires**		**N/A**
	Test in accordance with Annex A of IEC60570:2003/AMD2:2019		N/A
3.6.1 (-)	At least IP X3 or X5 respectively. IP ……..:	IP66	P
	Column-integrated luminaires:		N/A
	- 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		N/A
3.6.3.1 (-)	Static load test		P
	- drag coefficient..... :	1.2	P
	- loaded area (m²)..... :	FC-60: Solar: 0.7m^2 Lamp body:0.186m^2 FC-120: Solar: 1.42m^2 Lamp body:0.186m^2 W-100: Solar: 0.304m^2 Lamp body:0.18m^2	P
	- used load (N)..... :	FC-60: Solar: 1392N, Lamp body:370N; FC-120: Solar: 2823N, Lamp body:370N; W-100: Solar: 605N Lamp body:358N	P
	- measured deformation (cm/m) ..... :	< 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:		P
	a) glass that fractures into small pieces (test according to 3.6.5.1), or		P
	b) glass having a high impact shock resistance (test according to 3.6.5.2), or		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	- number of particles is more than 40 ..... :	Min. 52pcs	P
3.6.5.2 (-)	Protection by the use of high impact resistant glass		N/A
3.6.5.2.1 (-)	Glass covers have high mechanical strength		N/A
	Test according IEC 62262 with test apparatus according IEC 60068-2-75 with impact energy of 5J on preconditioned sample		N/A
3.6.5.2.2 (-)	Glass covers not break into large pieces		N/A
	- test according 3.6.5.1, number of particles is more than 20 ..... :		N/A
3.6.6 (-)	Connection compartment of column-integrated luminaire		N/A
	- 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:		N/A
	- 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:		N/A
	- 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**		N/A
3.7 (11.2)	Creepage distances and clearances .....:	See Table 3.7 (11.2)	N/A
	Impulse withstand category (Normal category II) (Category III Annex U, Table U.1)	Category II ☐ Category III ☐	—
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
3.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	N/A
	Creepage distances for frequency over 30 kHz:		N/A
	- Controlgear marked with $\hat{U}_{OUT}$ and f_{UOUT} according IEC 61347-1, clause 7.1, item w	See Test Table 3.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 3.7 (11.2) I	N/A
	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 3.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 3.7 (11.2) II	N/A
3.8 (7)	**PROVISION FOR EARTHING**		N/A
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
	Protective earth makes contact first		N/A
	Terminal blocks with integrated screwless protective 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)	Protective 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
3.8 (7.2.5)	Protective earth terminal integral part of connector socket		N/A
3.8 (7.2.6)	Protective earth terminal adjacent to mains terminals		N/A
3.8 (7.2.7)	Electrolytic corrosion of the protective earth terminal		N/A
3.8 (7.2.8)	Material of protective earth terminal		N/A
	Contact surface bare metal		N/A
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)	Protective earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
3.8 (7.2.12)	PELV circuit connected to protective earth for functional purpose		N/A
3.9 (14)	**SCREW TERMINALS**		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
3.9 (15)	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		**N/A**
	Separately approved; component list.....:	(see Annex 1)	N/A
	Part of the luminaire .....:	(see Annex 4)	N/A
3.10 (5)	**EXTERNAL AND INTERNAL WIRING**		**P**
3.10 (5.2)	**Supply connection and external wiring**		**P**
3.10 (5.2.1)	Means of connection.....:	Solar panel	P
	Outdoor luminaire has not PVC insulated external wiring if not Class III or SELV/PELV circuits ≤ 25 V AC/60 V DC/25 V peak interrupted DC voltage with frequency 10Hz -200 Hz or protected from outdoor environment		P
3.10 (5.2.2)	Type of cable.....:	See Annex 1	P
	Nominal cross-sectional area (mm²).....:	See Annex 1	P
	Cables equal to IEC 60227 or IEC 60245		N/A
3.10 (5.2.3)	Type of attachment, X, Y or Z	Type Z	P
3.10 (5.2.5)	Type Z not connected to screws		P
3.10 (5.2.6)	Cable entries:		P
	- 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:		N/A
	- 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:		P
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict
	- insulating material or lining		P
3.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	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	Type Z	P
3.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) .....:	60	P
	- torque test: torque (Nm).....:	0.25	P
	- displacement ≤ 2 mm	Max. 0.9	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
3.10 (5.2.10.4)	Luminaire with/designed for use with supply cord with maximum current of 2A:		N/A
	- Ordinary Class III luminaire supplied with SELV ≤ 25V RMS/60V DC		N/A
	- Ordinary Class III luminaire supplied with PELV ≤12V RMS/30V DC		N/A
	- Other than ordinary Class III luminaire supplied with voltage ≤12V RMS/30V DC		N/A
	Pull test of 30N		N/A
3.10 (5.2.11)	External wiring passing into luminaire		P
3.10 (5.2.12)	Looping-in terminals		N/A
3.10 (5.2.13)	Wire ends not tinned		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Wire ends tinned: no cold flow		P
3.10 (5.2.14)	Mains plug same protection		N/A
	Class III luminaire plug		P
	No unsafe compatibility		P
3.10 (5.2.15)	Connectors for Class III luminaires (IEC 60603 or IEC 62680)		N/A
3.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Appliance inlet or connector systems (IEC 61984)		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		N/A
	- IEC 60083		N/A
	- other standard		N/A
3.10 (5.3)	**Internal wiring**		**P**
3.10 (5.3.1)	Internal wiring of suitable size and type	(see Annex 1)	P
	Through wiring		N/A
	- 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 protective earth only		N/A
3.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²) .....:		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
3.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		P
	Cross-sectional area (mm²) .....:	(see Annex 1)	P
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

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Clause	Requirement + Test	Result - Remark	Verdict
3.10 (5.3.1.5)	SELV/PELV current-carrying parts		N/A
3.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
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°		P
3.10 (5.3.3)	Insulating bushings:		N/A
	- 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		N/A
3.10 (5.3.6)	Wire carriers		P
3.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
3.10 (5.4)	**Test to determine suitability of conductors having a reduced cross-sectional area**		**N/A**
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(See Annex 1)	N/A
	No damage to luminaire wiring after test		N/A
3.10.1 (-)	Cord anchorage if applicable		P
	- pull test: 25 times; pull (N) ..... :	60	P
	- torque test: torque (Nm)..... :	0.25	P

3.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		**N/A**
3.11 (8.2.1)	Live parts not accessible		N/A
	Basic insulated parts not used on the outer surface without appropriate protection		N/A
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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:		N/A
	- 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 lamp holder of metal in class I luminaires shall be connected to protective earth		N/A
3.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	- interrupted DC voltage (V) ……..:		N/A
	- touch current if applicable (mA) .....:		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	- interrupted DC voltage (V) ……..:		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.11 (8.2.3.d)	PELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	Other than ordinary luminaire:		N/A
	- voltage under load/ no-load AC (V).....:		N/A
	- voltage under load/ no-load DC (V)……...:		N/A
	One pole insulated if required		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		N/A
3.11 (8.2.6)	Covers reliably secured		N/A
3.11 (8.2.7)	Luminaire other than below with capacitor > 0,5 μF not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor > 0,1 μF (0.25) not exceed 34 V 1 s after disconnection		N/A
	Other luminaires with capacitor > 0,1 μF (0.25) with plug and track adaptors not exceed 60 V 5 s after disconnection		N/A

3.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		**P**
3.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5), (12.6) and (12.7) after (9.2) before (9.3) as specified in 3.13		—
3.12 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	LED module used	—
	Control gear if separate and not supplied	(Controlgear used see Annex 2)	—
3.12 (12.3)	**Endurance test:**		P
	a) mounting-position .....:	As normal use	—
	b) test temperature (°C).....:	55	—
	c) total duration (h) .....:	240	—
	d) supply voltage (V).....:	Full charged battery supplied	—
	d) if not equipped with control gear, constant voltage/current (V) or (A) .....:	—	—
3.12 (12.3.1d)	d) Class III luminaires powered via information technology communication cable:		N/A
	- voltage under normal operation (V)……...:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- voltage under abnormal operation (V)……..:		—
	e) luminaire ceases to operate		—
	f) luminaire with constant light output function		N/A
3.12 (12.3.2)	After endurance test:		P
	- 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)	N/A
3.12 (12.6)	**Thermal test (failed lamp control gear condition):**		**N/A**
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		N/A
	- 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 .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Test according to 12.7.1.1:		N/A
	- 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:		N/A
	- 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		N/A
	- 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		P

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Clause	Requirement + Test	Result - Remark	Verdict
3.12.2 (-)	(See above)		—
3.12.3 (-)	Glass covers used within the thermal limits declared by the glass manufacturer		P
3.13 (9)	**RESISTANCE TO DUST 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:		P
	- classification according to IP.....:	IP66	—
	- mounting position during test.....:	As normal use	—
	- fixing screws tightened; torque (Nm).....:	2/3 of torque in cl. 3.6 (4.12)	—
	- tests according to clauses .....:	cl.9.2.2 and cl. 9.2.7	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire		N/A
	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
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight, pressure watertight, high pressure and temperature water jet-proof or high pressure and cold water jet-proof luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		N/A
	g) no damage of protective shield or glass envelope		P
3.13 (9.3)	Humidity test 48 h	25°C, 93%RH	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 .....:	Metal foil	—
	Insulation resistance (MΩ).....:	Limit 1 MΩ	—

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Clause	Requirement + Test	Result - Remark	Verdict
	SELV/PELV:		P
	- between current-carrying parts of different polarity:		N/A
	- between current-carrying parts and mounting surface .....:	>10MΩ	P
	- between current-carrying parts and metal parts of the luminaire.....:	>10MΩ	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:	>10MΩ	P
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV/PELV:		N/A
	- between live parts of different polarity.....:		N/A
	- between live parts and mounting surface .....:		N/A
	- between live parts and metal parts.....:		N/A
	- 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 .....:		P
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).....:	See below	P
	SELV/PELV:		P
	- between current-carrying parts of different polarity:	--	N/A
	- between current-carrying parts and mounting surface .....:	500V	P
	- between current-carrying parts and metal parts of the luminaire.....:	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts .....:	500V	P
	- Insulation bushings as described in Section 5 .....:		N/A
	Other than SELV/PELV:		N/A
	- between live parts of different polarity.....:		N/A
	- between live parts and mounting surface .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- between live parts and metal parts.....:		N/A
	- 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 (mA).....:		N/A
	Protective conductor current (mA).....:		N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict

3.7 (11.2)	TABLE I: Creepage distances and clearances							N/A
	Minimum distances (mm) for a.c. up to 30 kHz sinusoidal voltages							N/A
	Applicable part of IEC 60598-1 Table 11.1.A*, 11.1.B* and 11.2*							N/A
	Insulation type **	Measured clearance	Required		Measured creepage	Required		
			clearance	*Table		creepage	*Table	
Distance 1:	—	—	—	—	—	—	—	
Working voltage (V) ..... :					—			—
PTI ..... :					< 600 ☐ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :					—			—
Supplementary information: —								
Distance 2:	—	—	—	—	—	—	—	
Working voltage (V) ..... :								—
PTI ..... :					< 600 ☐ ≥ 600 ☐			—
Pulse voltage or U_P if applicable (kV) ..... :					—			—
Supplementary information: —								

** Insulation type: B – Basic; S – Supplementary; R – Reinforced. See also IEC 60598-1 Annex M.

3.7 (11.2)	TABLE II: Creepage distances and clearances						N/A
Minimum distances (mm) for a.c. higher than 30 kHz sinusoidal voltages							
Applicable part of IEC 61347-1 Table 7 and 8* or IEC 60664-4 Table 1 and 2							
Distances	Insulation type **	Measured clearance	Required		Measured creepage	Required	
			clearance	*Table		creepage	*Table
Distance 1:	--	--	--	--	--	--	--
Working voltage (V) ..... :					--		—
Frequency if applicable (kHz) ..... :					--		—
PTI ..... :					< 600 ☐ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Supplementary information:							

** Insulation type: B – Basic; S – Supplementary; R – Reinforced.

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

3.15 (13.2.1)	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm) .....:		2	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
DC connector bobbin	See Annex 1	125	1.6
Control device PCB	See Annex 1	125	1.0
Connector body of battery protective board	See Annex 1	125	1.4
PCB of battery protective board	See Annex 1	125	1.0
Plastic material of pin for son PCB	See Annex 1	125	1.2
Supplementary information: —			

3.15 (13.3.1)	TABLE: Needle-flame test				P
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
DC connector bobbin	See Annex 1	10s	No	0	P
Control device PCB	See Annex 1	10s	No	0	P
Connector body of battery protective board	See Annex 1	10s	No	0	P
PCB of battery protective board	See Annex 1	10s	No	0	P
Plastic material of pin for son PCB	See Annex 1	10s	No	0	P
Supplementary information: —					

3.5 (13.3.2)	TABLE: Glow-wire test (IEC 60695-2-11)			P
Glow wire temperature .....:		650°C		—
Object/ Part No./ Material	Duration of time	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Result
Plastic cover of sensor	30s	No	0	P

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Clause	Requirement + Test	Result - Remark	Verdict

LED lens	30s	No	0	P
Plastic reflector	30s	No	0	P
Mylar of battery pack	30s	No	0	P
Supplementary information: -—				

3.15 (13.4)	TABLE: Proof tracking test				P
Test voltage PTI .....:		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
DC connector bobbin	See Annex 1	Yes	Yes	Yes	P
Control device PCB	See Annex 1	Yes	Yes	Yes	P
Connector body of battery protective board	See Annex 1	Yes	Yes	Yes	P
PCB of battery protective board	See Annex 1	Yes	Yes	Yes	P
Plastic material of pin for son PCB	See Annex 1	Yes	Yes	Yes	P
Plastic cover of sensor	See Annex 1	Yes	Yes	Yes	P
LED lens	See Annex 1	Yes	Yes	Yes	P
Plastic reflector	See Annex 1	Yes	Yes	Yes	P
Mylar of battery pack	See Annex 1	Yes	Yes	Yes	P
Supplementary information:—					

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

ANNEX 1	TABLE: Critical components information					P
Object/part No.	Code	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity
Solar panel #1	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-PC70W-16	16VDC, 70W, 4.37A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #2	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-PC80W-18	18VDC, 80W, 4.44A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #3	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-MC110W-16	16VDC, 110W, 6.87A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #4	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-MC120W-16	16VDC, 120W, 7.5A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #5	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-PC160W-36	36VDC,160W, 4.44A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #6	B	Ningbo Ring Electronics Co., Ltd.	G12M200W-36	36VDC, 200W, 5.56A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	DEKRA 31-90009-002 REV.1
Solar panel #7	B	Shenzhen JCN New Energy Technology Co., Ltd.	JCN-MC260W-36	36VDC, 260W, 7.22A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	SGS CB BE-42893
Solar panel #8	B	Ningbo Ring Electronics Co., Ltd.	G12M35W-36	36VDC, 35W, 0.98A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	DEKRA 31-90009-002 REV.1

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Clause	Requirement + Test	Result - Remark	Verdict

Solar panel #9	B	Ningbo Ring Electronics Co., Ltd.	G12M40W-36	36VDC, 40W, 1.11A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	DEKRA 31-90009-002 REV.1
Solar panel #10	B	Ningbo Ring Electronics Co., Ltd.	G12M45W-36	36VDC, 45W, 1.25A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	DEKRA 31-90009-002 REV.1
Solar panel #11	B	Ningbo Ring Electronics Co., Ltd.	G12M50W-36	36VDC, 50W, 1.39A	IEC 61215-1; IEC 61215-2; IEC 61215-1-1; IEC 61730-1; IEC 61730-2	DEKRA 31-90009-002 REV.1
Solar panel box	C	Zhongshan Senlang Mould Factory	MM30-02-01	PC	IEC 60598-1; IEC 60598-2-3	Tested with appliance
Solar panel lead wire; Lamp body internal input wire; Lead wire of control device; LED module wire (only for series 1)	B	Queshan Yuqiang Cable Co., Ltd.	H05RN-F	2 x 1.0mm^2	EN 50525-2-21	VDE 40044073
Wire between solar panel and control device; Wire between battery pack and control device (only for series 2 and 3)	B	Queshan Yuqiang Cable Co., Ltd.	H05RN-F	2 x 1.5mm^2	EN 50525-2-21	VDE 40044073
LED module wire for series 2 and 3	B	Queshan Yuqiang Cable Co., Ltd.	H05RN-F	2 x0.75-1.0mm^2	EN 50525-2-21	VDE 40044073
	D	Foshan Siato Conduction Technology Co., Ltd	H03VVH2-F	2 x0.75-1.0mm^2	EN 50525-2-21	VDE 40050246
Wire between solar panel for series 2 and 3	B	Queshan Yuqiang Cable Co., Ltd.	H05RN-F	2 x0.75-1.0mm^2	EN 50525-2-21	VDE 40044073
DC connector	C	HeiSolar Energy Co., Ltd.	DC series	Max. 36VDC, 10A	IEC 60598-1; IEC 60598-2-3	Tested with appliance

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

Enclosure of control device	C	Zhongshan Senlang Mould Factory	MM30-02-01	PC	IEC 60598-1; IEC 60598-2-3	Tested with appliance
Plastic cover of sensor	C	SABIC INNOVATIVE PLASTICS US L L C	945(GG)	PC	IEC 60598-1; IEC 60598-2-3	Tested with appliance
Potting material of control device	B,C	DONGGGUAN SHI PAI HUA CHUANG MATERIAL FTY	808A/B	Epoxy Casting Compound (EP - Casting), V-0	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E304477
PCB of control device	B,C	KINGBOARD LAMINATES HOLDINGS LTD	KB-6150	130°C, V-0	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E123995
Plastic material of pin for son PCB	C	SABIC INNOVATIVE PLASTICS US L L C	945(GG)	PC, V-0, 130°C	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E121562
Winding of control device	B,C	G K WINDING WIRES LTD	GEEKAY SOLD-F	155°C	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E205855
LED #1	C	Guandong Cai Ting Photoelectric Technology Co., Ltd.	3030	Vf: 3.0-3.3V ; If: 450mA; Size: 3.0mm x 3.0 mm x 0.67mm; CCT: 3000K/4000K/6000K	IEC 60598-1; IEC 60598-2-3	Tested with appliance
LED #2	C	SHENZHEN LEPOWER OPTO ELECTRONICS CORP., LTD	5050	Vf: 10-12V@ If: 90mA; Size: 5.0mm x 5.0 mm x 0.44mm; CCT: 3000K/4000K/ 6000K	IEC 60598-1; IEC 60598-2-3	Tested with appliance
LED PCB	C	Jiangmen Chuanghuite Electronic Co LTD	CHT-AL1	130°C, V-0, metal base	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E519701
Heat-shrinkable tube	B,C	JIANGSU DASHENG HEAT SHRINKABLE MATERIAL CO LTD	DRS-1	600V, 125°C	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E203831
LED lens	C	CHI MEI CORPORATION	PMMA-110V(+)	PMMA	IEC 60598-1; IEC 60598-2-3	Test with the appliance

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

Plastic reflector	B,C	SABIC INNOVATIVE PLASTICS US L L C	241R(f2)	Polycarbonate (PC) material, 130°C, V-2	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E121562
Glass	C	ZHEJIANG YAOJIANG IMPORT AND EXPORT CO., LTD	Tempered glass	Tempered glass, Δt: 180°C, min.3.0mm thickness	IEC 60598-1; IEC 60598-2-3	Tested with appliance
Battery cell	B	Dongguan LongTTech Company Ltd.	32700 6000mAh	3.2V, 6000mAh, taper-off current: 300mA; Final voltage: 2V	IEC 62133-2	TUV RH CB JPTUV-142938
PCB of battery protective board	B,C	JIANGMEN JIANGHAI ZHONGZHENG CIRCUIT BOARD CO LTD	ZZ-03	V-0, 130°C	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E501072
Connector body of battery protective board	C	Covestro Deutschland AG [PC Resins]	1695 + (z)	PC, 130°C	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E41613
Wire of battery pack connected to control device (only for series 1)	B	Wonderful Ebeam Cable Sdn. Bhd.	H05VV-F	2 x 1.0mm^2	EN 50525-2-21	VDE 113774
Connector wire of battery protective board	B,C	SHENZHEN JIAHUIDA ELECTRONICS CO LTD	1007	80°C, 22AWG	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E361915
Wire between battery and battery protective board	B,C	SHENZHEN JIAHUIDA ELECTRONICS CO LTD	3235	200°C, 14-16AWG	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E361915
Mylar of battery pack	B,C	CHENGDU KANGLONGXIN PLASTICS CO LTD	KLX FRPC-1880	Polycarbonate (PC) material, 125°C, V-0	IEC 60598-1; IEC 60598-2-3	Tested with appliance and UL E315185
Fiber enclosure of battery pack	B,C	Dongguan Chenying Fiber Technology Co LTD	HF PET	PET	IEC 60598-1; IEC 60598-2-3	Tested with appliance
Screwless terminal block of battery pack for series 2 and 3	B	Jiangxi Gaochao Industrial Co., Ltd.	KB18-2P; KB18-2PJ	AC 450 V, 16A, 0,5-2,5mm^2, T110	EN 60998-1; EN 60998-2-2	TUV SUD B 003006 0001 Rev. 01

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Clause	Requirement + Test	Result - Remark	Verdict

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

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2-1	TABLE: Thermal tests of Section 12		P
	Type reference ..... :	FC-60	—
	Lamp used ..... :	LED module	—
	Lamp control gear used ..... :	Control device	—
	Mounting position of luminaire ..... :	As normal use	—
	Supply wattage (W) ..... :	See below	—
	Supply current (A) ..... :	See below	—
	Temperatures in test 1 - 4 below are corrected for ta (°C) ..... :	50°C	—
	- abnormal operating mode ..... :	a. Short circuit one LED b. Open circuit one LED	—
3.12 (12.4)	- test 1: rated voltage ..... :	—	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	1.Battery charging during test 2.Battery fully-charged before	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—
3.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage ..... :	Charging & Battery fully-charged before a. SC one LED, Normal working b. OC one LED, Normal working	—

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal					Cl. 12.5 – abnormal	
		test 1	test 2		test 3	limit	test 4	limit
			1	2				
Solar contact	50.0	--	59.8	50.0	--	Ref.	--	--
Solar wire	50.0	--	59.2	50.1	--	90	--	--
Connector between solar and control device	50.0	--	52.8	52.7	--	Ref.	--	--
Control device PCB	50.0	--	53.6	61.3	--	130	--	--
Control device wire	50.0	--	53.0	55.0	--	90	--	--
LED module wire	50.0	--	52.8	51.4	--	90	--	--
Battery wire	50.0	--	52.4	51.4	--	80	--	--
Connector inner lamp body	50.0	--	53.4	58.0	--	Ref.	--	--

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

Enclosure of control device	50.0	--	52.8	53.9	--	Ref.	--	--
LED module PCB	50.0	--	52.3	63.9	--	130	--	--
Glass (inner)	50.0	--	51.7	59.6	--	Ref.	--	--
Glass (outer)	50.0	--	51.8	55.5	--	Ref.	--	--
Battery surface	50.0	--	51.0	50.9	--	60	--	--
Circuit protection board PCB of Battery	50.0	--	51.8	51.5	--	130	--	--
Mounting surface	50.0	--	52.4	50.2	--	90	--	--
Lighted object (0.1m)	50.0	--	54.1	52.0	--	90	--	--
Supplementary information: During the abnormal operation a and b, lamp normal working, all temperatures are the same as normal operation 1 and 2.								

ANNEX 2-1	TABLE: Thermal tests of Section 12		P
	Type reference ..... :	FC-120	—
	Lamp used ..... :	LED module	—
	Lamp control gear used ..... :	Control device	—
	Mounting position of luminaire ..... :	As normal use	—
	Supply wattage (W) ..... :	See below	—
	Supply current (A) ..... :	See below	—
	Temperatures in test 1 - 4 below are corrected for ta (°C) ..... :	50°C	—
	- abnormal operating mode ..... :	a. Short circuit one LED b. Open circuit one LED	—
3.12 (12.4)	- test 1: rated voltage ..... :	—	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	1.Battery charging during test 2.Battery fully-charged before	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	—	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	—	—
3.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage ..... :	Charging & Battery fully-charged before a. SC one LED, Normal working b. OC one LED, Normal working	—

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

Temperature measurements (°C)								
Part	Ambient	Cl. 12.4 – normal					Cl. 12.5 – abnormal	
		test 1	test 2		test 3	limit	test 4	limit
			1	2				
Solar contact	50.0	--	76.0	52.6	--	Ref.	--	--
Solar wire	50.0	--	50.0	50.4	--	90	--	--
Control device wire	50.0	--	50.2	51.6	--	90	--	--
Control device PCB	50.0	--	54.7	61.8	--	130	--	--
Winding of control device	50.0	--	58.1	62.3	--	120	--	--
Connector between solar and control device	50.0	--	51.2	54.4	--	Ref.	--	--
Sensor surface	50.0	--	51.0	52.3	--	Ref.	--	--
Sensor wire	50.0	--	51.0	54.8	--	90	--	--
Connector inner lamp body	50.0	--	51.8	56.4	--	Ref.	--	--
Battery lead wire	50.0	--	50.6	51.3	--	80	--	--
Battery cell surface	50.0	--	50.6	50.1	--	60	--	--
Battery pack surface	50.0	--	50.7	50.3	--	60	--	--
LED module connector	50.0	--	51.7	56.1	--	Ref.	--	--
LED module PCB	50.0	--	50.8	82.5	--	130	--	--
LED module wire	50.0	--	50.9	78.5	--	90	--	--
Mounting surface	50.0	--	51.0	50.0	--	90	--	--
Lighted object (0.1m)	50.0	--	51.8	50.8	--	90	--	--
Supplementary information: During the abnormal operation a and b, lamp normal working, all temperatures are the same as normal operation 1 and 2.								

ANNEX 2-1	TABLE: Thermal tests of Section 12		P
	Type reference ..... :	W-100	—
	Lamp used ..... :	LED module	—
	Lamp control gear used ..... :	Control device	—
	Mounting position of luminaire ..... :	As normal use	—
	Supply wattage (W) ..... :	See below	—
	Supply current (A) ..... :	See below	—

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

	Temperatures in test 1 - 4 below are corrected for ta (°C) .....:	50°C	—
	- abnormal operating mode.....:	a. Short circuit one LED b. Open circuit one LED	—
3.12 (12.4)	- test 1: rated voltage .....:	—	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current .....:	1.Battery charging during test 2.Battery fully-charged before	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage.....:	—	—
	Through wiring or looping-in wiring loaded by a current of A during the test .....:	—	—
3.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage .....:	Charging & Battery fully-charged before a. SC one LED, Normal working b. OC one LED, Normal working	—

Temperature measurements (°C)

Part	Ambient	Cl. 12.4 – normal					Cl. 12.5 – abnormal	
		test 1	test 2		test 3	limit	test 4	limit
			1	2				
Solar contact	50.0	--	51.4	51.6	--	Ref.	--	--
Connector between solar and control device	50.0	--	50.9	54.9	--	Ref,	--	--
Solar wire	50.0	--	51.2	51.5	--	90	--	--
Control device PCB	50.0	--	51.4	51.8	--	130	--	--
Connector between control device and battery	50.0	--	55.7	52.5	--	Ref.	--	--
Connector of battery	50.0	--	55.4	52.2	--	Ref.	--	--
Battery wire	50.0	--	50.9	50.1	--	80	--	--
Circuit protection board PCB of battery	50.0	--	50.5	50.1	--	130	--	--
Battery cell surface	50.0	--	50.1	50.2	--	60	--	--
Battery pack	50.0	--	51.2	50.5	--	60	--	--
Connector between control device and LED module	50.0	--	51.0	50.2	--	Ref,	--	--
Wire clamped	50.0	--	52.3	50.5	--	75	--	--
LED module wire	50.0	--	51.5	53.8	--	90	--	--
Glass (inner)	50.0	--	50.3	53.3	--	Ref.	--	--

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

LED module PCB	50.0	--	50.0	72.7	--	130	--	--
Glass (outer)	50.0	--	50.0	62.3	--	Ref.	--	--
Mounting surface	50.0	--	50.0	65.2	--	90	--	--
Lighted object (0.1m)	50.0	--	50.2	60.0	--	90	--	--
Supplementary information: During the abnormal operation a and b, lamp normal working, all temperatures are the same as normal operation 1 and 2.								

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).....:	M	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

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

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
(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)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.1.2)	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 and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

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

15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....:		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) .....:		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**									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									
	Voltage drop after 10th alt. 25th cycle									
	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									
	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									
	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									
	Max. allowed voltage drop (mV)..... :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
Supplementary information:										

==END OF REPORT==

ATTACHMENT 1			
Clause	Requirement + Test	Result - Remark	Verdict
	LED modules for general lighting – Safety specifications IEC 62031: 2018 (Partial)		P
12 (14)	**FAULT CONDITIONS**		P
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected		N/A
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)		N/A
- (14.3)	Short-circuit or interruption of semiconductor devices		P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.5)	Short-circuit across electrolytic capacitors		N/A
	Short-circuit or interruption of SPDs		N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq$ 1 MΩ ..... :	>100	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply		—
12.2	**Overpower condition**		P
	Module withstands overpower condition >15 min.		P
	Module with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
	No fire, smoke or flammable gas is produced		P
	Molten material does not ignite tissue paper, spread below the module		P

ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

	Additional requirements for miscellaneous electronic circuits according to IEC 61347-2-11:2001 + A1:2017 and IEC 61347-1:2015 + A1:2017	**P**

14 (14)	**FAULT CONDITIONS**		**P**
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (after any reduction in 14.2 - 14.5)	(see appended table)	N/A
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
	Short-circuit or interruption of SPDs	(see appended table)	N/A
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ .....:	> 100MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power a.c. supply and in turn to a d.c. supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

14	**TABLE: tests of fault conditions**			**P**
Part	Simulated fault	Charging mode	Discharging mode	Hazard

ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

For FC-60				
For control device				
D2	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
Q21	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
U5(1&5)	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
U6	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Q8	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
Q10	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
U7	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
C1	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
D1	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
C54	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Battery input	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Battery protective board				
U1(1&5)	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Output	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
For FC-120				
For control device				
Q3	Short circuit	Unit shut down, recoverable	Unit normal working, recoverable	NO
D17	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
U2(1&3)	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
U1(1&5)	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO

ATTACHMENT 3			
Clause	Requirement + Test	Result - Remark	Verdict

Q8	Short circuit	Unit shut down, recoverable	Unit normal working, recoverable	NO
Q6	Short circuit	Unit shut down, recoverable	Unit normal working, recoverable	NO
U6(1&5)	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
D13	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
U5(1&5)	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
C1	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
C2	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Battery input	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Battery protective board				
U1(1&5)	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
D1	Short circuit	Unit normal working, recoverable	Unit normal working, recoverable	NO
Q1	Short circuit	Unit shut down, recoverable	Unit shut down, recoverable	NO
Q2	Short circuit	Unit shut down, recoverable	Unit normal working, recoverable	NO

ATTACHMENT 4			
Clause	Requirement + Test	Result - Remark	Verdict

	Blue light hazard to light sources and luminaires of IEC/TR 62778:2014	P

Test conditions:
1. Tests performed on model FC-60, **fully battery park supply**
2. Ambient temperature: 25°C, Humidity: 64%.
3. Measurement distance:200mm.
4. Angular subtense of whole lamp: 100mrad.

Lamp classification group: RG1
Test data:

Test Results		
Symbol	**Units**	**Results**
Lb (11mrad)	W•m-2•sr-1	2.124E+02
Lb (100mrad)	W•m-2•sr-1	--
L (11mrad)	cd•m-2	3.161E+05
Ethr	lx	--
dmin	M	--

Test conditions:
1. Tests performed on model FC-120, **fully battery park supply**
2. Ambient temperature: 25°C, Humidity: 64%.
3. Measurement distance:200mm.
4. Angular subtense of whole lamp: 100mrad.

Lamp classification group:RG1
Test data:

Test Results		
Symbol	**Units**	**Results**
Lb (11mrad)	W•m-2•sr-1	3.199E+03
Lb (100mrad)	W•m-2•sr-1	--
L (11mrad)	cd•m-2	2.139E+06
Ethr	lx	--
dmin	M	--

ATTACHMENT 4			
Clause	Requirement + Test	Result - Remark	Verdict

Test conditions:
1. Tests performed on model W-100**, fully battery park supply**
2. Ambient temperature: 25°C, Humidity: 64%.
3. Measurement distance:200mm.
4. Angular subtense of whole lamp: 100 mrad.

Lamp classification group: RG1
Test data:

Test Results		
Symbol	**Units**	**Results**
Lb (11mrad)	W•m-2•sr-1	3.495E+02
Lb (100mrad)	W•m-2•sr-1	--
L (11mrad)	cd•m-2	3.073E+05
Ethr	lx	--
dmin	M	--

ATTACHMENT 5			
Clause	Requirement + Test	Result - Remark	Verdict

The requirements of remote controller according to parts of IEC 61058-1:2016	**P**

17	**Endurance test**
Test condition	a) At ambient 50°C b) LED module as load according to client requirement c) 1s on and 3s off d) 10000 cycles
17.5.8	Endurance complete switch (TC8)
Model	FC-60
Test condition	Battery fully-charged before test
10000 cycle	Pass

17	**Endurance test**
Test condition	a) At ambient 50°C b) LED module as load according to client requirement c) 1s on and 3s off d) 10000 cycles
17.5.8	Endurance complete switch (TC8)
Model	FC-120
Test condition	Battery fully-charged before test
10000 cycle	Pass

17	**Endurance test**
Test condition	a) At ambient 50°C b) LED module as load according to client requirement c) 1s on and 3s off d) 10000 cycles
17.5.8	Endurance complete switch (TC8)
Model	W-100
Test condition	Battery fully-charged before test
10000 cycle	Pass

ATTACHMENT 6			
Clause	Requirement + Test	Result - Remark	Verdict

	Additional requirements for controlgear according to IEC 61347-2-7:2011 + A1:2017 + A2:2021, IEC 61347-1:2015 + A1:2017	**P**

22 (-)	**RECHARGING DEVICE**		P
	Recharging device provide the rated charge performance specified by the ESSS manufacturer to charge the ESSS within 24 h or the declared recharging time per clause 7.2		P
	Transformers in the recharging device comply with relevant parts of IEC 61558-2-1, IEC 61558-2-6 and IEC 61558-2-16		P
22.1 (-)	**Low temperature operation**		P
	Charged ESSS for 48 h or twice the charge time per clause 7.2 with a minimum of 12 h and then discharged until voltage indicated in table 1 is achieved at 20 °C ± 5 °C		P
	Charged ESSS at 0,9 times rated supply voltage at minimum ambient temperature for 24 h or the declared charging time per clause 7.2	FC-60: 0.9 x 16V=14.4V; 50.0ºC; FC-120: 0.9 x 36V=32.4V; 50.0ºC; W-100: 0.9 x 36V=32.4V; 50.0ºC	P
	Battery: Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} as specified in clause 20 or EDLC: Simulating supply failure, lamp operated for rated duration of operation times K_d	FC-60:9.6V (limit: 8.0V) FC-120:19.8V (limit: 16.0V) W-100:19.6V (limit: 16.0V)	P
22.2 (-)	**High temperature operation**		P
	Charged ESSS for 48 h or twice the charge time per clause 7.2 with a minimum of 12 h and then discharged until voltage indicated in table 1 is achieved at 20 °C ± 5 °C		P
	Charged ESSS at 0,9 times rated supply voltage at maximum ambient temperature for 24 h or the declared charging time per clause 7.2	FC-60: 0.9 x 16V=14.4V; 50.0ºC; FC-120: 0.9 x 36V=32.4V; 50.0ºC; W-100: 0.9 x 36V=32.4V; 50.0ºC	P

ATTACHMENT 6			
Clause	Requirement + Test	Result - Remark	Verdict
	Battery: Simulating supply failure, lamp operated for rated duration of operation and at the end the battery voltage is at least V_{min} as specified in clause 20 or EDLC: Simulating supply failure, lamp operated for rated duration of operation times K_d	FC-60:9.6V (limit: 8.0V) FC-120:19.7V (limit: 16.0V) W-100:19.7V (limit: 16.0V)	P
22.3 (-)	**Abnormal operating condition**		P
	Recharging device operated at 1,1 times rated supply voltage and maximum marked ambient temperature with ESSS disconnected and output short-circuited	0.9Un: FC-60: 0.9 x 16V=14.4V; 50.0ºC; FC-120: 0.9 x 36V=32.4V; 50.0ºC; W-100: 0.9 x 36V=32.4V; 50.0ºC 1.1Un: FC-60: 1.1 x 16V=17.6V; 50.0ºC; FC-120: 1.1 x 36V=39.6V; 50.0ºC; W-100: 1.1 x 36V=39.6V; 50.0ºC	P
	- no flames, molten material, or flammable gases		P
	After the test period and short-circuit removed		P
	- the recharging device is safe		P
	- normal recharge if self-resetting or user-replaceable protective devices		P
22.4 (-)	**Void**		-
22.5 (-)	**ESSS charge and discharge characteristics**		P
	Charged battery at 0,9 and 1,1 times rated operating voltage for 48 h or twice the charge time per clause 7.2 with a minimum of 12 h and then discharged until voltage indicated in table 1 is achieved at 20 ºC ± 5 ºC	FC-60: 1.1 x 16V=17.6V; 50.0ºC; FC-120: 1.1 x 36V=39.6V; 50.0ºC; W-100: 1.1 x 36V=39.6V; 50.0ºC	P
	During both charge and discharge cycles, current and voltage characteristics within those declared by controlgear manufacturer		P
22.6 (-)	**Lamp failure**		P

ATTACHMENT 6			
Clause	Requirement + Test	Result - Remark	Verdict
	Lamp failure does not interrupt charging current to ESSS and not impair the operation of the ESSS		P
22.7 (-)	Chargers for lithium batteries shall operate the cells according to the criteria given in Tables 1 and 3, unless otherwise declared by the manufacturer's declaration of design. The values of a battery pack calculated per series or parallel cells.		N/A
	Battery charging does not start below T_{cmin} and above T_{cmax}		N/A
	Temperature sensor location marked on the label or manufacturer's data sheet		N/A
	Thermal sensor location reflects the maximum temperature of the battery pack		N/A
	Two or more cells connected in series, each cell voltage shall be monitored separately with appropriate equalization control in meeting Table 3 voltage limits.		N/A
	The control contained within the battery, part of the battery protection or as part of the controlgear		N/A
23 (-)	**PROTECTION AGAINST EXCESSIVE DISCHARGE**		P
	Protection against polarity reversal of individual cells, limits the discharge current when the battery voltage has fallen to V_{low} or V_{blow} (Li batteries) according to a) to d)		P
	- Discharge current (A) .....:	Max.: 0.01A	P
	Protection system prevents any further discharge until the normal supply has been restored. Battery voltage not below V_{low} or V_{blow} (Li batteries), and discharge current does not exceed a) to d)		P
	- Battery voltage (V) .....:	FC-60:9.6V (limit: 8.0V) FC-120: 19.8V (limit: 16.0V) W-100: 19.6V (limit: 16.0V)	P
	- Discharge current (A) .....:	Max.: 0.01A	P