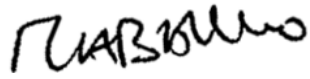


Test Report issued under the responsibility of:  
 EMITECH ANGERS

<b>TEST REPORT</b> <b>EN 60598-2-1</b> <b>Luminaire</b> <b>Part 2: Particular requirements:</b> <b>Section One – Fixed general purpose luminaires</b>	
<b>Report Number</b> ..... :	RS051-15-102444-1-A Ed. 0
<b>Date of issue</b> .....	3-Jul-15
<b>Total number of pages</b> .....	42
<b>Applicant's name</b> ..... :	<b>B ET D SARL</b>
<b>Address</b> ..... :	25 La Grellerie – 44140 LE BIGNON - France
<b>Test specification:</b>	
<b>Standard</b> ..... :	EN 60598-2-1:1989 used in conjunction with EN 60598-1:2008 + A11:2009
<b>Test procedure</b> ..... :	CE marking
<b>Non-standard test method</b> ..... :	N/A
<b>Test Report Form No.</b> .....	IEC60598_2_1C
<b>Test Report Form(s) Originator</b> .. :	Intertek Semko AB
<b>Master TRF</b> ..... :	2012-11
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<b>Test item description</b> ..... :	Luminaire
<b>Trade Mark</b> ..... :	<b>PixLED PixBOARD PixCABLE</b>
<b>Manufacturer</b> ..... :	<b>PIXLUM®</b>
<b>Model/Type reference</b> .....	PixLED, PixBOARD and PixCABLE
<b>Ratings</b> ..... :	12Vac



Testing procedure and testing location:		
<input checked="" type="checkbox"/>	<b>Testing Laboratory:</b>	<b>EMITECH ANGERS</b>
Testing location/ address:		Site de Juigné - P.A. de Lanserre – 21, rue de la Fuye 49610 JUIGNE SUR LOIRE (France)
	Tested by (name + signature) .....	M. CABALLERO 
	Approved by (name + signature) .....	B. CALLENS
<input type="checkbox"/>	<b>Associated CB Laboratory:</b>	
Testing location/ address:		
	Tested by (name + signature) .....	
	Approved by (name + signature) .....	
<input type="checkbox"/>	Testing procedure: <b>TMP</b>	
Testing location/ address:		
	Tested by (name + signature) .....	
	Approved by (name + signature) .....	
<input type="checkbox"/>	Testing procedure: <b>WMT</b>	
Testing location/ address:		
	Tested by (name + signature) .....	
	Witnessed by (name + signature) .....	
	Approved by (name + signature) .....	
<input type="checkbox"/>	Testing procedure: <b>SMT</b>	
Testing location/ address:		
	Tested by (name + signature) .....	
	Approved by (name + signature) .....	
	Supervised by (name + signature) .....	
<input type="checkbox"/>	Testing procedure: <b>RMT</b>	
Testing location/ address:		
	Tested by (name + signature) .....	
	Approved by (name + signature) .....	
	Supervised by (name + signature) .....	

**List of Attachments (including a total number of pages in each attachment):**

TITLE	PAGE
ANNEX 1: PHOTOS OF THE EQUIPMENT UNDER TEST .....	33
ANNEX 2: LIST OF TEST EQUIPMENT .....	36
ANNEX 3: TABLE OF UNCERTAINTIES.....	37
ANNEX 4: MANUALS .....	38
ANNEX 5: GLOW WIRE TEST PHOTOGRAPHIES.....	41

**Summary of testing:**
**TESTS PERFORMED (NAME OF TEST AND TEST CLAUSE):**

*1.2 (0) GENERAL TEST REQUIREMENTS*  
*1.4 (2) CLASSIFICATION*  
*1.5 (3) MARKING*  
*1.6 (4) CONSTRUCTION*  
*1.11 (8) PROTECTION AGAINST ELECTRIC SHOCK*  
*1.12 (12) ENDURANCE TEST AND THERMAL TEST*  
*1.13 (9) ENDURANCE TEST AND THERMAL TEST*  
*RESISTANCE TO DUST, SOLID OBJECTS AND*  
*MOISTURE*  
*1.14 (10) INSULATION RESISTANCE AND ELECTRIC*  
*STRENGTH*  
*1.15 (13) RESISTANCE TO HEAT, FIRE AND*  
*TRACKING*

**Testing location:**

**EMITECH ANGERS**  
 21 rue de la Fuye  
 49610 JUIGNE SUR LOIRE  
 France

**Summary of compliance with National Differences:**

List of countries addressed:

- **Country members of CENELEC:**

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

- **Country affiliates members of CENELEC:**

Albania, Belarus, Bosnia and Herzegovina, Georgia, Israel, Jordan, Libya, Montenegro, Serbia, Morocco, Tunisia, and Ukraine.

The product fulfils the requirements of EN 60598-2-1:1989 used in conjunction with EN 60598-1:2008 + A11:2009.

**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.

**PixBOARD Labels**

PIXLUM - PixBOARD Foam - ref: 31100001 - TBTS 12V - 150 W max. - T° max 40°C - IP20 -  - NF EN 60 598-1 et 60 598-2-1 - 




PIXLUM - PixBOARD Foam  
 ref: 31100001  
 TBTS 12V - 150 W max.  
 T° max 40°C - IP20 -   
 NF EN 60 598-1 et 60 598-2-1  





**PixLED label**

**PIX LUM**  
 100 PixLEDs - Ref: 41215301  
 Green (525°K) - 570 mcd  
 For PixBOARD Only - Ø4,6mm /H 3.1mm  
 12 Volts AC - 0.21 Watts - Beam 120°  
 **IP20**  **RoHS**  
 COMPLIANT 

**PixCABLE labels**

**PIX LUM**  
 10 x Clips (by 2)  
 For PixBOARD Only  
 Ref: 21070003  
 12 Volts AC - 150 Watts maxi  
 Without Cable  
 NF EN60598-1 & NF EN60598-2-1  
 **IP20**  **RoHS**  
 COMPLIANT 

**PIX LUM**  
 10xPixCABLE Power Supply  
 For PixBOARD Only  
 Ref: 22171503  
 12 Volts AC - 150 Watts maxi  
 Cable 1,5 m - 180°C - 2.5mm<sup>2</sup>  
 NF EN60598-1 & NF EN60598-2-1  
 **IP20**  **RoHS**  
 COMPLIANT 

**PIX LUM**  
 10xPixCABLE Bridge  
 For PixBOARD Only  
 Ref: 23170203  
 12 Volts AC - 150 Watts maxi  
 Cable 0,2 m - 180°C - 2.5mm<sup>2</sup>  
 NF EN60598-1 & NF EN60598-2-1  
 **IP20**  **RoHS**  
 COMPLIANT 

<b>Test item particulars</b> .....	
Classification of installation and use.....	Fixed luminaire, class III
Supply Connection .....	Wires with nippers
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing</b> .....	
Date of receipt of test item .....	08/06/2015
Date (s) of performance of tests .....	From 09/06/2015 to 02/07/2015
<b>General remarks:</b>	
<p>The test results presented in this report relate only to the object tested.          This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.          "(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 60598-1</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 02:</b>	
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 .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
<b>Name and address of factory (ies)</b> .....	Not communicated

**General product information:**

The evaluated product is composed by three elements:

- PixBOARD: a board made of foam layers in between which is inserted two layers of aluminum
- PixLED: a LED to stick in the PixBOARD
- PixCABLE: a cable used to power the PixBOARD

See annex 4 Manuals for details.

The power supply (12 Vac/150 W output) is not part of the evaluation.

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>1.2 (0)</b>	<b>GENERAL TEST REQUIREMENTS</b>		
1.2 (0.1)	Information for luminaire design considered	Standard Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.2 (0.3)	More sections applicable .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—

<b>1.4 (2)</b>	<b>CLASSIFICATION</b>		
1.4 (2.2)	Type of protection .....	Class III	—
1.4 (2.3)	Degree of protection.....	IP 20	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
1.4 (2.5)	Luminaire for normal use .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Luminaire for rough service .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

<b>1.5 (3)</b>	<b>MARKING</b>		
1.5 (3.2)	Mandatory markings	Checked	P
	Position of the marking	Checked	P
	Format of symbols/text	Checked	P
1.5 (3.3)	Additional information		P
	Language of instructions	Checked in French	P
1.5 (3.3.1)	Combination luminaires	Not a combination luminaire	N/A
1.5 (3.3.2)	Nominal frequency in Hz	No limit specified	N/A
1.5 (3.3.3)	Operating temperature	+5 to +40°C	P
1.5 (3.3.4)	Symbol or warning notice		N/A
1.5 (3.3.5)	Wiring diagram	Checked	P
1.5 (3.3.6)	Special conditions	No special conditions	N/A
1.5 (3.3.7)	Metal halide lamp luminaire – warning		N/A
1.5 (3.3.8)	Limitation for semi-luminaires	Not a semi luminaire	N/A
1.5 (3.3.9)	Power factor and supply current	PF=1 specified in instructions	P
1.5 (3.3.10)	Suitability for use indoors	For indoor use only	P
1.5 (3.3.11)	Luminaires with remote control	No remote control	N/A
1.5 (3.3.12)	Clip-mounted luminaire – warning	Not clip mounted	N/A
1.5 (3.3.13)	Specifications of protective shields	No protective shields	N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5 (3.3.14)	Symbol for nature of supply	Not necessary	N/A
1.5 (3.3.15)	Rated current of socket outlet	No socket outlet	N/A
1.5 (3.3.16)	Rough service luminaire		N/A
1.5 (3.3.17)	Mounting instruction for type Y, type Z and some type X attachments	Class III equipment	N/A
1.5 (3.3.18)	Non-ordinary luminaires with PVC cable	Refer above	N/A
1.5 (3.3.19)	Protective conductor current in instruction if applicable	No protective conductor	N/A
1.5 (3.3.20)	Provided with information if not intended to be mounted within arm's reach		N/A
1.5 (3.4)	Test with water	15s	P
	Test with hexane	15s	P
	Legible after test	Checked. Tests have been conducted on PixCABLE label only.	P
	Label attached		P

<b>1.6 (4)</b>	<b>CONSTRUCTION</b>		
1.6 (4.2)	Components replaceable without difficulty		P
1.6 (4.3)	Wireways smooth and free from sharp edges		N/A
1.6 (4.4)	Lampholders		N/A
1.6 (4.4.1)	Integral lampholder	No lampholder	N/A
1.6 (4.4.2)	Wiring connection		N/A
1.6 (4.4.3)	Lampholder for end-to-end mounting		N/A
1.6 (4.4.4)	Positioning		N/A
	- pressure test (N) .....		N/A
	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) .....		N/A
	After test the lampholder have not moved from its position and show no permanent deformation		N/A
1.6 (4.4.5)	Peak pulse voltage		N/A



EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.4.6)	Centre contact		N/A
1.6 (4.4.7)	Parts in rough service luminaires resistant to tracking		N/A
1.6 (4.4.8)	Lamp connectors		N/A
1.6 (4.4.9)	Caps and bases correctly used		N/A
1.6 (4.5)	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
1.6 (4.6)	Terminal blocks		N/A
	Tails	No terminal block	N/A
	Unsecured blocks		N/A
1.6 (4.7)	Terminals and supply connections		N/A
1.6 (4.7.1)	Contact to metal parts	Not connected to mains	N/A
1.6 (4.7.2)	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
1.6 (4.7.3)	Terminals for supply conductors		N/A
1.6 (4.7.3.1)	Welded connections:		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 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
1.6 (4.7.4)	Terminals other than supply connection		N/A
1.6 (4.7.5)	Heat-resistant wiring/sleeves		N/A
1.6 (4.7.6)	Multi-pole plug		N/A
	- test at 30 N		N/A
1.6 (4.8)	Switches:		N/A
	- adequate rating	No switches	N/A
	- adequate fixing		N/A
	- polarized supply		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- compliance with 61058-1 for electronic switches		N/A
1.6 (4.9)	Insulating lining and sleeves		N/A
1.6 (4.9.1)	Retainment	No such part	N/A
	Method of fixing..... :		N/A
1.6 (4.9.2)	Insulated linings and sleeves		N/A
	Resistant to a temperature > 20 °C to the wire temperature or	No such parts	N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C)..... :		N/A
1.6 (4.10)	Insulation of Class II luminaires		N/A
1.6 (4.10.1)	No contact, mounting surface – accessible metal parts – wiring of basic insulation	Class III	N/A
	Safe installation fixed luminaires		N/A
	Capacitors and switches		N/A
	Interference suppression capacitors according to IEC 60384-14		N/A
1.6 (4.10.2)	Assembly gaps:		N/A
	- not coincidental	Class III	N/A
	- no straight access with test probe		N/A
1.6 (4.10.3)	Retainment of insulation:		N/A
	- fixed	Class III	N/A
	- unable to be replaced; luminaire inoperative		N/A
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
1.6 (4.11)	Electrical connections		
1.6 (4.11.1)	Contact pressure	No such construction	N/A
1.6 (4.11.2)	Screws:		N/A
	- self-tapping screws	No such construction	N/A
	- thread-cutting screws		N/A
1.6 (4.11.3)	Screw locking:		N/A
	- spring washer	No such construction	N/A
	- rivets		N/A
1.6 (4.11.4)	Material of current-carrying parts	Aluminium/copper	P

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.11.5)	No contact to wood or mounting surface		P
1.6 (4.11.6)	Electro-mechanical contact systems	No such component	N/A
1.6 (4.12)	Mechanical connections and glands		N/A
1.6 (4.12.1)	Screws not made of soft metal	No such construction	N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
	Torque test: torque (Nm); part..... :		N/A
1.6 (4.12.2)	Screws with diameter < 3 mm screwed into metal	No screws	N/A
1.6 (4.12.4)	Locked connections:		N/A
	- fixed arms; torque (Nm)..... :	No such construction	N/A
	- lampholder; torque (Nm)..... :		N/A
	- push-button switches; torque 0,8 Nm..... :		N/A
1.6 (4.12.5)	Screwed glands; force (Nm)..... :	No glands	N/A
1.6 (4.13)	Mechanical strength		N/A
1.6 (4.13.1)	Impact tests:		N/A
	- fragile parts; energy (Nm)..... :	Class III	N/A
	- other parts; energy (Nm)..... :		N/A
	1) live parts		N/A
	2) linings		N/A
	3) protection		N/A
	4) covers		N/A
1.6 (4.13.3)	Straight test finger		N/A
1.6 (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
1.6 (4.13.6)	Tumbling barrel		N/A
1.6 (4.14)	Suspensions and adjusting devices		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.14.1)	Mechanical load:		N/A
	A) four times the weight		N/A
	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
1.6 (4.14.2)	Load to flexible cables		N/A
	Mass (kg) .....	Not suspended	N/A
	Stress in conductors (N/mm <sup>2</sup> ) .....		N/A
	Mass (kg) of semi-luminaire .....		N/A
	Bending moment (Nm) of semi-luminaire .....		N/A
1.6 (4.14.3)	Adjusting devices:		N/A
	- flexing test; number of cycles .....	No adjusting devices	N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
1.6 (4.14.4)	Telescopic tubes: cords not fixed to tube; no strain on conductors	No telescopic tube	N/A
1.6 (4.14.5)	Guide pulleys	No guide pulleys	N/A
1.6 (4.14.6)	Strain on socket-outlets	No socket outlet	N/A
1.6 (4.15)	Flammable materials:		
	- glow-wire test 650 °C	PixBOARD foam is 650°C GWT compliant.	P
	- 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
1.6 (4.15.2)	Luminaires made of thermoplastic material with lamp control gear		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	a) construction	No lamp control gear	N/A
	b) temperature sensing control	Refer above	N/A
	c) surface temperature	Refer above	N/A
1.6 (4.16)	Luminaires for mounting on normally flammable surfaces		P
	No lamp control gear	(compliance with Section 12)	P
1.6 (4.16.1)	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
1.6 (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
1.6 (4.16.3)	Design to satisfy the test of 12.6		N/A
1.6 (4.17)	Drain holes	Not protected against ingress of water	N/A
	Clearance at least 5 mm		N/A
1.6 (4.18)	Resistance to corrosion:		N/A
1.6 (4.18.1)	- rust-resistance	Not protected against ingress of water	N/A
1.6 (4.18.2)	- season cracking in copper		N/A
1.6 (4.18.3)	- corrosion of aluminium		N/A
1.6 (4.19)	Ignitors compatible with ballast	No ignitor	N/A
1.6 (4.20)	Rough service vibration	Not a rough service luminaire	N/A
1.6 (4.21)	Protective shield:		N/A
1.6 (4.21.1)	Shield fitted	No such lamp	N/A
	Shield of glass if tungsten halogen lamps		N/A
1.6 (4.21.2)	Particles from a shattering lamp not impair safety		N/A
1.6 (4.21.3)	No direct path		N/A
1.6 (4.21.4)	Impact test on shield		N/A
	Glow-wire test on lamp compartment		N/A
1.6 (4.22)	Attachments to lamps	No lamp	N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.6 (4.23)	Semi-luminaires comply Class II		N/A
1.6 (4.24)	UV radiation for tungsten halogen lamps and metal halide lamps (Annex P)	No lamp	N/A
1.6 (4.25)	No sharp point or edges		P
1.6 (4.26)	Short-circuit protection:		N/A
1.6 (4.26.1)	Uninsulated accessible SELV parts	To be defined in final installation	N/A
1.6 (4.26.2)	Short-circuit test		N/A
1.6 (4.26.3)	Test chain according to Figure 29		N/A
1.6 (4.27)	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Pull test of terminal fixing (20 N)	No earthing	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

<b>1.7 (11)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
	Working voltage (V).....:	Class III	—
	Voltage form	Sinusoidal <input type="checkbox"/> Non-sinusoidal <input type="checkbox"/>	—
	PTI	< 600 <input type="checkbox"/> ≥ 600 <input checked="" type="checkbox"/>	—
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II <input type="checkbox"/> Category III <input type="checkbox"/>	—
	Rated pulse voltage (kV).....:		—
	(1) Current-carrying parts of different polarity: cr (mm); cl (mm) .....		N/A
	(2) Current-carrying parts and accessible parts: cr (mm); cl (mm) .....		N/A
	(3) Parts becoming live due to breakdown of basic insulation and metal parts: cr (mm); cl (mm) .....		N/A
	(4) Outer surface of cable where it is clamped and metal parts: cr (mm); cl (mm) .....		N/A

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict
	(6) Current-carrying parts and supporting surface: cr (mm); cl (mm) .....		N/A

<b>1.8 (7)</b>	<b>PROVISION FOR EARTHING</b>		<b>N/A</b>
1.8 (7.2.1 + 7.2.3)	Accessible metal parts	Class III equipment with no earthing	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 groove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
1.8 (7.2.2 + 7.2.3)	Earth continuity in joints etc.		N/A
1.8 (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
1.8 (7.2.5)	Earth terminal integral part of connector socket		N/A
1.8 (7.2.6)	Earth terminal adjacent to mains terminals		N/A
1.8 (7.2.7)	Electrolytic corrosion of the earth terminal		N/A
1.8 (7.2.8)	Material of earth terminal		N/A
	Contact surface bare metal		N/A
1.8 (7.2.10)	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
1.8 (7.2.11)	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A

<b>1.9 (14)</b>	<b>SCREW TERMINALS</b>		<b>N/A</b>
	Separately approved; component list	No screw terminals	N/A
	Part of the luminaire	Refer above	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

<b>1.9 (15)</b>	<b>SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS</b>		N/A
	Separately approved; component list	No terminal	N/A
	Part of the luminaire		N/A

<b>1.10 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		<b>N/A</b>
1.10 (5.2)	Supply connection and external wiring		N/A
1.10 (5.2.1)	Means of connection..... :	Not connected to mains	N/A
1.10 (5.2.2)	Type of cable .....		N/A
	Nominal cross-sectional area (mm <sup>2</sup> )..... :		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
1.10 (5.2.3)	Type of attachment, X, Y or Z		N/A
1.10 (5.2.5)	Type Z not connected to screws		N/A
1.10 (5.2.6)	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
1.10 (5.2.7)	Cable entries through rigid material have rounded edges		N/A
1.10 (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
1.10 (5.2.9)	Locking of screwed bushings		N/A
1.10 (5.2.10)	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A
	- insulating material or lining		N/A
1.10 (5.2.10.1)	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	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
1.10 (5.2.10.2)	Adequate cord anchorage for type Y and type Z attachment		N/A
1.10 (5.2.10.3)	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N) .....		N/A
	- torque test: torque (Nm) .....		N/A
	- displacement $\leq 2$ mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
1.10 (5.2.11)	External wiring passing into luminaire		N/A
1.10 (5.2.12)	Looping-in terminals		N/A
1.10 (5.2.13)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
1.10 (5.2.14)	Mains plug same protection	No main plug	N/A
	Class III luminaire plug		N/A
1.10 (5.2.16)	Appliance inlets (IEC 60320)	No appliance inlet	N/A
	Appliance couplers of class II type		N/A
1.10 (5.2.17)	No standardized interconnecting cables properly assembled		N/A
1.10 (5.2.18)	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
1.10 (5.3)	Internal wiring		N/A
1.10 (5.3.1)	Internal wiring of suitable size and type	No internal wiring	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) .....		N/A
	- temperatures .....		N/A
	Green-yellow for earth only		N/A
1.10 (5.3.1.1)	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm <sup>2</sup> ).....	No such parts	N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
1.10 (5.3.1.2)	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Adequate cross-sectional area and insulation thickness		N/A
1.10 (5.3.1.3)	Double or reinforced insulation for class II		N/A
1.10 (5.3.1.4)	Conductors without insulation		N/A
1.10 (5.3.1.5)	SELV current-carrying parts		N/A
1.10 (5.3.1.6)	Insulation thickness other than PVC or rubber		N/A
1.10 (5.3.2)	Sharp edges etc.	No such parts	N/A
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
1.10 (5.3.3)	Insulating bushings:		N/A
	- suitable fixed	No internal wiring	N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
1.10 (5.3.4)	Joints and junctions effectively insulated	No internal wiring	N/A
1.10 (5.3.5)	Strain on internal wiring		N/A
1.10 (5.3.6)	Wire carriers		N/A
1.10 (5.3.7)	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.11 (8)	PROTECTION AGAINST ELECTRIC SHOCK		
1.11 (8.2.1)	Live parts not accessible	Class III equipment. SELV parts only.	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 and adjustable luminaires		N/A
	Basic insulated parts not accessible with Ø 50 mm probe from outside, within arm's reach, on wall-mounted 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		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
1.11 (8.2.2)	Portable luminaire adjusted in most unfavourable position		N/A
1.11 (8.2.3.a)	Class II luminaire:		
	- basic insulated metal parts not accessible during starter or lamp replacement	Class III	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
1.11 (8.2.3.b)	BC lampholder of metal in class I luminaires shall be earthed	No lamp holder	N/A
1.11 (8.2.3.c)	Class III luminaires with exposed SELV parts:		
	Ordinary luminaire:		P
	- touch current .....		N/A
	- no-load voltage.....	12Vac	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Other than ordinary luminaire:		N/A
	- nominal voltage .....		N/A
1.11 (8.2.4)	Portable luminaire have protection independent of supporting surface	Not portable	N/A
1.11 (8.2.5)	Compliance with the standard test finger or relevant probe	Class III	N/A
1.11 (8.2.6)	Covers reliably secured		N/A
1.11 (8.2.7)	Discharging of capacitors $\geq 0,5 \mu\text{F}$	Not connected by plug	N/A
	Portable plug connected luminaire with capacitor		N/A
	Other plug connected luminaire with capacitor		N/A
	Discharge device on or within capacitor		N/A
	Discharge device mounted separately		N/A

<b>1.12 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		<b>N/A</b>
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13		—
1.12 (12.3)	Endurance test:		N/A
	- mounting-position .....	No lamp nor control gear	—
	- test temperature ( $^{\circ}\text{C}$ ) .....		—
	- total duration (h).....		—
	- supply voltage: Un factor; calculated voltage (V) .....		—
	- lamp used .....		—
1.12 (12.3.2)	After endurance test:		N/A
	- no part unserviceable		N/A
	- luminaire not unsafe		N/A
	- no damage to track system		N/A
	- marking legible		N/A
	- no cracks, deformation etc.		N/A
1.12 (12.4)	Thermal test (normal operation)	Not enough power to heat the pixBoard or the LEDs. PixCABLEs are specified for $180^{\circ}\text{C}$ applications.	N/A
1.12 (12.5)	Thermal test (abnormal operation)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.12 (12.6)	Thermal test (failed lamp control gear condition):		N/A
1.12 (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
1.12 (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
1.12 (12.7)	Thermal test (failed lamp control gear in plastic luminaires):		N/A
1.12 (12.7.1)	Luminaire without temperature sensing control		N/A
1.12 (12.7.1.1)	Luminaire with fluorescent lamp $\leq 70W$		N/A
	Test method 12.7.1.1 or Annex W .....	Not a luminaire with fluorescent lamp	—
	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 V:		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 .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C) .....		N/A
	- part tested; temperature (°C) .....		N/A
1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions	Not a luminaire with discharge lamp	—
	- 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:		N/A
	- part tested; temperature (°C) .....		N/A
	- part tested; temperature (°C) .....		N/A
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA	Not a 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
1.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- manual reset cut-out	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- auto reset cut-out	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- case of abnormal conditions	Not a Luminaire with temperature sensing control	—
	- highest measured temperature of fixing point/exposed part (°C): .....		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C) .....		N/A
	- part tested; temperature (°C) .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.13 (9)	<b>RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE</b>		N/A
1.13 (-)	If IP > IP 20 the order of the test specified in clause 1.12		—
1.13 (9.2)	Tests for ingress of dust, solid objects and moisture:		N/A
	- classification according to IP .....	IPX0	—
	- mounting position during test.....		—
	- fixing screws tightened; torque (Nm).....		—
	- tests according to clauses .....		—
	- 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 SELV parts or where it could become a hazard		N/A
	d) i) For luminaires without drain holes – no water entry		N/A
	d) ii) For luminaires with drain holes – no hazardous water entry		N/A
	e) no water in watertight luminaire		N/A
	f) no contact with live parts (IP 2X)		N/A
	f) no entry into enclosure (IP 3X and IP 4X)		N/A
	f) no contact with live parts (IP3X and IP4X)		N/A
	g) no trace of water on part of lamp requiring protection from splashing water		N/A
	h) no damage of protective shield or glass envelope		N/A
1.13 (9.3)	Humidity test 48 h		P

1.14 (10)	<b>INSULATION RESISTANCE AND ELECTRIC STRENGTH</b>		
1.14 (10.2.1)	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....		—
	Insulation resistance (MΩ)		—
	SELV:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts of different polarity..... :	>40GΩ	P
	- between current-carrying parts and mounting surface ..... :	>40GΩ	P
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ... :		N/A
	Other than SELV:		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 ... :		N/A
1.14 (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):		N/A
	SELV:		P
	- between current-carrying parts of different polarity..... :	500Vdc	P
	- between current-carrying parts and mounting surface ..... :	500Vdc	P
	- between current-carrying parts and metal parts of the luminaire..... :		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts ..... :		N/A
	- Insulation bushings as described in Section 5 ... :		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Other than SELV:		
	- 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 ...		N/A
1.14 (10.3)	Touch current or protective conductor current (mA) .....	No protective conductor	N/A

<b>1.15 (13)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		
1.15 (13.2.1)	Ball-pressure test:		N/A
	- part tested; temperature (°C) .....	No risk in the meaning of the standard	N/A
	- part tested; temperature (°C) .....		N/A
1.15 (13.3.1)	Needle flame test (10 s):		N/A
	- part tested .....	No such part	N/A
	- part tested .....		N/A
1.15 (13.3.2)	Glow-wire test (650°C):		
	- part tested .....	PixBOARD foam	P
	- part tested .....		N/A
1.15 (13.4.1)	Tracking test:		N/A
	- part tested .....		N/A
	- part tested .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	<b>ANNEX 1: components</b>		P
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object/part No.	Code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Foam		PixBOARD	PixBOARD	Thickness: 7mm GWT 650°C & 960°C	EN 60695-2- 12: 2001	Tested in equipment
LED		PixLED	PixLED	—	EN 62471	See separate Emitech test report
Wires		PixCABLES	PixCABLES	180°C	EN 60598-2- 1:1989	Tested in equipment

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

	<b>ANNEX 2: temperature measurements, thermal tests of Section 12</b>		<b>N/A</b>
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	Type reference .....		—
	Lamp used .....		—
	Lamp control gear used .....		—
	Mounting position of luminaire .....		—
	Supply wattage (W) .....		—
	Supply current (A) .....		—
	Calculated power factor .....		—
	Table: measured temperatures corrected for $t_a = 25\text{ °C}$ :		
	- abnormal operating mode .....	—	—
	- test 1: rated voltage .....	—	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage .....		—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage .....	—	—
	- test 4: 1,1 times rated voltage or 1,05 times rated wattage .....	—	—
	Through wiring or looping-in wiring loaded by a current of A during the test .....	—	—

temperature (°C) of part	Clause 12.4 – normal				Clause 12.5 – abnormal	
	test 1	test 2	test 3	limit	test 4	limit
—	—	—	—	—	—	—

EN 60598-2-1			
Clause	Requirement + Test	Result - Remark	Verdict

	<b>ANNEX 3: screw terminals (part of the luminaire)</b>		<b>N/A</b>
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<b>(14)</b>	<b>SCREW TERMINALS</b>		N/A
(14.2)	Type of terminal.....:	No screw terminals	—
	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 (mm <sup>2</sup> ) .....		N/A
(14.3.3)	Conductor space (mm).....:		N/A
(14.4)	Mechanical tests		
(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

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Clause	Requirement + Test	Result - Remark	Verdict

	<b>ANNEX 4: screwless terminals (part of the luminaire)</b>		<b>N/A</b>
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(15)	<b>SCREWLESS TERMINALS</b>		<b>N/A</b>
(15.2)	Type of terminal.....:	No 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
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	Electrical tests		
	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



<b>ATTACHMENT TO TEST REPORT IEC 60598-2-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Luminaires Part 2: Particular requirements: Section One – Fixed general purpose luminaires	
<b>Differences according</b> .....	EN 60598-2-1:1989 used in conjunction with EN 60598-1:2008 + A11:2009
<b>Annex Form No.</b> .....	EU_GD_IEC60598_2_1C
Annex Form Originator .....	IMQ S.p.A.
Master Annex Form .....	2013-02
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>	
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<b>1.5 (3)</b>	<b>MARKING</b>		<b>N/A</b>
1.5 (3.3.101)	Adequate warning on the package	No such part	N/A

<b>1.6 (4)</b>	<b>CONSTRUCTION</b>		<b>N/A</b>
1.6 (4.11.6)	Electro-mechanical contact systems	No electro-mechanical contact systems	N/A

<b>1.10 (5)</b>	<b>EXTERNAL AND INTERNAL WIRING</b>		<b>N/A</b>
1.10 (5.2.1)	Connecting leads	Not connected to mains	N/A
	- without a means for connection to the supply		N/A
	- terminal block specified		N/A
	- relevant information provided		N/A
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		N/A
1.10 (5.2.2)	Cables equal to HD21 S2 or HD22 S2		N/A

<b>1.12 (12)</b>	<b>ENDURANCE TEST AND THERMAL TEST</b>		<b>N/A</b>
1.12 (12.4.2c)	Thermal test (normal operation)		N/A

<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		<b>N/A</b>
(3.3)	DK: power supply cord with label	Not connected to mains	N/A

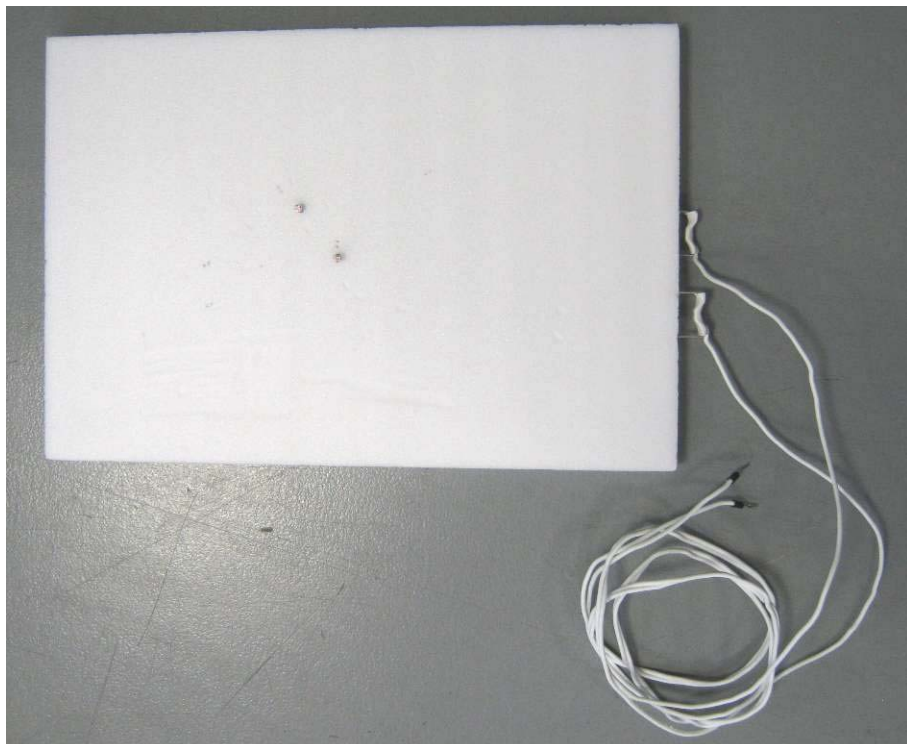
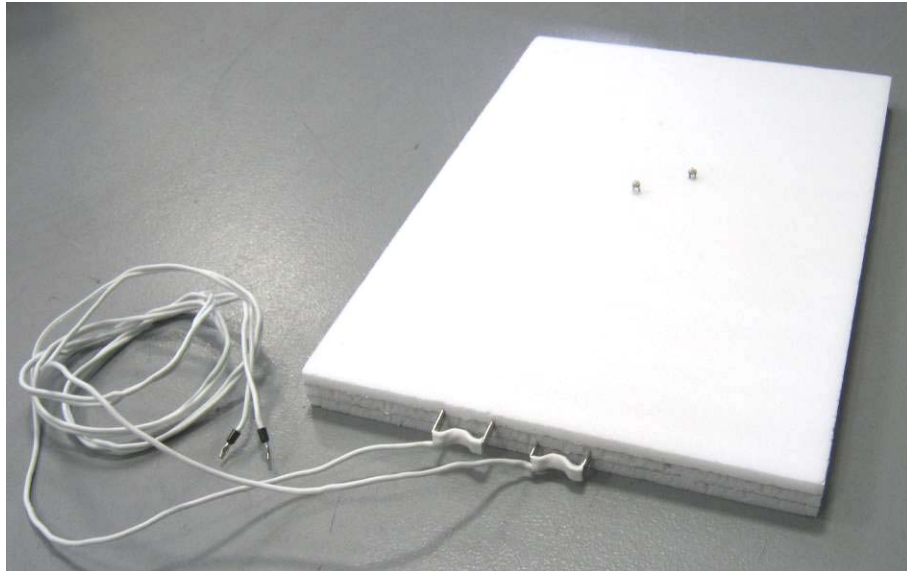
	IT: warning label on Class 0 luminaire		N/A
(4.5.1)	DK: socket-outlets		N/A
(5.2.1)	CY, DK, FI, SE, GB: type of plug		N/A

<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		
(4 & 5)	FR: Shuttered socket-outlets 10/16A	No plug	N/A
(13.3)	FR: Glow-wire test 850°C alt. 750°C for luminaires in premises open to public or 960°C for luminaires in emergency exits	PixBOARD foam is GWT 960°C compliant	P
(13.3)	GB: Requirements according to United Kingdom Building Regulation		N/A



**ANNEX 1: PHOTOS OF THE EQUIPMENT UNDER TEST**

General views



PixBOARD



PixCABLE



PixLED



**ANNEX 2: LIST OF TEST EQUIPMENT**

<b>Emitech number</b>	<b>Testing / measuring equipment / material used</b>	<b>Manufacturer</b>	<b>Type</b>
4698	Chronometer	RADIOSPARES	RS 365 6230
1558	Safety tester	SEFELEC	SMG 500

**ANNEX 3: TABLE OF UNCERTAINTIES**

<b>Table of Uncertainty of Measurement in Electrical Safety Area</b>	
Heating measured with thermocouple from 0 to 100 °C	<b>3,18°C</b>
Heating measured with thermocouple from 100 to 250 °C	<b>3,76°C</b>
Temperature measurement with thermocouple from 0 to 100 °C	<b>2,83°C</b>
Temperature measurement with thermocouple from 100 to 250 °C	<b>3,47°C</b>
Heating measurement of transformer by variation of resistance	<b>3,5°C</b>
Measurement with vernier caliper	<b>0,15mm</b>
Measurement with micrometer	<b>37,37µm</b>
Measurement with optical system USB Paralux	<b>0,095mm</b>
Measurement with magnifying glass	<b>0,14mm</b>
Measurement with numeric camera	<b>0,47 mm</b>
Direct voltage measurement	<b>0,55%</b>
Alternative voltage measurement	<b>1,79%</b>
Direct current measurement	<b>1,78%</b>
Alternative current measurement	<b>2,92%</b>
Direct current measurement (with current probe)	<b>2,93%</b>
Alternative current measurement (with current probe)	<b>2,93%</b>
Resistance measurement	<b>1,16%</b>
Power measurement	<b>3,51%</b>
Torque test (0,25 Nm)	<b>0,08Nm</b>
Torque test (0,5 Nm)	<b>0,16Nm</b>
Torque test (1 Nm)	<b>0,26Nm</b>
Pull/Compression test (10 N à 20 N)	<b>0,92N</b>
Pull/Compression test (20 N à 60 N)	<b>2,31N</b>
Pull/Compression test (60 N à 100 N)	<b>5,79N</b>
Touch current measurement (60601-1) rms	<b>6,6%</b>
Touch current measurement (60950-1/61010-1) peak	<b>9 %</b>
Touch current measurement (60950-1/61010-1) rms	<b>8,9 %</b>
Touch current measurement (61010-1 wet condition)peak	<b>6,8%</b>
Touch current measurement (61010-1 wet condition) rms	<b>6,6 %</b>
Measurement of additional torque applied to the socket-outlet (60950-1, 60335-1, ...)	<b>(5 % + 0,004) Nm</b>

## ANNEX 4: MANUALS

# Notice PixBOARD

**PixBOARD** est une marque de la société **PIXLUM**®

A lire avant installation

**TBTS 12 Volts**

**IP20**

**RoHS**

**COMPLIANT**

04.03.2015

**150 watts MAX. - NF EN 60 598-1 et 60 598-2-1**

## La collection



Les panneaux **PixBOARDs** répondent aux normes européennes les plus exigeantes.



Sans poussière et de coloris blanc ils se découpent aisément pour s'adapter à votre espace.



Imprimez directement votre visuel, sur le panneau «**Mousse**» pour une parfaite mise en lumière!



Installés comme une cloison sèche, ils se décorent au gré de vos envies avec les luminaires **PIXLUM**®.

## Avant Propos

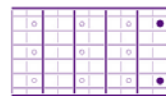


Les panneaux **PixBOARDs** ne peuvent être utilisés qu'avec la collection **PIXLUM**® et exclusivement sous tension **12 volts** dans la limite de **150 Watts**. Conçus pour la décoration d'intérieur, ils peuvent être utilisés dans un environnement allant de +5 à +40°C.

Le panneau **PixBOARD** «**Plâtre**» est classé au feu **Bs1d0**

Le panneau **PixBOARD** «**Mousse**» est classé au feu **M4**

## Installation



1- Commencez par faire un plan de calepinage de l'espace à décorer.

2- Hors tension, découpez les panneaux (cutter, scie...) sans descendre en dessous de 10 cm de largeur. Nettoyez soigneusement les bords de tous résidus de copeaux d'aluminium et ne pas les courber.



3- Collez-les ou vissez-les sur la zone à décorer. N'utilisez aucune colle solvantée. Pour les visser, n'utilisez que la visserie de la collection **PIXLUM**® à raison de 7vis/m<sup>2</sup> (**PixSCREW** ou **PIXANCHOR**). Pour plus d'information, consultez la notice de fixation.



4- Connectez ensuite vos panneaux entre eux puis vers un transformateur TBTS 12 Volts AC avec les connecteurs **PixCABLEs** et ce dans les règles de l'art (type, longueur, section...).



5- Avant d'aller plus loin, testez le bon fonctionnement de votre installation.

6- Si vos besoins en éclairage dépassent les 150 watts, réalisez plusieurs réseaux de 150 watts maximum en les isolant entre eux.

7- Enfin, jointez vos panneaux, comme on le ferait pour une cloison sèche, enduisez-les et terminez par le revêtement de finition qui vous convient, sans toutefois dépasser 1mm de surépaisseur sur les panneaux bruts.

8- Votre surface est alors prête à recevoir votre mise en scène lumineuse !

## En cas de problème



- Vérifiez que votre transformateur est bien sous tension.

- Assurez-vous qu'aucun corps métallique ne touche la tranche d'un des panneaux ou n'est directement inséré dans un des panneaux.

- Assurez-vous d'avoir bien utilisé la visserie **PIXLUM**® et convenablement.

- Retirez tous les luminaires et les repositionner sous tension.

## Références et désignations



Panneau	Référence	L x l	Ep.	Poids	Tension max	P. Max	Cl. feu	Qty
<b>PixBOARD</b> Plâtre	32100005	2.5 x 1.2 m	22 mm	6.5 kg/m <sup>2</sup>	12V	150 W	Bs1d0	50
<b>PixBOARD</b> Mousse	31100005	+/- 5	+/- 1	1.7 kg/m <sup>2</sup>				

**Attention la mousse blanche des panneaux ne supporte aucun solvant.** Avant de commencer testez colle, peinture... sur un petit échantillon de panneau.

# Notice PixCABLE

PixCABLE est une marque de la société PIXLUM®

A lire avant installation **TBTS 12 Volts**  **IP20**  **RoHS COMPLIANT**  09.03.2015  
**150 Watts MAX. - NF EN 60 598-1 et 60 598-2-1**

## La collection



Les connecteurs PixCABLEs répondent aux normes européennes les plus exigeantes.



Conçus à la fois pour apporter de l'énergie aux panneaux PixBOARDs et pour les relier entre eux.

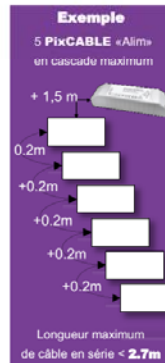


Limité à 150 W, 2.5mm<sup>2</sup>, le PixCABLE « alim » est livré avec 1.5 m de câble et le « liaison » avec 0.2 m.



Invisible, le PixCABLE est discret en s'insérant à 100% dans la tranche du panneau.

## Avant propos



- Ils sont exclusivement conçus pour la collection PIXLUM en 12 Volts.
- Ils doivent impérativement être installés hors tension.
- Ils sont limités à 150 Watts maximum.
- Ne pas installer plus de 6 panneaux en cascade (cf. croquis ci-contre)
- Le PixCABLE «Alim» permet de relier le transformateur au panneau.
- Le PixCABLE «Liaison» permet de relier deux panneaux entre eux.
- Perte en ligne: dans un panneau PixBOARD la perte en ligne est négligeable (2.67 µΩ/cm, soit 8mV par longueur de panneau).
- Conformément à la NF C 15-100, pour un ensemble de panneaux reliés entre eux à un seul transformateur, vous ne devez jamais dépasser 2.7m de câble puisque nos câbles font 2.5mm<sup>2</sup>. Pour identifier cette longueur, vous devez additionner toutes les longueurs de câbles en série «alim» + câbles «liaisons». Dans l'exemple ci-contre, 5 câbles de «liaisons» (5 x 0,2m) + la longueur du câble «alim» (1 x 1,5m) font 2,5 m de câble en série, ce qui est convenable.

## Installation



- A l'endroit qu'il vous convient, insérez soigneusement et fermement, chaque cavalier du PixCABLE à cheval sur chaque film aluminium visible et accessible sur la tranche du panneau.
- Ensuite reliez le câble au transformateur PixPOWER 12 Volts AC de 150W Maxi. Vous veillerez à visser fermement les contacts de la sortie 12 volts sur les câbles du connecteur préalablement dénudés.
- Pour relier les panneaux PixBOARDs entre eux utilisez les connecteurs PixCABLEs «Liaison» et procédez de la même façon.

## En cas de problème



- Assurez-vous d'avoir bien mis l'installation sous tension.
- N'auriez-vous pas un clip à cheval sur les deux films aluminium? Ce qui générerait alors un court-circuit.
- Assurez-vous qu'aucun élément métallique ne touche la tranche du panneau ou bien ne soit inséré dans le panneau.
- Si vous avez vissé le panneau, avez-vous utilisé des vis PixSCREWS?

## Références et désignations



Désignation	Référence	Long. Câble	Section	Tension max	P. Max	Qté
PixCABLE « Alim »	22171503	1,7 m	2,5 mm <sup>2</sup> *	12 Volts AC	150 W maxi.	10
PixCABLE « Liaison »	23170203	0,2 m	2,5 mm <sup>2</sup> *			10
« Clips »	21070003	sans	sans			10

\* Câble blanc souple haute température 180°C

# Notice PixLED

**PixLED** est une marque de la société PIXLUM®

A lire avant installation **TBTS 12 Volts AC**  **IP20**  **RoHS COMPLIANT**  27.03.2015  
**NF EN 60 598-1 et 60 598-2-1 - MTBF: 40 000 Hrs - Angle 120°**

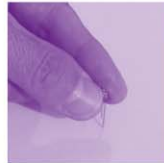
## La collection



Les **PixLEDs** répondent aux normes européennes les plus exigeantes.



Leur petite taille en fait un luminaire esthétique, discret et néanmoins très lumineux.



Faciles à utiliser et à déplacer elles permettent des agencements modulables sans égal.



Leur variété de couleurs et d'intensités permettent de multiples fantaisies décoratives.

## Avant propos

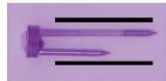


Les **PixLEDs** conviennent à un usage exclusif avec les produits de la gamme **PIXLUM**®, connectés dans les règles de l'art à un transformateur TBTS 12 Volts homologué dans le pays d'installation. Leur petite taille et leur côté piquant en font un composant à tenir hors de portée des enfants.

En fonctionnement, leur température peut atteindre 60°C. Il est donc recommandé de ne pas les recouvrir ou de les mettre en contact avec des matériaux sensibles à la chaleur.

En fonctionnement, les prévenir de tout risque de choc.

## Installation



En premier lieu, assurez-vous que les deux broches soient parallèles entre elles et que le tube isolant est présent.

Sur un des panneaux **PixBOARD** allumé, piquez soigneusement et bien perpendiculairement au panneau la première **PixLED**. Une fois complètement piquée, jusqu'au PCB de la LED, elle s'allume !

Recommencez ainsi avec d'autres **PixLEDs** pour constituer votre décor, dans la limite de la puissance du transformateur.

Sur un panneau « Plâtre » faite un pré-perçage avec l'outil **PixTOOL**. Dans les trous ainsi réalisés, y insérer votre **PixLED**.

Si vous ne voyez pas le pré-perçage, révélez les trous avec une lampe de poche.

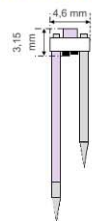
## En cas de problème



Si après piquage, votre **PixLED** ne s'allume pas, assurez-vous que l'installation est bien sous tension. Si c'est le cas, recommencez le piquage avec la même **PixLED** ou bien remplacez-la.

Si en piquant votre **PixLED**, l'ensemble des autres luminaires s'éteint ou clignote, c'est que votre dernière **PixLED** installée, pose un problème, enlevez-la et remplacez-la.

## Références et désignations



La gamme **PixLEDs** est constituée de 6 couleurs, plus un blanc chaud et un blanc froid. Les blancs existent quant à eux, en trois intensités lumineuses pour vous permettre de créer encore plus d'effet.

Coloris	Référence	Luminosité	Puissance	Qté
Rose	41215101	550 mcd	0.21 W	100 PixLEDs par sachet
Bleu	41214201	480 mcd	0.21 W	
Vert	41215301	570 mcd	0.21 W	
Jaune	41194401	480 mcd	0.19 W	
Or	41194501	480 mcd	0.19 W	
Rouge	41195601	525 mcd	0.19 W	
Blanc Chaud*	41122731	250 mcd	0.12 W	
Blanc Chaud*	41165731	520 mcd	0.16 W	
Blanc Chaud*	4118A731	1010 mcd	0.18 W	
Blanc Froid*	41122861	260 mcd	0.12 W	
Blanc Froid*	41165861	510 mcd	0.16 W	
Blanc Froid*	4118A861	1020 mcd	0.18 W	

Blanc froid = 6100°K - Blanc Chaud = 3000°K

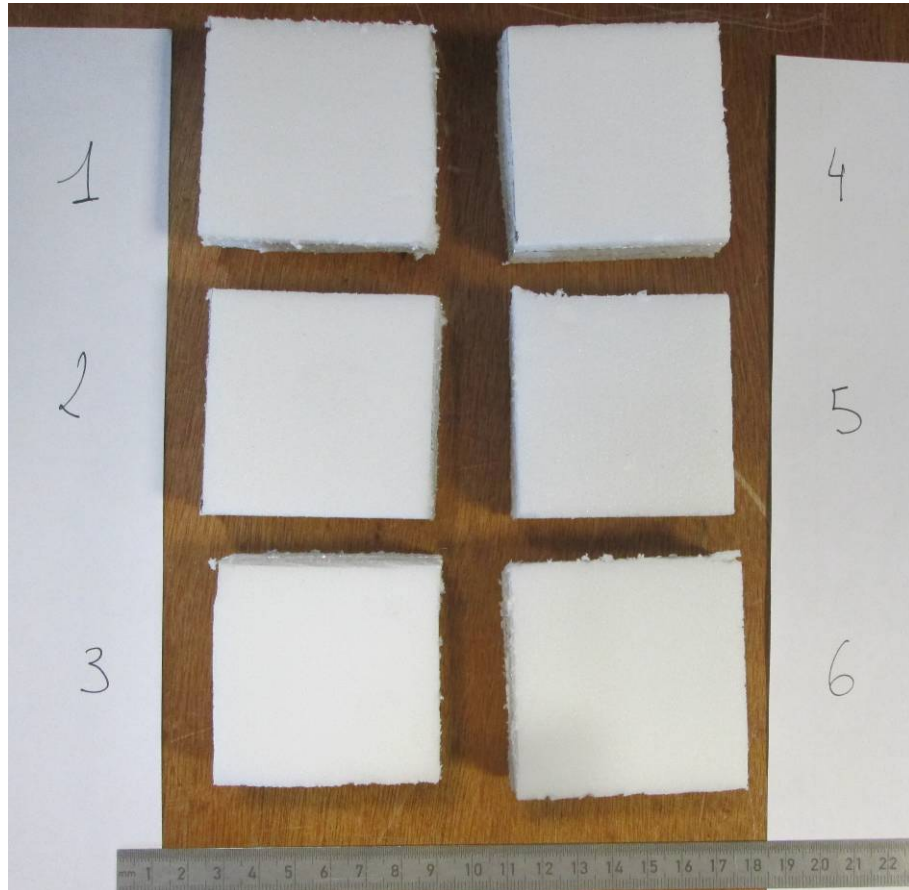


**ANNEX 5: GLOW WIRE TEST PHOTOGRAPHIES**

Before tests samples view

Samples tested at 960°C

Samples tested at 650°C



Samples tested at 960°C

Samples tested at 650°C

