CGS TEST HİZMETLERİ TEKNİK KONTROL VE BELGELENDİRME ANONİM ŞİRKETİ

Kayışdağı Mahallesi Gülçin Sokak No:2/2
Ataşehir İstanbul/TURKİYE

Deney Raporu
Test Report

Test
TS EN ISO/IEC 17025
AB-1316-T

AB-1316-T
LVD-196-23
08-20

Müşterinin adı /adresi: *Customer name/address*	***HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş./Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 Pendik / Istanbul / Turkey***
***İstek Numarası* :** Order no.	***01042020nkk2***
Numunenin Adı ve Tarifi : Name and identity of test item	***P03004XX2; Procolor AC 60 RGBA Floodlight Medium Beam 30°/ LED Projektör*** – LED Floodlight
Numunenin Kabul tarihi : The date of receipt of test item	***02-04-2020***
Açıklamalar : Remarks	***DGC'ye EN 60598-2-5 Standardı uyarınca Güvenlik Deneyleri yapılmıştır.*** Safety tests have been applied to EUT according to EN 60598-2-5.
Deneyin yapıldığı tarih : Date of Test	***02-06-2020 to 05-08-2020***
Raporun Sayfa Sayısı: Number of pages of the Report	***59 sayfa*** / 59 pages

Deney laboratuvarı olarak faaliyet gösteren CGS TEST HİZMETLERİ A.Ş., TÜRKAK'tan AB-1316-T ile TS EN ISO/IEC 17025 Nisan 2012 standardına göre akredite edilmiştir.

CGS TEST HİZMETLERİ A.Ş. accredited by TÜRKAK under registration AB-1316-T for TS EN ISO/IEC 17025 April 2012 as test laboratory.

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The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Mühür/Kaşe Seal	***Tarih*** Date	***Deney Sorumlusu*** Person in change of test	***Onaylayan*** Approval
	08-06-2020	***Mehtap İrem TANKÜL***	***Timur GÜSER***

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TEST REPORT
IEC 60598-2-5
Luminaires
Part 2: Particular requirements
Section 5: Floodlights

Report Number. ..... :	LVD-196-23
Date of issue ..... :	08.06.2020
Total number of pages ..... :	59 pages
Name of Testing Laboratory preparing the Report ..... :	CGS TEST HİZMETLERİ TEKNİK KONTROL VE BELGELENDİRME ANONİM ŞİRKETİ
Manufacturer ..... :	HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş.
Applicant's name ..... :	HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş.
Address ..... :	Güllübağlar Mah. Kahramanlar Cad. No:3-1 34906 Pendik / Istanbul / Turkey
Test specification:	
Standard ..... :	IEC 60598-2-5:2011 used in conjunction with IEC 60598-1:2014, AMD1:2017 EN 60598-2-5:2015 used in conjunction with EN 60598-1:2015
Test procedure ..... :	Type Test
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	F510_10
Test Report Form(s) Originator .... :	Intertek Semko AB
Master TRF ..... :	Dated 2018-04-06

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Test item description ..... :	LED Floodlight
Trade Mark ..... :	
Manufacturer ..... :	HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ A.Ş.
Model/Type reference ..... :	P03002XX2
Ratings ..... :	90-264 V AC; 30,85 W; 0,165 A; IP67; RG2

List of Attachments (including a total number of pages in each attachment):	
Summary of testing:	
Tests performed (name of test and test clause): 5.5 (3.4) Durability 5.6 (4.12.1) Torque Screw Test 5.6 (4.13)Mechanical strength 5.6 (4.13.3) Straight test finger 5.8 (7)Provision For Earthing 5.12 (12.3.1) Endurance test 5.12 (12.4.1) Thermal test (Normal operation) 5.13 (9) Resistance to powder and water test 5.13 (9.3) Humidity test 5.14 (10.2.1) Insulation resistance test 5.14 (10.2.2) Electric strength test 5.14 (10.3) Touch current test	**Testing location:** CGS TEST HİZMETLERİ TEKNİK KONTROL VE BELGELENDİRME ANONİM ŞİRKETİ Kayışdağı Mahallesi Gülçin Sokak No:2/2 Ataşehir/İSTANBUL

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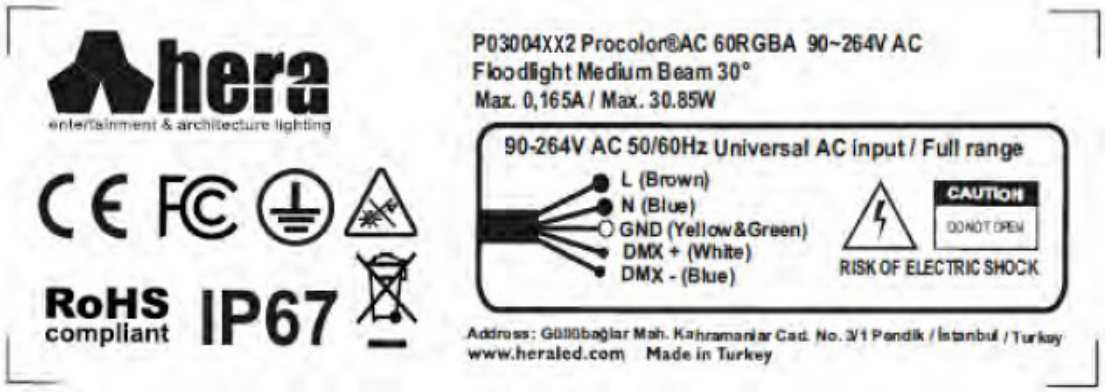
Copy of marking plate:
The artwork below may be only a draft.



Label Testing:
Rubbing for 15 s with a piece of cloth with water. And a further 15 s with a piece of cloth soaked with petroleum.

Test item particulars.....:	Procolor AC 60RGBA Floodlight Medium Beam 30°
Classification of installation and use.....:	Class I & Fixed connections for outdoors use
Supply Connection.....:	Type Y attachment, connection with tails
.....:	
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 .....:	02-04-2020
Date (s) of performance of tests.....:	02-04-2020 to 05-06-2020

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

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General product information:

Product is a fixed floodlight with LED module.

Input voltage: 90-264 V AC, Input current: 0,165 A (Max.), Input power: 30,85 W (Max.)

The other sub-models of the product are given in Attachment 3.

The luminaire’s connection is provided with tails, but this cable is used only for testing process.

The product is sold without this supply tail cable.

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
5.4 (0+2)	**CLASSIFICATION OF LUMINAIRES**		P
5.4 (0)	**General requirements and tests**		—
5.4 (0.3)	More sections applicable..... :	Yes ☐ No ☒ Section/s:	—
5.4 (0.5)	Components	(see Annex 1)	—
5.4 (0.7)	Information for luminaire design in light sources standards		—
5.4 (0.7.2)	Light source safety standard ..... :		—
	Luminaire design in the light source safety standard		—
5.4 (2)	**Classification of luminaires**		—
5.4 (2.2)	Type of protection ..... :	Class I	P
5.4 (2.3)	Degree of protection..... :	IP 67	—
5.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ..... :	Yes ☒ No ☐	—
5.4 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—

5.5 (3)	**MARKING**		P
5.5 (3.2)	Mandatory markings	See on page 3	P
	Position of the marking	On the enclosure	P
	Format of symbols/text	Symbols>5mm, Text>2mm	P
5.5 (3.3)	Additional information	Information for connection pins and warning symbol for RG2	P
	Language of instructions	In English	P
5.5 (3.3.1)	Combination luminaires	No combination luminaires	N/A
5.5 (3.3.2)	Nominal frequency in Hz	50/60 Hz	P
5.5 (3.3.3)	Operating temperature		N/A
5.5 (3.3.5)	Wiring diagram		P
5.5 (3.3.6)	Special conditions	No special conditions	N/A
5.5 (3.3.7)	Metal halide lamp luminaire – warning	No metal halide lamp	N/A
5.5 (3.3.8)	Limitation for semi-luminaires	No semi-luminaires	N/A
5.5 (3.3.9)	Power factor and supply current	0,165 A & 30,85 W	P
5.5 (3.3.10)	Suitability for use indoors	Outdoors	N/A
5.5 (3.3.11)	Luminaires with remote control	No remote control	N/A
5.5 (3.3.12)	Clip-mounted luminaire – warning	No clip	N/A

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
5.5 (3.3.13)	Specifications of protective shields		N/A
5.5 (3.3.14)	Symbol for nature of supply	AC symbol	P
5.5 (3.3.15)	Rated current of socket outlet	No socket outlet	N/A
5.5 (3.3.16)	Rough service luminaire	No rough service luminaire	N/A
5.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Type Y	N/A
5.5 (3.3.18)	Non-ordinary luminaires with PVC cable		N/A
5.5 (3.3.19)	Protective conductor current in instruction if applicable		N/A
5.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
5.5 (3.3.21)	Non-replaceable and non-user replaceable light sources information provided		N/A
5.5 (3.3.22)	Controllable luminaires, classification of insulation provided		N/A
5.5 (3.3.23)	Luminaire without controlgear provided with necessary information for selection of appropriate component		N/A
5.5 (3.3.24)	If not supplied with terminal block, information on the packaging		N/A
5.5 (3.4)	Test with water	Applied	P
	Test with hexane	Applied	P
	Legible after test	Inspected	P
	Label attached	Inspected	P
5.5 (-)	Additional information if applicable		N/A
	a) Operation position		N/A
	b) Weight and dimensions		N/A
	c) Maximum protected area		N/A
	d) Limitation of use indoors and/or outdoor		N/A
	e) Maximum mounting height if ≤ 5 m		N/A
5.6 (4)	**CONSTRUCTION**		P
5.6 (4.2)	Components replaceable without difficulty		P
5.6 (4.3)	Wireways smooth and free from sharp edges		P
5.6 (4.4)	**Lampholders**		N/A
5.6 (4.4.1)	Integral lampholder	No lampholder	N/A
5.6 (4.4.2)	Wiring connection		N/A

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
5.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
5.6 (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
5.6 (4.4.5)	Peak pulse voltage		N/A
5.6 (4.4.6)	Centre contact		N/A
5.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
5.6 (4.4.8)	Lamp connectors		N/A
5.6 (4.4.9)	Caps and bases correctly used		N/A
5.6 (4.4.10)	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
5.6 (4.5)	**Starter holders**		N/A
	Starter holder in luminaires other than class II	No starter	N/A
	Starter holder class II construction		N/A
5.6 (4.6)	**Terminal blocks**		N/A
	Tails	No terminal blocks	N/A
	Unsecured blocks		N/A
5.6 (4.7)	**Terminals and supply connections**		P
5.6 (4.7.1)	Contact to metal parts		P
5.6 (4.7.2)	Test 8 mm live conductor	Covered with tube	N/A
	Test 8 mm earth conductor		N/A
5.6 (4.7.3)	Terminals for supply conductors		N/A
5.6 (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

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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
5.6 (4.7.4)	Terminals other than supply connection		N/A
5.6 (4.7.5)	Heat-resistant wiring/sleeves	Inspected	P
5.6 (4.7.6)	Multi-pole plug	No plug	N/A
	- test at 30 N		N/A
5.6 (4.8)	**Switches**		N/A
	- adequate rating	No switches	N/A
	- adequate fixing		N/A
	- polarized supply		N/A
	- compliance with IEC 61058-1 for electronic switches		N/A
5.6 (4.9)	**Insulating lining and sleeves**		N/A
5.6 (4.9.1)	Retainment		N/A
	Method of fixing ..... :		N/A
5.6 (4.9.2)	Insulated linings and sleeves:		N/A
	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
5.6 (4.10)	**Double or reinforced insulation**		N/A
5.6 (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
5.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental	No gaps	N/A
	- no straight access with test probe		N/A
5.6 (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

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
5.6 (4.10.4)	Protective impedance device		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
5.6 (4.11)	**Electrical connections and current-carrying parts**		P
5.6 (4.11.1)	Contact pressure	Inspected	P
5.6 (4.11.2)	Screws:		N/A
	- self-tapping screws	No self-tapping screws for electrical connections	N/A
	- thread-cutting screws	No thread-cutting screws for electrical connections	N/A
5.6 (4.11.3)	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
5.6 (4.11.4)	Material of current-carrying parts	Approved component	P
5.6 (4.11.5)	No contact to wood or mounting surface	Inspected	P
5.6 (4.11.6)	Electro-mechanical contact systems		N/A
5.6 (4.12)	**Screws and connections (mechanical) and glands**		**P**
5.6 (4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :	Cover screw:3,85 mm; 1,20 Nm PCB fixing screw:1,98 mm; 0,40 Nm Position fixing screw: 5,85 mm; 2,5Nm	P
	Torque test: torque (Nm); part..... :		N/A
5.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
5.6 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm) ..... :		N/A
	- lampholder; torque (Nm) ..... :		N/A
	- push-button switches; torque 0,8 Nm ..... :		N/A
5.6 (4.12.5)	Screwed glands; force (Nm)..... :		N/A
5.6 (4.13)	**Mechanical strength**		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6 (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
5.6 (4.13.2)	Metal parts have adequate mechanical strength		P
5.6 (4.13.3)	Straight test finger	30N	P
5.6 (4.13.4)	Rough service luminaires		N/A
	- IP54 or higher	No rough service	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
5.6 (4.13.6)	Tumbling barrel		N/A
5.6 (4.14)	**Suspensions, fixings and means of adjusting**		**P**
5.6 (4.14.1)	Mechanical load:		P
	A) four times the weight	Tested with 1,6x4 = 6,4 kg	P
	B) torque 2,5 Nm		N/A
	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
5.6 (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
5.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- strands broken ..... :		N/A
	- electric strength test afterwards		N/A
5.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
5.6 (4.14.5)	Guide pulleys		N/A
5.6 (4.14.6)	Strain on socket-outlets		N/A
5.6 (4.15)	**Flammable materials**		N/A
	- glow-wire test 650°C ..... :	See Test Table 5.15 (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		N/A
	- thermal protection		N/A
	- electronic circuits exempted		N/A
5.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction	No thermoplastic	N/A
	b) temperature sensing control		N/A
	c) surface temperature		N/A
5.6 (4.16)	**Luminaires for mounting on normally flammable surfaces**		P
	No lamp control gear ..... :	(compliance with Section 12)	N/A
	Provided with adaptor for a track meet the requirements for direct mounting on normally flammable surfaces		N/A
5.6 (4.16.1)	Lamp control gear spacing:		P
	- spacing 35 mm		P
	- spacing 10 mm		N/A
5.6 (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
5.6 (4.16.3)	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
5.6 (4.17)	**Drain holes**		N/A
	Clearance at least 5 mm		N/A
5.6 (4.18)	**Resistance to corrosion**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6 (4.18.1)	- rust-resistance		N/A
5.6 (4.18.2)	- season cracking in copper		N/A
5.6 (4.18.3)	- corrosion of aluminium		N/A
5.6 (4.19)	Ignitors compatible with ballast		N/A
5.6 (4.20)	Rough service vibration		N/A
5.6 (4.21)	**Protective shield**		N/A
5.6 (4.21.1)	Shield fitted if tungsten halogen lamps or metal halide lamps		N/A
	Shield of glass if tungsten halogen lamps		N/A
5.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
5.6 (4.21.3)	No direct path		N/A
5.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment..... :	See Test Table 5.15 (13.3.2)	N/A
5.6 (4.22)	Attachments to lamps not cause overheating or damage		N/A
5.6 (4.23)	Semi-luminaires comply Class II		N/A
5.6 (4.24)	**Photobiological hazards**		N/A
5.6 (4.24.1)	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)	Tested according to TS EN 62471:2012 by TSE. Test Report No: 530733 Report reviewed	N/A
5.6 (4.24.2)	Retinal blue light hazard		N/A
	Class of risk group assessed according to IEC/TR 62778 ..... :		—
	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
5.6 (4.25)	**Mechanical hazard**		**P**
	No sharp point or edges		P
5.6 (4.26)	**Short-circuit protection**		N/A

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict
5.6 (4.26.1)	Adequate means of uninsulated accessible SELV parts		N/A
5.6 (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
5.6 (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
5.6 (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
5.6 (4.29)	**Luminaires with non-replaceable light source**		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
5.6 (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:	See on page 4	P
	Minimum two fixing means		P
5.6 (4.31)	**Insulation between circuits**		N/A
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
5.6 (4.31.1)	SELV circuits		N/A
	Used SELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of SELV circuits from LV supply		N/A
	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		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
	Plugs and socket-outlets does not have protective conductor contact		N/A
5.6 (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 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
5.6 (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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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
5.6 (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
5.6.1 (-)	At least IPX3 if for outdoor use	IPX7	P
5.6.2 (-)	Lampholder brackets and lamp supports		N/A
5.6.3 (-)	Adjusting means	Inspected	P
5.6.4 (-)	Controlling components		N/A
5.6.5 (-)	Fixing device		N/A
	Wind force test		N/A
5.6.6 (-)	Locking of angular adjustment		N/A
5.6.7 (-)	Vibration resistance		N/A
5.6.8 (-)	Requirement on glass cover if mounting height > 5 m		P
	Method of protection .....:	CI (5.6.8.2) Equivalent to IK08 according to IEC 62262 See Report LVD-196-21	—

5.7 (11)	**CREEPAGE DISTANCES AND CLEARANCES**		**N/A**
5.7 (11.2.1)	Impulse withstand category (Normal category II)	Category II ☐ Category III ☐	—
	Category III according Annex U	Approved component used	N/A
	Protected against pollution, reduced creepage and clearance according Annex P of IEC 61347-1		N/A
5.7 (11.2.2)	Creepage distances for frequency up to 30 kHz	See Test Table 5.7 (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 5.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 5.7 (11.2) II	N/A
5.7 (11.2.3)	Clearances for frequency up to 30 kHz	See Test Table 5.7 (11.2) I	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Clearances distances for frequency over 30 kHz:		N/A
	- Controlgear marked with U_P	See Test Table 5.7 (11.2) II	N/A
	- Requirements according IEC 60664-4 for controlgear not covered by IEC 61347	See Test Table 5.7 (11.2) II	N/A

5.8 (7)	**PROVISION FOR EARTHING**		P
5.8 (7.2.1 + 7.2.3)	Accessible metal parts	Cord anchorage: 0,048 Ω	P
	Metal parts in contact with supporting surface	Inspected	P
	Resistance < 0,5 Ω..... :	0,042 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		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
5.8 (7.2.2 + 7.2.3)	Earth continuity in joints, etc.		N/A
5.8 (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
5.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
5.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
5.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
5.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
5.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
5.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.9 (14)	**SCREW TERMINALS**		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A

5.9 (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

5.10 (5)	**EXTERNAL AND INTERNAL WIRING**		P
5.10 (5.2)	**Supply connection and external wiring**		P
5.10 (5.2.1)	Means of connection ..... :	Connection with tails	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
5.10 (5.2.2)	Type of cable..... :		N/A
	Nominal cross-sectional area (mm²) ..... :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
5.10 (5.2.3)	Type of attachment, X, Y or Z	Type Y	P
5.10 (5.2.5)	Type Z not connected to screws		N/A
5.10 (5.2.6)	Cable entries:		P
	- suitable for introduction	Inspected	P
	- adequate degree of protection	Inspected	P
5.10 (5.2.7)	Cable entries through rigid material have rounded edges		P
5.10 (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
5.10 (5.2.9)	Locking of screwed bushings		N/A
5.10 (5.2.10)	Cord anchorage:		P
	- covering protected from abrasion		P
	- clear how to be effective		N/A
	- no mechanical or thermal stress		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- no tying of cables into knots etc.		N/A
	- insulating material or lining	The earthing connection is connected.	P
5.10 (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
5.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		P
5.10 (5.2.10.3)	Tests:		P
	- impossible to push cable; unsafe	The test is applied with 3x0,75 mm^2 cable.	P
	- pull test: 25 times; pull (N) ..... :	60 N	P
	- torque test: torque (Nm) ..... :	0,25 Nm	P
	- displacement ≤ 2 mm	Inspected: 0,5 mm	P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
5.10 (5.2.11)	External wiring passing into luminaire		N/A
5.10 (5.2.12)	Looping-in terminals		N/A
5.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
5.10 (5.2.14)	Mains plug same protection	No plug	N/A
	Class III luminaire plug		N/A
	No unsafe compatibility		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.10 (5.2.16)	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
5.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
5.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083	No plug	N/A
	- other standard		N/A
5.10 (5.3)	**Internal wiring**		P
5.10 (5.3.1)	Internal wiring of suitable size and type	SELV current-carrying parts	N/A
	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 earth only		N/A
5.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm²)..... :	SELV part	N/A
	Insulation thickness (mm) ..... :	SELV part	N/A
	Extra insulation added where necessary		N/A
5.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm²)..... :		N/A
5.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
5.10 (5.3.1.4)	Conductors without insulation		N/A
5.10 (5.3.1.5)	SELV current-carrying parts		P
5.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
5.10 (5.3.2)	Sharp edges etc.		P
	No moving parts of switches etc.		P
	Joints, raising/lowering devices		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
5.10 (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
5.10 (5.3.4)	Joints and junctions effectively insulated		N/A
5.10 (5.3.5)	Strain on internal wiring		N/A
5.10 (5.3.6)	Wire carriers		N/A
5.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
5.10 (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 2)	N/A
	No damage to luminaire wiring after test		N/A
5.11 (8)	**PROTECTION AGAINST ELECTRIC SHOCK**		P
5.11 (8.2.1)	Live parts not accessible		P
	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	Adjustable luminaire	P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A
	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		P
	Protection in any position		P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
5.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
5.11 (8.2.3.a)	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement	Class I	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
5.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed	No BC lampholder	N/A
5.11 (8.2.3.c)	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V)..... :		N/A
	- no-load 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
	- nominal 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
5.11 (8.2.4)	Portable luminaire has protection independent of supporting surface	No portable luminaire	N/A
5.11 (8.2.5)	Compliance with the standard test finger or relevant probe		P
5.11 (8.2.6)	Covers reliably secured		P
5.11 (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

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Clause	Requirement + Test	Result - Remark	Verdict

5.12 (12)	**ENDURANCE TEST AND THERMAL TEST**		P
5.12.2 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 5.13		—
5.12 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	(Lamp used see Annex 2)	—
	Controlgear if separate and not supplied	(Controlgear used see Annex 2)	—
5.12 (12.3)	**Endurance test**		**P**
	a) mounting-position ..... :	Normally	—
	b) test temperature (°C) ..... :	35°C	—
	c) total duration (h) ..... :	240h	—
	d) supply voltage (V) ..... :	264 V AC x1,1=290,4 V AC	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) ..... :		—
	e) luminaire ceases to operate		—
5.12 (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
5.12 (12.4)	**Thermal test (normal operation)**	(see Annex 2)	P
5.12 (12.5)	**Thermal test (abnormal operation)**	(see Annex 2)	N/A
5.12 (12.6)	**Thermal test (failed lamp control gear condition):**		N/A
5.12 (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
5.12 (12.6.2)	Temperature sensing control		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions ..... :	No temperature sensing control	—
	- 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
5.12 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		N/A
5.12 (12.7.1)	Luminaire without temperature sensing control		N/A
5.12 (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:		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 Test Table 5.15 (13.2.1)	N/A
5.12 (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 Test Table 5.15 (13.2.1)	N/A
5.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- case of abnormal conditions ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
5.12 (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 Test Table 5.15 (13.2.1)	N/A
5.12.1 (-)	Reduction 10 °C of measured temperatures if for outdoor use		—
5.12.2 (-)	Glass covers used within the thermal limits	The Δt value did not specify by the manufacturer. Measured Δt value: 4,1 °C	N/A

5.13 (9)	**RESISTANCE TO DUST AND MOISTURE**		P
5.13.1 (-)	If IP > IP 20 the order of tests as specified in clause 5.12		P
5.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP..... :	IP67	—
	- mounting position during test ..... :	Adjustable Luminaire	—
	- fixing screws tightened; torque (Nm) ..... :		—
	- tests according to clauses..... :	See Report: LVD-196-19	—
	- electric strength test afterwards		N/A
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
5.13 (9.3)	Humidity test 48 h	%93 Rh; 25°C	P
5.14 (10)	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		P
5.14 (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) ..... :	2 MΩ	—
	SELV		P
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface..... :	>110 MΩ	P
	- between current-carrying parts and metal parts of the luminaire..... :	>110 MΩ	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		P
	- between live parts of different polarity ..... :	> 999,9 MΩ	P
	- between live parts and mounting surface ..... :	442 MΩ	P
	- between live parts and metal parts ..... :	> 999,9 MΩ	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..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
5.14 (10.2.2)	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires with manual ignitors		N/A
	Test voltage (V) ..... :		N/A
	SELV		P
	- between current-carrying parts of different polarity :		N/A
	- between current-carrying parts and mounting surface ..... :	500 V AC; 1min; No Breakdown	P
	- between current-carrying parts and metal parts of the luminaire ..... :	500 V AC; 1min; No Breakdown	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		P
	- between live parts of different polarity ..... :	1500 V AC; 1min; No Breakdown	P
	- between live parts and mounting surface ..... :	1500 V AC; 1min; No Breakdown	P
	- between live parts and metal parts ..... :	1500 V AC; 1min; No Breakdown	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 ..... :		N/A
	- Insulation bushings as described in Section 5 ..... :		N/A
5.14 (10.3)	Touch current or protective conductor current (mA).:	0,212 mA	P

5.15 (13)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		N/A
5.15 (13.2.1)	Ball-pressure test ..... :	See Test Table 5.15 (13.2.1)	N/A
5.15 (13.3.1)	Needle-flame test (10 s) ..... :	See Test Table 5.15 (13.3.1)	N/A
5.15 (13.3.2)	Glow-wire test (650°C) ..... :	See Test Table 5.15 (13.3.2)	N/A
5.15 (13.4)	Proof tracking test (IEC 60112) ..... :	See Test Table 5.15 (13.4)	N/A

5.7 (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**

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Clause	Requirement + Test	Result - Remark	Verdict

	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:							
Distance 3:							
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.

5.7 (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:							
Distance 2:							
Working voltage (V) .....:							—
Frequency if applicable (kHz) .....:							—

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

PTI .....:	< 600 ☐ ≥ 600 ☐						—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:							—
Supplementary information:							
Distance 3:							
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.

5.15 (13.2.1)	**TABLE: Ball Pressure Test of Thermoplastics**		**N/A**
Allowed impression diameter (mm) ..... :		2mm	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Diffuser	Various	105,3°C	0,5 mm
Supplementary information:			

5.15 (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:					

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

5.15 (13.3.2)	**TABLE: Glow-wire test (IEC 60695-2-11)**			N/A
Glow wire temperature ..... :	650°C			—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (tb) (s)	Verdict
Supplementary information:				

5.15 (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	P

Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Internal PCB	A	KINGBOARD LAMINATES HOLDINGS LTD	KB-6160	Flammable class: V-0; t_c = 130°C	UL 796 Standard for Printed-Wiring Boards	UL (E123995)
Diffuser	C	Various	Various	--	EN 60598-1 EN 60598-2-5	Tested with appliance (Cl. 13.2.1)
Glass Protection Cover	C	Various	Various	--	EN 60598-1 EN 60598-2-5	Tested with appliance (Cl 5.12.2)
Driver	A	MEANWELL	IRM-60-24	Input 100-240 V AC 1,8 A 50/60 Hz Output 24 V DC 2,5 A	UL1310	UL (E183223)

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

Internal Cable	B	TURKAB KABLO SAN. VE TİC. LTD. ŞTİ.	H07V-K	--	EN 50525-2-31	CE; TSE (044780-TSE-01/02)
Cord Anchorage (Cable Gland)	B	BİMED TEKNIK ALETLER SAN. VE TIC. A.S.	BMBCVG-02R	IP67	DIN EN 62444 (VDE 0619):2014-05 EN 62444:2013	VDE (40040034)
LED's	B	Cree INC.	XPE2	85 °C	UL 8750	UL (E349212)

Supplementary information:

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

ANNEX 2	**TABLE: Thermal tests of Section 12**		P
	Type reference ..... :	Procolor AC 60RGBA Floodlight Medium Beam 30°	—
	Lamp used..... :	LED Module	—
	Lamp control gear used..... :	Meanwell IRM-60-24	—
	Mounting position of luminaire ..... :	Adjustable Floodlight LED Luminaire	—
	Supply wattage (W)..... :	36,14 W (for test 2)	—
	Supply current (A) ..... :	0,22 A (for test 2)	—
	Temperatures in test 1 - 4 below are corrected for ta (°C) ..... :	25°C	—
	- abnormal operating mode ..... :		—
1.12 (12.4)	- test 1: rated voltage ..... :	264 V	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	264 V x1,06=279,84 V AC	—
	- 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 ..... :		—
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :		—

IEC 60598-2-5			
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
Internal PCB	25°C	79,2°C			130°C		
LED Module	25°C	87,5°C			Metal		
Diffuser	25°C	80,8°C			105,3°C Cl. 13.2.1		
Glass Protection Cover (t_1)	25°C	55,1°C			Cl 5.12.2*		
Glass Protection Cover (t_2)	25°C	57,3°C			Cl 5.12.2*		
Metal Enclosure	25°C	46,6°C			Metal		
Driver	25°C	77,3°C			105°C		
Internal Wire	25°C	69,8°C			180°C		

Supplementary information:

* There is no limit for glass protection temperature at EN 60598-1&EN 60598-2-5 standards, but also there should be a limit temperature difference value (Δt) which is declared from manufacturer for clause 5.12.2
Δt in this respect is the temperature difference which is allowed among two points (hottest and coldest spots) of the glass measured at the same time. The Δt value should be specified by the glass manufacturer.
$\Delta t = |t_2 - t_1|$ °C

IEC 60598-2-5			
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 60598-2-5			
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

IEC 60598-2-5			
Clause	Requirement + Test	Result - Remark	Verdict

	Terminal size and rating		N/A
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:										

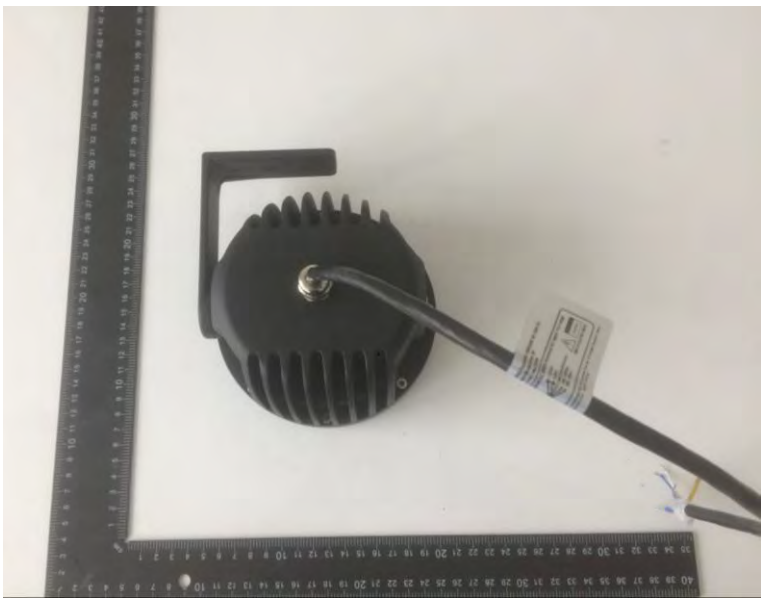
ATTACHMENT 1

Equipment of measurements

Equipment No	Kind of equipment	Model Type	Manufacturer	Last Cal Date	Next Cal Date	Last Ver Date	Next Ver Date	Test Clause
E-001	CE COMPACT TESTER	C.A 6160	Chauvin Arnoux	14.12.2019	14.12.2020	19.12.2019	19.06.2020	5.14(10.2.1) 5.14(10.2.2)
E-039	AC Supply	---	VARSAN	---		---	---	Voltage Arrangement
E-071	Datalogger	GL200A	Graphtech	22.11.2019	22.11.2020	19.12.2019	19.06.2020	5.12(12.4.1)
E-008	Oscilloscope	UTD2012CEX	UNI-T	26.10.2019	26.10.2019	14.11.2019	14.11.2020	5.14(10.3)
E-009	Oscilloscope Probe	UT-P04	UNI-T	16.11.2018	16.11.2019	14.11.2019	14.11.2020	5.14(10.3)
E-011	Multimeter	UT61B	UNI-T	05.10.2019	05.10.2020	14.11.2019	14.11.2020	Voltage Measurement
E-004	Climatic Chamber	---	ULMEKA Mekatronik Sistemler	04.10.2020	04.10.2021	14.11.2019	14.11.2020	5.13 (9.3)
E-095	Tested Box (EN 60990 Figure 4)	---	MULTITECH	01.04.2020	01.04.2021	---	---	5.14(10.3)
E-033	Temperature-Humidity Meter	30.3166.02.S2	TFA	07.10.2019	07.10.2020	---	---	Environmental Measurement
E-006	Powder cabinet	---	ULMEKA Mekatronik Sistemler	---	---	---	---	5.13 (9)
E-051	Water Tank	---	İZOPLAS	---	---	---	---	5.13 (9)
E-037	Force Gauge	SF500	Geratech	09.10.2019	09.10.2020	---	---	5.6 (4.13.3)
E-035	Torque Screw	7441/TİP I	WERA	09.10.2019	09.10.2020	---	---	5.6(4.12.1)
E-036	Torque Screw	7440/TİP I	WERA	09.10.2019	09.10.2020	---	---	5.6(4.12.1)
E-057	Oven	FRN	DİZAYN	31.01.2020	31.01.2021	06.02.2020	06.08.2020	5.12(12.3.1)
E-075	Impact Hammer	F22.50	PTL Dr Grabenhost Gmbh	15.11.2019	15.11.2021	---	---	5.6 (4.13)

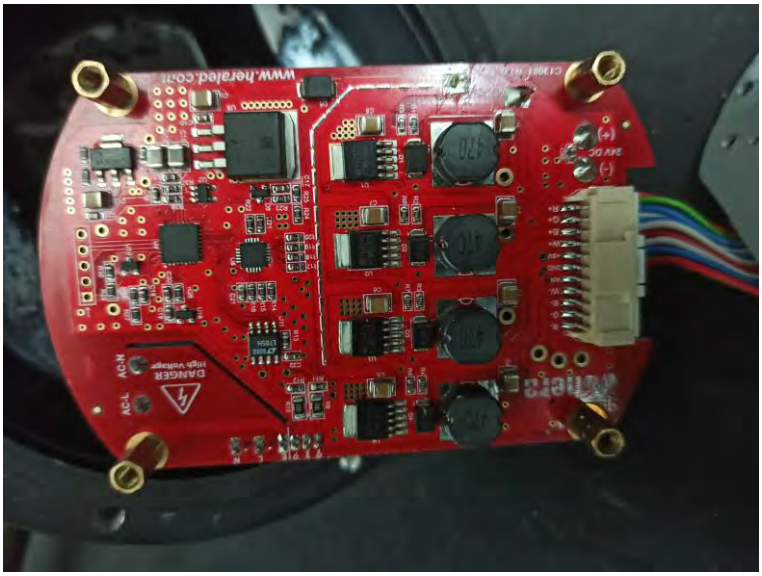
ATTACHMENT 2
Photo Documentation

Photo documentation

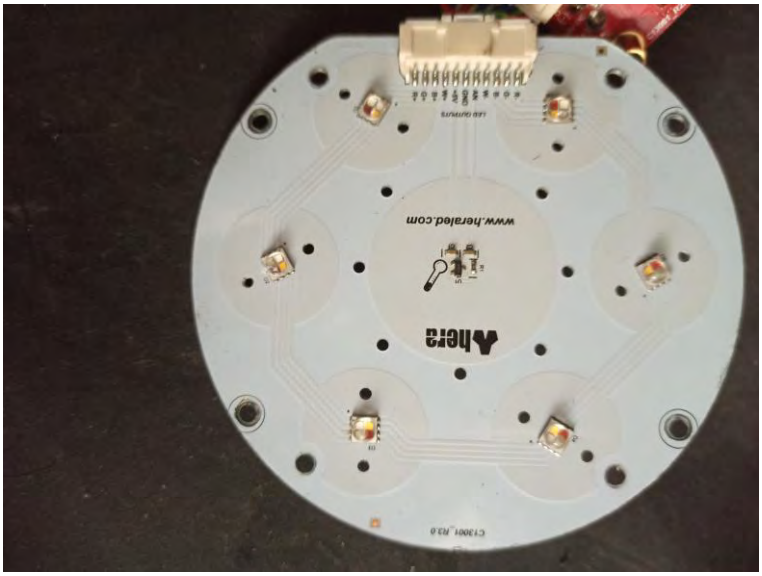
Top View

Back View

Opened View

Component View



Component View



Component View

ATTACHMENT 3
DECLARATION OF IDENTITY

HERA LED olarak test edilen Procolor®AC 60 RGBA 90~264VAC Floodlight Medium Beam 30° model ürünün aşağıda belirtilen ürünlerle elektriksel ve mekniksel olarak benzer olduklarını beyan ederiz.

Model / Type	Açıklama / Description	
P03001XX1	Procolor®AC 10 Single Color 90~264VAC Floodlight Narrow Beam 19°	P1 2 3 4 X X 7 01-Red 02-Green 03-Blue 04-Amber 05-Warm White 06-Natural White 07-Cool White
P03001XX2	Procolor®AC 10 Single Color 90~264VAC Floodlight Medium Beam 26°	
P03001XX3	Procolor®AC 10 Single Color 90~264VAC Floodlight Wide Beam 54°	
P03003XX1	Procolor®AC 35 Single Color 90~264VAC Floodlight Narrow Beam 8°	
P03003XX2	Procolor®AC 35 Single Color 90~264VAC Floodlight Medium Beam 30°	
P03003XX3	Procolor®AC 35 Single Color 90~264VAC Floodlight Wide Beam 45°	
P03004XX1	Procolor®AC 60 Single Color 90~264VAC Floodlight Narrow Beam 8°	
P03004XX2	Procolor®AC 60 Single Color 90~264VAC Floodlight Medium Beam 30°	
P03004XX3	Procolor®AC 60 Single Color 90~264VAC Floodlight Wide Beam 45°	
P03004101	Procolor®AC 60RGBA 90~264VAC Floodlight Narrow Beam 8°	
P03004102	Procolor®AC 60RGBA 90~264VAC Floodlight Medium Beam 30°	
P03004103	Procolor®AC 60RGBA 90~264VAC Floodlight Wide Beam 45°	
P03004121	Procolor®AC 60DW 90~264VAC Floodlight Narrow Beam 8°	
P03004122	Procolor®AC 60DW 90~264VAC Floodlight Medium Beam 30°	
P03004123	Procolor®AC 60DW 90~264VAC Floodlight Wide Beam 45°	

Mehmet TARTAN

6.03.2020

HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ İÇ VE DIŞ. TİC. A.Ş.
Güllübağlar Mah. Kahramanlar Cad. No:3/1
Pendik / İSTANBUL Tel:0216 307 79 00
Tic.Sic.No:[illegible]-5
Pendik V.D.:461 081 6211

HERA EĞLENCE VE MİMARİ AYDINLATMA SİSTEMLERİ İÇ VE DIŞ TİCARET A.Ş.

Güllübağlar Mah. Kahramanlar Cad. No: 3/1 34906 Pendik / İSTANBUL / TÜRKİYE T: 0216 307 79 00 (pbx) F: 0216 307 79 02

www.heraled.com info@heraled.com

ATTACHMENT 4

TS EN 62471:2012-01 Report

TÜRKAK - TÜRK AKREDİTASYON KURUMU tarafından akredite
Accredited by TÜRKAK

TSE DENEY ve KALİBRASYON MERKEZİ BAŞKANLIĞI
Elektroteknik Laboratuvarı Gebze Müdürlüğü

Adres:TSE Kalite Kampüsü Cumhuriyet Mah. 2258 Sk. No:10 H-Blok, Çayırova Tren İstasyonu Yanı Gebze/ KOCAELİ
Tel:+90 (262) 723 1526 Fax: +90 (262) 723 16 20 E-posta elektroteknikl ab@tse.org.tr Web:www.tse.org.tr

HEADSHIP OF TSE TEST and CALIBRATION CENTER
ELECTROTECHNICAL LABORATORY (GEBZE)

Address:TSE Kalite Kampüsü Cumhuriyet Mah. 2258 Sk. No:10 H-Blok, Çayırova Tren İstasyonu Yanı Gebze/ KOCAELİ
Tel:+90 (262) 723 1526 Fax: +90 (262) 723 16 20 E-mail:elektroteknikl ab@tse.org.tr Web:www.tse.org.tr

AB-0001-T
530733
06-20

MUAYENE VE DENEY RAPORU
TEST REPORT

Deneyi Talep Eden/Firma (Adı,Adresi,Şehir vb.) *Requesting/Customer (Name,Adress,City etc.)*	:	HERA EĞLENCE VE MİMARİ AYDINLATMA (GÜLLÜBAĞLAR MAH.KAHRAMANLAR CAD.NO:3-1 Pendik-İSTANBUL)
Deney Talep Tarihi/No *Order Date / No*	:	01.06.2020 / 401289
Numunenin Tanımı (No,Cins, Marka, Tip, Tür, Model vb.) *Sample Description(No,Type,Mark,Model etc.)*	:	600027,PROJEKTÖR, HERA , P03002XX2 Precolor AC 60 RGBA Floodlight Medium Beam 25° , - , - , 1.00 adet
Numune Kabul Tarihi *Test Item Receipt Date*	:	01.06.2020
Deneylerin Yapıldığı Tarih *Date of Test*	:	01.06.2020 - 03.06.2020
Uygulanan Standard / Metod *Applied Standard/Method*	:	TS EN 62471:2012-01 Lambaların ve lamba sistemlerinin fotobiyolojik güvenliği
Raporun Sayfa Sayısı *Number of pages of the report*	:	19 (3 sayfa ek/page(s) app.)
Açıklamalar	:	Numuneye sadece TS EN 62471 Retinal mavi ışık tehlikesi deneyi uygulanmıştır. Yapılan muayene ve deneylerden OLUMLU sonuç alınmıştır.

Remarks

Türk Akreditasyon Kurumu(TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği(EA) ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanınma antlaşmasını imzalamıştır.

The Turkish Accreditation Acency(TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation(EA) and of the International Laboratory Accreditation(ILAC) for the Mutual recognation of test reports.

Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.

The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Numune müşteri tarafından alınmıştır, bu rapordaki sonuçlar numunenin teslim alındığı hali için geçerlidir. Bu rapor özel deney talebine istinaden düzenlenmiş olup, Standartlara Uygunluk Belgesi niteliğinde değildir. Partiyi temsil etmez, Piyasa Gözetim ve Denetim Faaliyetlerine esas oluşturmaz, ilan, reklam ve ihalelerde 6102 sayılı Türk Ticaret Kanunu'nun 54. Ve 55. Maddelerinde yer alan haksız rekabet hükümlerine aykırılık teşkil edecek şekilde kullanılamaz. Söz konusu hususlara aykırı hareket edilmesi halinde hukuki ve cezai açıdan TSE sorumlu tutulamaz.

The sample was taken by the customer and the results in this report are valid for the status of the sample being received. This report has been prepared in accordance with the request for special tests and is not qualified as a Certificate of Conformity to Standards. It does not represent the party, does not constitute a basis for Market Surveillance and Audit Activities, and cannot be used in announcement, advertisements and tenders in contradiction with the provisions of unfair competition in Articles 54 and 55 of the Turkish Commercial Law No. 6102. TSE cannot be held responsible in case of violation of these issues in legal and criminal terms.

Mühür *Seal*	Tarih *Date*	Deney Sorumlusu *Person in charge of tests*	Kontrol Eden *Reviewer*	Onaylayan *Approved by*
	02/06/2020	Hanife Seyma EKŞİ Deney Personeli Testing Expert	Gülşah GÖKER TATLI Bölüm Sorumlusu Division Head	Burcu PALA Laboratuvar Müdürü V. Laboratory Manager Dep.

TSE DENEY ve KALİBRASYON MERKEZİ BAŞKANLIĞI ELEKTROTEKNİK LABORATUVARI
HEADSHIP OF TSE TEST and CALIBRATION CENTER ELECTROTECHNICAL LABORATORY
MUAYENE - DENEY SONUÇLARI *TEST RESULTS*

AB-0001-T
530733
06-20

DENEY RAPORU
TS EN 62471
Lambaların ve Lamba Sistemlerinin Fotobiyolojik Güvenliği

Rapor No	530733
Yayın Tarihi	
Sayfa sayısı	19
Raporu hazırlayan test laboratuvarının adı	TSE Elektroteknik Laboratuvarı Gebze Müdürlüğü
Talep Eden (Başvuru Sahibi Kuruluş)	HERA EĞLENCE VE MİMARİ AYDINLATMA
Adres	GULLUBAĞLAR MAH.KAHRAMANLAR CAD.NO:3-1 34806 PENDİK / İSTANBUL
Test Spesifikasyonları:	
Standart	TS EN 62471:2012
IEC karşılığı	IEC 62471:2006
Test prosedürü	TSE
Standart dışı metot	NU
Test Rapor Form No	TSE62471B
Test Rapor Formunu Oluşturan	TSE
Yayın Tarihi	2020-06

Genel sorumluluk reddi:

Bu deney raporunda sunulan test sonuçları yalnızca test edilen numune ile ilgilidir.
Bu deney raporunun tamamı hariç bir bölümü TSE'nin yazılı onayı olmadan çoğaltılamaz. Bu deney raporu ve içeriğinin doğruluğunu TSE ilgili birimleri ile iletişim yoluyla (elektroteknikgebze@tse.org.tr) doğrulanabilir.

TSE DENEY ve KALİBRASYON MERKEZİ BAŞKANLIĞI ELEKTROTEKNİK LABORATUVARI
HEADSHIP OF TSE TEST and CALIBRATION CENTER ELECTROTECHNICAL LABORATORY

MUAYENE - DENEY SONUÇLARI *TEST RESULTS*

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Numunenin Tanımı .....:	PROJEKTÖR
Ticari Marka.....:	HERA EĞLENCE VE MİMARİ AYDINLATMA
Üretici .....:	P03002XX2 Procolor AC 60RGBA Floodlight Medium Beam 25°
Model/Tip Referansı .....:	100-240V,50-60Hz,325W güç kaynağı ile birlikte kullanılan,
Anma Değerleri .....:	48VDC,0,840A,40, IP67,Sınıf III,32W led ışık kaynağı ile çalışan projektör

Sorumlu Test Laboratuvarı (uygulanabilir ise), test prosedürü ve test yer(leri) :		
☒ **CB Deney Laboratuvarı:**	TSE Elektroteknik Laboratuvarı Gebze Müdürlüğü	
Deney yapılan yer/ adres .....:	Cumhuriyet Mah. 2258 Sok. No:10 Çayırova Tren İstasyonu Yanı Gebze / KOCAELİ	
☐ **Onaylanmış CB Laboratuvarı:**		
Deney yapılan yer/ adres .....:		
Deneyi yapan (adı, görevi, imzası) .....:	Kapak sayfasına bakınız.	
Onaylayan (adı, görevi, imzası).....:	Kapak sayfasına bakınız.	
☐ **Test prosedürü : CTF Seviye 1:**		
Deney yapılan yer/ adres .....:		
Deneyi yapan (adı, görevi, imzası) .....:		
Onaylayan (adı, görevi, imzası).....:		
☐ **Test prosedürü : CTF Seviye 2:**		
Deney yapılan yer/ adres .....:		
Deneyi yapan (adı + imzası) .....:		
Gözlemleyen (adı, görevi, imzası) .....:		
Onaylayan (adı, görevi, imzası).....:		
☐ **Test prosedürü : CTF Seviye 3:**		
☐ **Test prosedürü : CTF Seviye 4:**		
Deney yapılan yer/ adres .....:		
Deneyi yapan (adı, görevi, imzası) .....:		
Gözlemleyen (adı, görevi, imzası) .....:		
Onaylayan (ad, görevi, imzası).....:		
Denetleyen (adı, görevi, imzası).....:		

TRF No. TSE62471B
LAB-D-FR-36/22.07.2019-5

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Eklerin Listesi (her bir ekteki sayfaların toplam sayısını ekleyerek):

- Avrupa Grup Uyumu Farklılıkları ve Ulusal Farklılıklar (3 sayfa)

Deney özeti:

Uygulanan deney (deneyin adı ve maddesi):	**Deney yapılan yer:**
- Numuneye sadece TS EN 62471 Retinal mavi ışık tehlikesi deneyi uygulanmıştır.	TSE Elektroteknik Laboratuvarı Gebze Müdürlüğü Cumhuriyet Mah. 2258 Sok. No:10 Gebze / KOCAELİ

Ulusal farklılıklara uyum özeti:
Adreslenmiş ülkelerin listesi:

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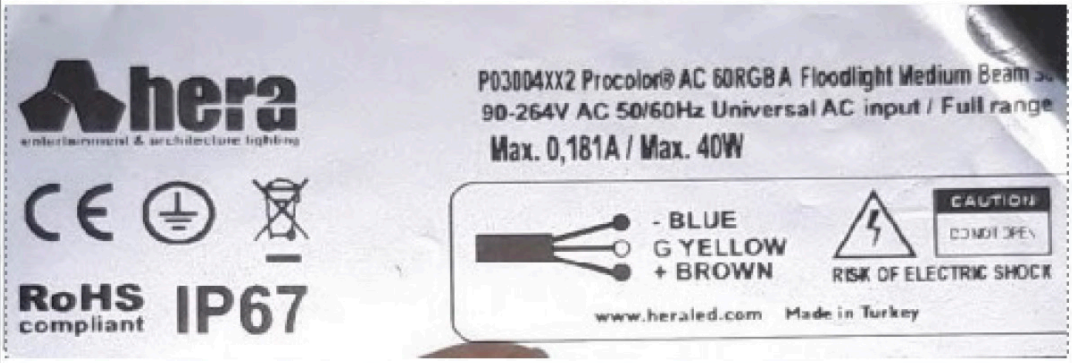
İşaretleme Plakasının Örneği



Deney numunesinin ayrıntıları	:	☒ Sürekli Dalgalı Lamba ☐ Darbeli Lamba
Test edilen lamba	:	
Test edilen lamba sistemi	:	**NU**
Lamba sınıflandırma grubu	:	☐ istisnai ☐ risk 1 ☒ risk 2 ☐ risk 3
Lamba başlığı	:	**NU**
Ampül	:	**NU**
Lambanın beyan değerleri	:	**NU**
Lamba üzerinde ilave işaretleme	:	**NU**
Lambanın IEC standardına uygun hale getirilmesi	:	**IECxx**
Kullanılan ölçüm cihazı	:	**BENTHAM**
Ölçüm sırasındaki ortam sıcaklığı	:	23°C
Güvenli kullanım için bilgiler	:	NU

Muhtemel Deney Hükümleri:

-Bu deney, bu numuneye uygulanmaz	:	NU
-Belirtilen şartlara uygun	:	G
-Belirtilen şartlara uygun değil	:	K
-Bu deney için beyan/şartlar belirtilmediğinden değerlendirilememiştir	:	ŞB
-Bu deney talep edilmemiştir	:	TE
-Bu deney laboratuvarımız imkanlarıyla yapılamamaktadır	:	X
-Bu deney cihaz arızası sebebiyle yapılamamıştır	:	CA

Deney	:	
Numunenin alındığı tarih	:	01.06.2020
Deney performans tarihleri	:	01.06.2020-03.06.2020

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Genel uyarılar:	
"(Bkz. Açıklama #)" Test raporuna eklenmiş açıklamaya atıf yapar. "(Bkz. Ekli tablo)" Test raporuna eklenmiş ek kısımlarına yapar. Bu raporda ondalık ayırıcı olarak ☒ virgül / ☐ nokta kullanılmıştır.	
IECEE 02 - Madde 4.2.5 için Üreticinin Beyanı:	
Birden fazla üretim yeri ve üreticiden değerlendirme için alınan numunenin/numunelerin her bir fabrikadan sağlanan ürünlerinin temsili olduğunu belirten bir beyan içerdiği durumda bir CB test sertifikası edinmek için olan uygulama.....:	☐ Evet ☒ Uygulanmaz
Farklılıklar varsa ürün hakkında genel bilgi bölümünde tanımlanmalıdır.	
Üretim yer(ler)inin adı ve adresi ..... :	HERA EĞLENCE VE MİMARİ AYDINLATMA / GULLUBAGLAR MAH.KAHRAMANLAR CAD.NO:3-1 34906 PENDİK/İSTANBUL
Ürün hakkında genel bilgi:	

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4	**MARUZ KALMA SINIRLARI**		G
4.1	Genel		G
	Bu standarttaki maruz kalma sınırları 0.01 ms'den az,herhangi bir 8 saatlik periyottan fazla olmamalı ve maruz kalmanın kontrolünde kılavuz olarak kullanılmalı		G
	Işık kaynağının ayrıntılı spektral verileri, genelde sadece bu kaynağın ışık şiddeti 10_4 cd.m-2 değerini geçerse gereklidir.	Bkz. Madde 4.3	G
4.3	Tehlikeli maruz kalma sınırları		NU
4.3.1	Cilt ve göz için aktinik UV tehlikesi maruz kalma sınırı		NU
	Herhangi bir 8 saatlik periyotta etkin ışıma miktarı için maruz kalma sınırı 30J.m-2dir.		NU
	Geniş bandlı bir kaynak tarafından üretilen mor ötesi ışımaya maruz kalmadan kaynaklanan göz veya cildin hasarlanmasına karşı koruma için ışık kaynağının etkin tümleşik spektral ışın yoğunluğu ES aşağıdaki formülle tanımlanan seviyeleri aşmamalıdır: $E_s\ t = \sum_{200}^{400} \sum_{t} E_\lambda(\lambda,t) \cdot S_{UV}(\lambda) \cdot \Delta t \ \ \Delta\lambda \le 30$ J·m-2		NU
	Korunmamış göz veya cildin üzerinde mor ötesi ışıma olayına maruz kalma için izin verilebilir süre aşağıdaki gibi hesaplanmalıdır: $t_{max} = \frac{30}{E_s}$ s		NU
4.3.2	Göz için yakın UV tehlikesi maruz kalma sınırı		NU
	315 nm'den 400 nm'ye kadar olan spektral aralığı (UV-A) için göze olan toplam ışınlama miktarı 1000 s'den daha az olan maruz kalma süreleri için 10000 J.m-2 değerini aşmamalıdır. 1000 s'den daha büyük olan maruz kalma süreleri için (yaklaşık 16 dakika) korunmamış bir gözdeki UV-A ışın yoğunluğu E_{UVA} , 10 W.m-2 değerini aşmamalıdır.		NU
	1000 s'den daha az süreler için korunmamış gözdeki mor ötesi ışıma olayına maruz kalmaya izin verilebilir, süre aşağıdaki gibi hesaplanmalıdır: $t_{max} \le \frac{10\,000}{E_{UVA}}$ s		NU
4.3.3	Retinal mavi ışık tehlikesinin maruz kalma sınırı		G
	Kronik mavi ışığa maruz kalmadan kaynaklanan retinal foto kimyasal yaralanmaya karşı koruma için ışık kaynağının tümleşik spektral parlaklığı mavi ışık tehlike fonksiyonu B(λ) yardımıyla ifade edilir. Örneğin ağırlıklı parlaklık ,LB, aşağıdaki şekilde tanımlanan seviyeleri aşmamalıdır:		G

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	$L_B \cdot t = \sum_{300}^{700} \sum_{t} L_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 10^6$ J · m^{-2} · sr^{-1}	$t_{max} = \frac{10^6}{L_B}$ t ≤ 10^4 s için	G
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 100$ W · m^{-2} · sr^{-1}	t > 10^4 s için	G
4.3.4	Retinal mavi ışık tehlikesi maruz kalma sınırı-küçük kaynak		NU
	Gözdeki mavi ışık tehlike fonksiyonu B(λ)'ye karşı spektral irradyans E_λ aşağıda tanımlanan seviyeleri aşmamalıdır:	Bkz. Çizelge 4.2	NU
	$E_B \cdot t = \sum_{300}^{700} \sum_{t} E_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 100$ J · m^{-2}	t ≤ 100 s için	NU
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 1$ W · m^{-2}	t > 100 s için	NU
4.3.5	Retinal Isıl tehlike maruz kalma sınırı		NU
	Retinal ısıl yaralanmaya karşı koruma için ışık kaynağının tümleşik spektral parlaklığı L_λ, yanma tehlikesi ağırlık fonksiyonu R(λ) tarafından ağırlıklandırılır (Şekil 4.2 ve Çizelge 4.2'den). Yanma tehlikesi ağırlıklı parlaklık aşağıda tanımlanan seviyeleri aşmamalıdır:		NU
	$L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{50\,000}{\alpha \cdot t^{0,25}}$ W · m^{-2} · sr^{-1}	(10 µs ≤ t ≤ 10 s)	NU
4.3.6	Retinal Isıl tehlike maruz kalma sınırı-Zayıf görsel uyarı		NU
	Kızıl ötesi ısı lambası veya isteksizlik tepkisini harekete geçirmek için zayıf görsel uyarının yetersiz olduğu herhangi bir yakın kızıl ötesi kaynak için 10 s'den daha büyük olan maruz kalma süreleri için göz tarafından görüldüğü gibi yakın kızıl ötesi (780 nm'den 1400 nm'ye kadar) parlaklık L_{IR}, aşağıdaki ile sınırlandırılmalıdır:		NU
	$L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{6\,000}{\alpha}$ W · m^{-2} · sr^{-1}	t > 10 s	NU
4.3.7	Göz için kızıl ötesi ışıma tehlikesi maruz kalma sınırları		NU
	Korneanın ısıl yaralanmasından ve göz merceği üzerindeki muhtemel gecikmiş etkilerden (kataraktogenez) sakınmak için 780 nm'den 3000 nm'ye kadar olan dalga boyu aralığı boyunca 1000 s'den daha az olan süreler için gözün kızıl ötesi ışımaya maruz kalması E_{IR}, aşağıdaki değerleri geçmemelidir:		NU
	$E_{IR} = \sum_{780}^{3\,000} E_\lambda \cdot \Delta\lambda \le 18\,000 \cdot t^{-0,75}$ W · m^{-2}	t ≤ 1000 s	NU
	1000 s.'den büyük değerler için sınır:		NU
	$E_{IR} = \sum_{780}^{3\,000} E_\lambda \cdot \Delta\lambda \le 100$ W · m^{-2}	t > 1000 s	NU
4.3.8	Cilt için ısıl tehlike maruz kalma sınırı		NU

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	Cildin görülebilir ve kızıl ötesi ışınlama miktarı (380 nm'den 3000 nm'ye kadar) aşağıdaki değere sınırlandırılmalıdır.		NU
	$E_H \cdot t = \sum_{380}^{3\,000} \sum_{t} E_\lambda(\lambda,t)\ \Delta t\ \Delta\lambda \le 20\,000 \cdot t^{0,25}$ J m^{-2}		NU
5	**LAMBA VE LAMBA SİSTEMLERİNİN ÖLÇÜLMESİ**		
5.1	Ölçüm Şartları		G
	Ölçüm şartları, risk sınıflandırılmasının değerlendirilmesine ve maruz kalma sınırlarına karşı değerlendirmenin bir bölümü olarak rapor edilmelidir.		G
5.1.1	Lambanın yaşlandırılması		NU
5.1.2	Deney ortamı		G
	Özel deney şartları için uygun IEC/TSE lamba standardına veya böyle standardların olmaması durumunda uygun milli standardlara veya imalatçının tavsiyelerine bakılmalıdır.		NU
5.1.3	Harici Işıma		NU
	Harici kaynaklardan yayılan ışıma ve yansımanın ölçüm sonuçlarını etkilememesi için dikkatli kontroller yapılmalıdır.		NU
5.1.4	Lambanın çalışması		G
	Deneyden geçirilecek lamba		G
	-Uygun IEC/TSE standardına göre, veya		NU
	- İmalatçının tavsiyelerine göre çalıştırılmalıdır.		G
5.1.5	Lamba sisteminin çalışması		G
	Deney lambasının çalışması için gereken güç kaynağı		G
	-İlgili IEC/TSE standardına veya		NU
	-İmalatçının tavsiyelerine göre çalıştırılmalıdır.		G
5.2	Ölçüm Prosedürü		NU
5.2.1	Işın yoğunluğu (irradyans) Ölçümleri		NU
	Minimum delik çapı 7 mm		NU
	Minimum delik çapı 50 mm		NU
	Ölçüm, en büyük okumayı veren ışın demetinin konumunda yapılmalıdır.		NU
	Ölçüm cihazının kalibrasyonu		NU
5.2.2	Parlaklık (radyans) ölçümleri		G
5.2.2.1	Standart metod		G
	Ölçümler bir optik sistemle yapılır		G

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	Ölçüm cihazı her bir alıcı alan ve kendisinin görüş alanı boyunca (FOV) ortalaması alınan her bir tam kabul açısının mutlak ışıma gücünü okumak için kalibre edilmelidir.		G
5.2.2.2	Alternatif metot		NU
	Parlaklık düzeneğinin simgelenmesine alternatif olarak, kaynağa yerleştirilmiş dairesel alan sınırlandırıcısı ile ışın yoğunluğunun ölçülmesi parlaklık ölçmelerini yapmak için kullanılabilir		NU
5.2.3	Kaynak boyutunun ölçülmesi		G
	Bir kaynağın karşısında oluşan α açısının belirlenmesi kaynağın yayılma noktalarının % 50'sinin belirlenmesini gerektirir.		G
5.2.4	Darbeli kaynaklar için darbe genişliğinin ölçülmesi		NU
	Δt'nin belirlenmesi yayılma > tepe değerin % 50' si olduğu süre boyunca belirlenmesini gerektirir.		NU
5.3	Analiz Metotları		G
5.3.1	Ağırlıklı eğri enterpolasyonları		G
	Enterpolasyona tabi tutulmuş değerleri standard hale getirmek için, istenen dalgaboyu aralıklarında ara noktaları elde etmek için verilen logaritmik değerler üzerinde doğrusal enterpolasyon kullanılmalıdır.		G
5.3.2	Hesaplamalar		G
	Kaynak tehlikesi değerlerinin hesaplanması uygun fonksiyon tarafından spektral taramanın ağırlıklandırılmasıyla ve toplam ağırlıklı enerjinin hesaplanmasıyla yapılmalıdır.		G
5.3.3	Ölçüm belirsizliği		G
	Bütün ölçme sonuçlarının kalitesi belirsizliğin analiziyle belirlenmelidir.	Bkz. Ek C	G
6	**LAMBANIN SINIFLANDIRILMASI**		G
	Bu standardın amacı için değerlerin aşağıdaki gibi belirtilmesine karar verilmiştir.	Bkz. tablo 6.1	G
	-Genel aydınlatma hizmeti için amaçlanan lambalar için tehlike değerleri 200 mm'den daha az mesafe olmamak üzere 500 lüks aydınlatma şiddeti ürettiği bir mesafede ışın yoğunluğu veya parlaklık değerleri olarak belirtilmelidir.		G
	-Darbeli lamba kaynakları dahil diğer bütün ışık kaynakları için tehlike değerleri 200 mm'lik mesafede belirtilmelidir.		NU
6.1	Sürekli Dalgalı Lambalar		G
6.1.1	İstisnai Grup		NU
	Bu gruptaki lambalar herhangi bir fotobiyolojik tehlike ortaya çıkarmamalıdır. Bu gereklilik:		NU
	-8 saatlik maruz kalma (30000 s) içinde aktinik mor ötesi tehlikeyi (Es) ya da,		NU

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	-1000 s (yaklaşık 16 dk) içinde yakın UV tehlikeyi (E_{UVA}) ya da,		NU
	-10000 s (yaklaşık 2,8 saat) içinde retinal mavi ışık tehlikeyi (L_B) ya da,		NU
	-10 s içinde retinal ısıl tehlikeyi (L_R) ya da,		NU
	-1000 s içinde göz için kızıl ötesi ışıma tehlikesini (E_{IR}) ortaya çıkarmayan herhangi bir lamba tarafından karşılanır.		NU
6.1.2	Risk Grubu 1 (Düşük risk)		NU
	Bu gruptaki lambalar, istinai gruptaki sınırları aşan ancak:		NU
	-10000 s içinde aktinik mor ötesi tehlikeyi (E_S) ya da,		NU
	-300 s içinde yakın mor ötesi tehlikeyi (E_{UVA}) ya da,		NU
	-100 s içinde retinal mavi ışık tehlikeyi (L_B) ya da,		NU
	-10 s içinde retinal ısıl tehlikeyi (L_R) ya da		NU
	-100 s içinde göz için kızıl ötesi ışıma tehlikesini (E_{IR}) ortaya çıkarmayan herhangi bir lamba tarafından karşılanır.		NU
	Kuvvetli görsel uyarı olmaksızın kızıl ötesi ışıma yayan ve 100 s içinde yakın kızıl ötesi retinal tehlike (L_{IR}) ortaya çıkarmayan lambalar da risk grubu 1'dedir.		NU
6.1.3	Risk Grubu 2 (Orta risk)		G
	Bu gruptaki lambalar, Risk Grubu 1'deki sınırları aşan ancak,		G
	-1000 s'lik maruz kalma içinde aktinik mor ötesi tehlikeyi (E_S) ya da,		NU
	-100 s içinde yakın mor ötesi tehlikeyi (E_{UVA}) ya da,		NU
	-0,25 s (riskten kaçınma tepkisi) içinde retinal mavi ışık tehlikeyi (L_B) ya da,		G
	-0,25 s (riskten kaçınma tepkisi) içinde retinal ısıl tehlikeyi (L_R) ya da,		NU
	-10 s içinde göz için kızıl ötesi ışıma tehlikesini (E_{IR}) ortaya çıkarmayan herhangi bir lamba tarafından karşılanır.		NU
	Kuvvetli görsel uyarı (olmaksızın kızıl ötesi ışıma yayan ve 10 s içinde yakın kızıl ötesi retinal tehlike (L_{IR}) ortaya çıkarmayan lambalar da risk grubu 2'dedir.		NU
6.1.4	Risk Grubu 3 (Yüksek risk)		NU
	Risk Grubu 2'deki sınırları aşan lambalar bu gruptadır.		NU
6.2	Darbeli lambalar		NU
	Darbeli lamba kriterleri tek bir darbeye ve 0,25 s içinde herhangi bir dalga grubuna uygulanmalıdır.		NU

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	Darbeli bir lamba imalatçı tarafından belirtilen en yüksek anma enerjisi yükünde değerlendirilmelidir.		NU
	Deneyden geçirilen lambanın risk grubunun belirlenmesi aşağıdaki gibi yapılmalıdır:		NU
	-Maruz kalma sınırını aşan bir lamba risk grubu 3'e (yüksek risk) ait olarak sınıflandırılmalıdır.		NU
	-Tek darbeli lambalar için ağırlıklı ışınlama miktarı veya ağırlıklı parlaklık miktarı EL aşağısında olan bir lamba istisnai gruba ait olarak sınıflandırılmalıdır.		NU
	-Tekrarlamalı darbeli lambalar için ağırlıklı ışınlama miktarı veya ağırlıklı parlaklık miktarı EL aşağısında olan bir lamba darbeli yayılmanın ortalama zaman değerleri kullanılarak Madde 6.1'de açıklanan sürekli dalga risk kriteri kullanılarak değerlendirilmelidir.		NU

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Çizelge 4.1 Cilt ve göz için mor ötesi tehlikelerin değerlendirilmesinde spektral ağırlıklı fonksiyon

Wavelength[1] λ, nm	UV hazard function $S_{uv}(\lambda)$	Wavelength λ, nm	UV hazard function $S_{uv}(\lambda)$
200	0,030	313*	0,006
205	0,051	315	0,003
210	0,075	316	0,0024
215	0,095	317	0,0020
220	0,120	318	0,0016
225	0,150	319	0,0012
230	0,190	320	0,0010
235	0,240	322	0,00067
240	0,300	323	0,00054
245	0,360	325	0,00050
250	0,430	328	0,00044
254*	0,500	330	0,00041
255	0,520	333*	0,00037
260	0,650	335	0,00034
265	0,810	340	0,00028
270	1,000	345	0,00024
275	0,960	350	0,00020
280*	0,880	355	0,00016
285	0,770	360	0,00013
290	0,640	365*	0,00011
295	0,540	370	0,000093
297*	0,460	375	0,000077
300	0,300	380	0,000064
303*	0,120	385	0,000053
305	0,060	390	0,000044
308	0,026	395	0,000036
310	0,015	400	0,000030

[1] Seçilen dalga boyları, temsilidir: Diğer değerler ara dalga boylarında logaritmik enterpolasyon ile elde edilmelidir.

* Cıva boşalma spektrumunun yayılma çizgileri.

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Çizelge 4.2 Geniş bandlı optik kaynaklardan olan retinal tehlikelerin değerlendirilmesi için spektral ağırlık fonksiyonları

Wavelength nm	Blue-light hazard function B (λ)	Burn hazard function R (λ)
300	0,01	
305	0,01	
310	0,01	
315	0,01	
320	0,01	
325	0,01	
330	0,01	
335	0,01	
340	0,01	
345	0,01	
350	0,01	
355	0,01	
360	0,01	
365	0,01	
370	0,01	
375	0,01	
380	0,01	0,1
385	0,013	0,13
390	0,025	0,25
395	0,05	0,5
400	0,10	1,0
405	0,20	2,0
410	0,40	4,0
415	0,80	8,0
420	0,90	9,0
425	0,95	9,5
430	0,98	9,8
435	1,00	10,0
440	1,00	10,0
445	0,97	9,7
450	0,94	9,4
455	0,90	9,0
460	0,80	8,0
465	0,70	7,0
470	0,62	6,2
475	0,55	5,5
480	0,45	4,5
485	0,40	4,0
490	0,22	2,2
495	0,16	1,6
500-600	$10^{[(450-\lambda)/50]}$	1,0
600-700	0,001	1,0
700-1050		$10^{[(700-\lambda)/500]}$
1050-1150		0,2
1150-1200		$0{,}2\,10^{0{,}02(1150-\lambda)}$
1200-1400		0,02

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Çizelge 5.4	Kornea veya cilt yüzeyi için EL'lerin özeti (ışın yoğunluğu esaslı değerler)				
Tehlike adı	**İlgili denklem**	**Dalgaboyu aralığı nm**	**Maruz kalma süresi s**	**Sınırlama deliği rad (derece)**	**Sabit ışın yoğunluğuna gore EL $W.m^{-2}$**
Aktinik UV cilt ve göz	$E_S = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t
Göz UV-A	$E_{UVA} = \sum E_\lambda \cdot \Delta\lambda$	315 – 400	≤1000 >1000	1,4 (80)	10000/t 10
Mavi ışıklı küçük kaynak	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤100 >100	< 0,011	100/t 1,0
Göz IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780 –3000	≤1000 >1000	1,4 (80)	$18000/t^{0,75}$ 100
Cilt ısıl	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	$20000/t^{0,75}$

Çizelge 5.5	Retina için EL'lerin özeti (parlaklık esaslı değerler)				
Tehlike adı	**İlgili denklem**	**Dalgaboyu aralığı nm**	**Maruz kalma süresi s**	**Sınırlama deliği rad (derece)**	**Sabit parlaklığa gore EL $W.m^{-2}.sr^{-1}$**
Mavi ışık	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10 10-100 100-10000 ≥ 10000	$0,011 \cdot \sqrt{(t/10)}$ 0,011 $0,0011 \cdot \sqrt{t}$ 0,1	$10^6/t$ $10^6/t$ $10^6/t$ 100
Retinal ısıl	$L_R = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 $0,011 \cdot \sqrt{(t/10)}$	$50000/(\alpha \cdot t^{0,25})$ $50000/(\alpha \cdot t^{0,25})$
Retinal ısıl (zayıf görülebilir uyarıcı)	$L_{IR} = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	$6000/\alpha$

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Madde	Kural + Deney	Sonuç - Açıklama	Karar

Çizelge 6.1 Sürekli dalgalı lambaların risk grupları için yayılma sınırları

Risk	Etkinlik Spektrumu	Sembol	Birimler	Yayılma Ölçümleri					
				İstisnai		Düşük risk		Orta risk	
				Limit	Sonuç	Limit	Sonuç	Limit	Sonuç
Aktinik UV	$S_{UV}(\lambda)$	E_S	$W \cdot m^{-2}$	0,001	NU	0,003	NU	0,03	NU
Yakın UV		E_{UVA}	$W \cdot m^{-2}$	10	NU	33	NU	100	NU
Mavi ışık	$B(\lambda)$	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	NU	10000	NU	4000000	1,41E+04
Mavi ışık, küçük kaynak	$B(\lambda)$	E_B	$W \cdot m^{-2}$	1,0*	NU	1,0	NU	400	NU
Retinal ısıl	$R(\lambda)$	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	28000/α	NU	28000/α	NU	71000/α	NU
Retinal ısıl,zayıf görüş duyarlılığı **	$R(\lambda)$	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	6000/α	NU	6000/α	NU	6000/α	NU
IR ışıma göz		E_{IR}	$W \cdot m^{-2}$	100	NU	570	NU	3200	NU

* * α < 0,011 radyan ile bir tek olarak tanımlanan küçük kaynak. 10000 s'deki ortalama görüş alanı 0,1 radyandır.

** GLS olmayan kaynağın değerlendirilmesini gerektirir.

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