



LCIE



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## EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES EVALUATION REPORT N° 115287-629747-01

☒ **ATEX**☒ **Equipment**☐ **Component**

- ☒ For EC type examination certificate application (Annex III)
- ☐ For supplementary EC type examination certificate application (Annex II)
- ☐ For unit verification conformity certificate application (Annex IX)
- ☐ For voluntary type examination certificate application
- ☐ For supplementary voluntary type examination certificate application

☐ **IECEx**☐ **Equipment**☐ **Component**

- ☐ For certificate of conformity application
- ☐ For supplementary certificate of conformity application

ExTR reference N° ..... FR/LCI/ExTR .....

**Standard(s) EN (year)**

EN 60079-0:2009

EN 60079-1:2007

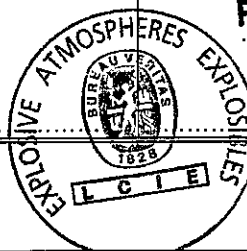
EN 60079-31:2009

**Standard(s) IEC (Edition)**

	Certification Body (ExCB)	Testing Laboratory (ExTL)
Name .....	LCIE	Supervision & Test Center of Ex-products of China Petroleum & Chemical Industry (PCEC)
Address .....	33, Avenue du General Leclerc 92260 Fontenay-aux-Roses / FRANCE	No. 85, No.3 Rd, Dingzigu, Hongqiao District, Tianjin, 300131, P.R.China.

	Applicant	Manufacturer
Name .....	Shenzhen KHJ Semiconductor Lighting Co, Ltd	Shenzhen KHJ Semiconductor Lighting Co, Ltd
Address .....	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.

Certification Body (ExCB)	Prepared by	Approved by
Name .....	Karim IKHLEF	Pablo SANTOS ALVAREZ
Date .....	24/09/2012	25/09/2012
Signature		



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Report n° ..... : 115287-629747-01

Date 24-09-2012

Job holder..... : Kik

Applicant ..... : Shenzhen KHJ Semiconductor Lighting Co, Ltd  
Product range..... : Explosion-proof Floodlight  
Type ..... : Ex-KAF30WM, Ex-KAF30NH and Ex-KAF30CH

### General product information

The explosion-proof floodlight is composed of enclosure, a wiring cover and a cover with light-transmitting part. The metallic part of the compartment is made of aluminium alloy. There are two flameproof compartments in the light. Two bushings are between the two compartments. The bushings are screwed into the threaded holes of the partition separating two compartments.

### Nomenclature :

Ex-KA X XX XX

Color (WM : Warm white/NH : Natural white/CH : Cool white).

Rated power (30W).

Beam angle (F: 180°).

Series (KA : KArowana).

Explosion prooflight.

OSRAM LED source  
,high efficiency and  
lumen output.



<b>Explosion-proof Flood Light</b>					
P/S: KArowana			Certificate No. :		
P/N:			S/N:		
Rated Voltage	Rated Power	Ta	Temperature Class		IP code
100 ~ 240VAC 50/60Hz	30W	-40°C ~ +55°C	Gas	Dust	T6
					780°C
SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD					
Caution: Use fasteners with yield stress > 450MPa					
Warnings: 1. Do not open when energized.					
2. After de-energizing, delay 10 minutes before opening.					

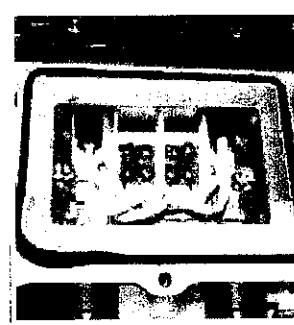
Anti-off designed screw  
to reduce the time for  
installation and  
maintenance.



The led is clung to the  
enclosure, which can  
make the heat sink very  
fast , low down the  
junction temp.



Terminal compartment  
is isolated with the led  
source compartment.  
Enhance isolation,  
ensure safety. More  
easy for connection  
and maintenance.





Report n° ..... : 115287-629747-01

Date 24-09-2012

Job holder..... : Kik

Applicant ..... : Shenzhen KHJ Semiconductor Lighting Co, Ltd  
Product range..... : Explosion-proof Floodlight  
Type ..... : Ex-KAF30WM, Ex-KAF30NH and Ex-KAF30CH

**Revision history**

Initial issue : Assessment of the equipment type Ex-KAF30xx explosion-proof floodlight KArowana series according to standards EN 60079-0:2009, EN 60079-1:2007 and EN 60079-31:2009.  
This assessment is based on the PCEC report No. PCEC/TR12013.


Test item description ..... : Explosion-proof Floodlight  
Trademark ..... : Shenzhen KHJ Semiconductor Lighting Co, Ltd  
Type ..... : Ex-KAF30WM, Ex-KAF30NH and Ex-KAF30CH

Marking .....	ATEX	IECEX																				
	<p>Shenzhen KHJ Semiconductor Lighting Co, Ltd Address : ... Type : Ex-KAF30WM or Ex-KAF30NH or Ex-KAF30CH. Serial number : ... Year of construction : ... ⊕ II 2 G D Ex d IIB T6 Gb Ex t IIIC T80°C Db IP66 LCIE 12 ATEX 3... X</p> <p>WARNING – DO NOT OPEN WHEN ENERGIZED. WARNING – AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING.</p>																					
Rating(s) .....	<table border="1"><thead><tr><th>Product type</th><th>Rated voltage</th><th>Rated power</th><th>Color</th><th>Beam angle</th></tr></thead><tbody><tr><td>Ex-KAF30WM</td><td>100~240V AC 50/60 Hz</td><td>30 W</td><td>Warm white</td><td>180 °</td></tr><tr><td>Ex-KAF30NH</td><td>100~240V AC 50/60 Hz</td><td>30 W</td><td>Natural white</td><td>180 °</td></tr><tr><td>Ex-KAF30CH</td><td>100~240V AC 50/60 Hz</td><td>30 W</td><td>Cool white</td><td>180 °</td></tr></tbody></table>		Product type	Rated voltage	Rated power	Color	Beam angle	Ex-KAF30WM	100~240V AC 50/60 Hz	30 W	Warm white	180 °	Ex-KAF30NH	100~240V AC 50/60 Hz	30 W	Natural white	180 °	Ex-KAF30CH	100~240V AC 50/60 Hz	30 W	Cool white	180 °
Product type	Rated voltage	Rated power	Color	Beam angle																		
Ex-KAF30WM	100~240V AC 50/60 Hz	30 W	Warm white	180 °																		
Ex-KAF30NH	100~240V AC 50/60 Hz	30 W	Natural white	180 °																		
Ex-KAF30CH	100~240V AC 50/60 Hz	30 W	Cool white	180 °																		

Classification of installation and use..... **Stationary**  
Ingress protection ..... IP66  
Rated ambient temperature range (°C) ..... -40°C up to +55°C

**Manufacturer's documents**

Title	Reference	Revision	Date
Technical file.	Explosion-proof Floodlight (KArowana)	-	2012-06-20

	Report n° ..... : 115287-629747-01	Date 24-09-2012	Job holder..... : Kik
	Applicant ..... : Shenzhen KHJ Semiconductor Lighting Co, Ltd Product range..... : Explosion-proof Floodlight Type ..... : Ex-KAF30WM, Ex-KAF30NH and Ex-KAF30CH		

### **Purpose of the assessment :**

The purpose of this report is the certification of the equipment type Ex-KAF30xx explosion-proof floodlight KAROWANA series according to standards EN 60079-0:2009, EN 60079-1:2007 and EN 60079-31:2009, based on the PCEC report in ExTR form No. PCEC/TR12013.

### **Analysis :**

The report has been carried out by the Chinese laboratory PCEC.

We accept the test results and thus the test report which are appended to this report.

Furthermore, the Ex-marking shall include the following warning markings:

WARNING – DO NOT OPEN WHEN ENERGIZED.

WARNING – AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING.

### **Routine verification and tests**

Each apparatus shall be submitted to a static overpressure test at 1,5 times the reference pressure according to clause 16.1 of EN 60079-1:2007.


### **Conclusions :**

The results show that the equipment type Ex-KAF30xx explosion-proof floodlight KAROWANA series comply with the requirements of standards :

EN 60079-0:2009,

EN 60079-1:2007,

EN 60079-31:2009.

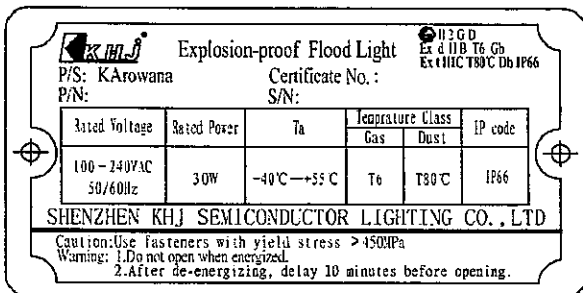
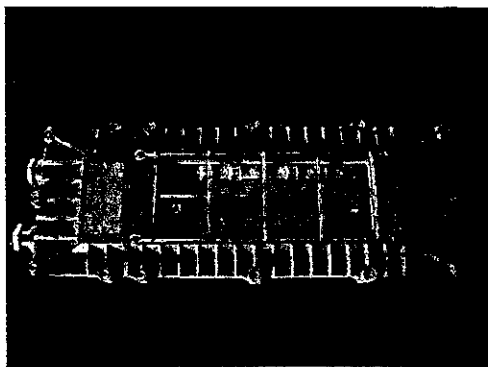
 <b>BUREAU VERITAS</b> 1828 <b>LCIE</b>	<b>Report n° ..... : 115287-629747-01</b>		<b>Date</b> 24-09-2012	<b>Job holder..... :</b> Kik
	Applicant .....: Shenzhen KHJ Semiconductor Lighting Co, Ltd			
	Product range.....: Explosion-proof Floodlight			
	Type .....: Ex-KAF30WM, Ex-KAF30NH and Ex-KAF30CH			

# **ANNEX :** **PCEC Report No. PCEC/TR12013**



## IECEx TEST REPORT COVER

ExTR Reference Number..... :	
ExTR Free Reference Number ..... :	PCEC/TR12013
Compiled by + signature (ExTL).... :	Bao Yuxin <i>Bao Yuxin</i>
Reviewed by + signature (ExTL) ... :	Xu Jianwen <i>Xu Jianwen</i>
Approved by + signature (ExCB)... :	
Date of issue ..... :	
Ex Testing Laboratory (ExTL) ..... :	Supervision & Test Center of Ex-products of China Petroleum & Chemical Industry
Address..... :	No 85, No. 3 Rd, Dingzigu, Hongqiao District, Tianjin, 300131, P.R.China
Ex Certification Body (ExCB) ..... :	
Address..... :	
Applicant's name..... :	SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD
Address..... :	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.
Standards associated with this ExTR package ..... :	IEC 60079-0:2007; IEC60079-1:2007; IEC60079-31:2008
Clauses considered ..... :	All clauses considered
Test procedure ..... :	IECEx System
Test Report Form Number..... :	ExTR Cover_4 (released 2010-12)
Test item description..... :	Explosion-proof Flood Light
Model/type reference..... :	KArowana series
Code (e.g. Ex __ II__ T__ )..... :	Ex d IIB T6 Gb/ Ex t IIIC T80 °C Db IP66
Rating..... :	Rated voltage:100~240VAC; rated power: 30W
All testing fully performed by ExTL staff at ExTL address above:	Yes.
<b>Instructions for Intended Use of ExTR Cover:</b> An ExTR Cover is the sole top-level document to associate together all other parts of an IECEx Test Report (ExTR) package. An ExTR package is comprised of an ExTR Cover and one or more associated ExTR documents (which may include Ex Test Reports, ExTR Addendums and ExTR of National Differences). All ExTR package documents are compiled and reviewed by the ExTL. The Issuing ExCB indicates final approval of the overall ExTR package on this ExTR Cover.	
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Manufacturer's name .....	SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD														
Address .....	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.														
Trademark .....	/														
<b>Particulars: Test item vs. Test requirements</b>															
Classification of installation and use .....	stationary														
Ingress protection .....	IP66														
Rated ambient temperature range (°C) .....	-40°C~+55°C														
Rated service temperature range (°C) for Ex Components .....	/														
<b>General remarks:</b>															
The test results presented in this ExTR package relate only to the item or product tested.															
<ul style="list-style-type: none"> <li>▪ "(see Attachment #)" refers to additional information appended to the ExTR package.</li> <li>▪ "(see appended table)" refers to a table appended to the ExTR package.</li> <li>▪ Throughout this ExTR package, a point is used as the decimal separator.</li> <li>▪ Where the term "N/A" appears in any part of an ExTR package, it indicates that the associated issue was considered "Not applicable" to the involved evaluation.</li> <li>▪ In accordance with IECEx 02, a Receiving ExCB may request a sample of the Ex equipment and copies of the documentation referred to in an ExTR Cover.</li> </ul>															
The technical content of this ExTR package shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.															
<b>Copy of Marking Plate:</b>															
 <p>Explosion-proof Flood Light</p> <p>P/S: KArowana Certificate No.: P/N: S/N:</p> <table border="1"> <thead> <tr> <th rowspan="2">Rated Voltage</th> <th rowspan="2">Rated Power</th> <th rowspan="2">Ta</th> <th colspan="2">Temperature Class</th> <th rowspan="2">IP code</th> </tr> <tr> <th>Gas</th> <th>Dust</th> </tr> </thead> <tbody> <tr> <td>100-240VAC 50/60Hz</td> <td>30W</td> <td>-40°C~+55°C</td> <td>T6</td> <td>T30°C</td> <td>IP66</td> </tr> </tbody> </table> <p>SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD</p> <p>Caution: Use fasteners with yield stress &gt; 450MPa Warning: 1. Do not open when energized. 2. After de-energizing, delay 10 minutes before opening.</p>	Rated Voltage	Rated Power	Ta	Temperature Class		IP code	Gas	Dust	100-240VAC 50/60Hz	30W	-40°C~+55°C	T6	T30°C	IP66	
Rated Voltage				Rated Power	Ta		Temperature Class		IP code						
	Gas	Dust													
100-240VAC 50/60Hz	30W	-40°C~+55°C	T6	T30°C	IP66										
<b>General product information:</b>															
1. The explosion-proof flood light is composed of a cover, a wiring cavity cover with light-transmitting part, a housing. The metallic part of the compartment is made of aluminium alloy. There are two flameproof compartments in the light. Two bushings are between the two compartments. The bushings are screwed into the threaded holes of the partition separating two compartments.															
2. Model implication:															
<p>Ex - KA X XX XX-ATEX</p> <p>→ Certification type</p> <p>→ Color (WM: Warm white/NH: Natural white/CH: Cool white)</p> <p>→ Rated power (30W)</p> <p>→ Beam angle (F: 180°)</p> <p>→ Series (KA: Karowana)</p> <p>→ Explosion proof light</p>															
<b>In accordance with OD 024, testing not fully performed by ExTL staff at the above ExTL address:</b>															
N/A															
<b>National differences considered as part of this evaluation, if any:</b>															
N/A															

**“Conditions of Use” for Ex Equipment or “Schedule of Limitations” for Ex Components, if any:**

1. Repair of the flameproof joints must be made in compliance with the structural specifications provided by the manufacturer. Repairs must not be made on the basis of values specified in table 2 of IEC 60079-1.
2. The assembly should be equipped with suitably certified cable glands with a compatible mode of protection for the intended use. The unused holes should be closed by suitably certified plugs.

**Routine tests, if any:**

Static pressure test is conducted according to Clause 16.1 of IEC 60079-1:2007.



Manufacturer's Documents			
Title:	Drawing No.:	Rev. Level:	Date:
Cover	110601-02	B	2011.11.10
Wiring cavity cover	110601-03	B	2011.11.10
Light-transmitting parts	110601-04	B	2011.11.10
Sealing ring for light cavity	110601-06	B	2011.11.10
Sealing ring for wiring cavity	110601-07	B	2011.11.10
Prevent the loss elastic element	110601-08	B	2011.11.10
Rubber pad	110601-13	A	2011.11.10
Cable tablet	110601-17	A	2011.11.10
Terminal	110601-18	B	2011.11.10
Brass gasket of terminal	110601-19	A	2011.11.10
Transparency platen	110601-23	B	2011.11.10
Inserts cover	110601-24	B	2011.11.10
Reflector	110601-25	B	2011.11.10
Insulation pad	110601-27	B	2011.11.10
Combination screw	110601-34	A	2011.11.10
Clamping washer	110602-04	A	2011.11.10
Inserts	110702-07	A	2011.11.10
Assembly drawing of explosion-proof flood light	111005-00-ATEX	A	2011.11.10
Housing	111005-01	A	2011.11.10
Reflector tablet	111005-02	A	2011.11.10
Reflector	111005-03	A	2011.11.10
Nameplate	111005-M01	A	2011.11.10
Explosion-proof sign nameplate	111005-M02	A	2011.11.10

**IECEx TEST REPORT****IEC 60079****Electrical equipment for explosive gas atmospheres  
Part 0: General requirements**

ExTR Reference Number..... :			
ExTR Free Reference Number ..... :	PCEC/TR12013		
Complied by + signature (ExTL).... :	Bao Yuxin	Bao Yuxin .....	
Reviewed by + signature (ExTL) ... :	Xu Jianwen	Xu Jianwen .....	
Date of issue .....	Jun. 7, 2012		
Ex Testing Laboratory (ExTL) .....	Supervision & Test Center of Ex-products of China Petroleum & Chemical Industry		
Address.....	No 85, No. 3 Rd, Dingzigu, Hongqiao District, Tianjin, 300131, P.R. China		
Applicant's name .....	SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD		
Address.....	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.		
Standard .....	IEC 60079-0:2007, Fifth edition		
Test procedure .....	IECEx Scheme		
Test Report Form No.....	ExTR60079-0_5A		
TRF Originator.....	Underwriters Laboratories		
Master TRF .....	dated 2007-11		
<b>Instructions for Intended Use of Ex Test Report:</b> This ExTR blank document is to be compiled and reviewed by the ExTL. The ExTR package in which this ExTR is incorporated (comprised of a single ExTR document or multiple ExTR documents) is to be accompanied by a single ExTR Cover Sheet, which is to be approved by the ExCB. ExTR Addendum(s) and/or ExTR Report of National Differences may also supplement this ExTR.			
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<b>Possible test case verdicts:</b> - test case does not apply to the test object .....:N / A - test object does meet the requirement .....:Pass			
<b>General remarks:</b> The tests 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 testing laboratory.  “(see Attachment #)” refers to additional information appended to the report. “(see appended table)” refers to a table appended to the report.  Throughout this report a point is used as the decimal separator.			

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
1	SCOPE		
2	NORMATIVE REFERENCES		
3	TERMS AND DEFINITIONS		
4	APPARATUS GROUPING AND TEMPERATURE CLASSIFICATION		
4.1	Group I	IIB T6; IIIC T80 C	N/A
4.2	Group II	IIB T6	Pass
4.3	Group III	IIIC T80 C	Pass
4.4	Equipment for a particular explosive atmosphere	Not equipment for a particular explosive atmosphere	N/A
5	TEMPERATURES		
5.1	Environmental influences		
5.1.1	Ambient temperatures	-40 C ~ +55 C	Pass
5.1.2	External source of heating or cooling	No external heating and cooling sources	N/A
5.2	Service temperature	Using maximum surface temperature instead of maximum service temperature is approved by the manufacturer. See clause 26.5.1.3.	Pass
5.3	Maximum surface temperature		
5.3.1	Determination of maximum surface temperature	The maximum surface temperature of the explosion-proof flood light locates on the light-transmitting part. Its maximum surface temperature is 74 C. Refer to clause 26.5.1.3 for details.	Pass
5.3.2	Limitation of maximum surface temperature		Pass
5.3.2.1	Group I electrical equipment	Group II and Group III electrical equipment.	N/A
5.3.2.2	Group II electrical equipment	IIB T6	Pass
5.3.2.3	Group III electrical equipment		Pass
5.3.2.3.1	Maximum surface temperature determined without a dust layer	IIIC T80 C	Pass

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
5.3.2.3.2	Maximum surface temperature with respect to dust layers	The maximum surface temperature was determined without a dust layer.	N/A
5.3.3	Small component temperature for Group I or Group II electrical equipment	No small component.	N/A

6	REQUIREMENTS FOR ALL ELECTRICAL EQUIPMENT		
6.1	General	KArowana explosion-proof flood light complies with the relevant requirements of IEC 60079-0, IEC 60079-1 and IEC 60079-31.	Pass

6.2	Mechanical strength of equipment	See clause 26.4.	Pass
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6.3	Opening times	After 10 minutes the temperature of the heat sink reduced to below 80°C. An opening delay marking is marked on the cover. See IEC 60079-0 clause 29.11.	Pass
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6.4	Circulating currents	No circulating currents.	N/A
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6.5	Gasket retention	The sealing rings are cemented by double component silicone.	Pass
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6.6	Electromagnetic and ultrasonic energy radiating equipment	No electromagnetic and ultrasonic energy radiating equipment.	N/A
6.6.1	Radio frequency sources		N/A
6.6.2	Lasers or other continuous wave sources		N/A
6.6.3	Ultrasonic sources		N/A

7	NON-METALLIC ENCLOSURES AND NON-METALLIC PARTS OF ENCLOSURES		
7.1	General		Pass
7.1.1	Applicability	1. The sealing rings are made of silicon rubber. 2. The bushings are made of PA66	Pass
7.1.2	Specification of materials	See the relevant documents.	Pass
7.1.3	Plastic materials	The RTI of PA66 is 120°C.	Pass
7.1.4	Elastomeric materials	The COT of silicon rubber is -40°C ~ +180°C.	Pass

7.2	Thermal endurance		
7.2.1	Tests for thermal endurance	Relevant tests were carried out, see clause 26.8 and 26.9.	Pass

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
7.2.2	Material selection	The COT or TI (RTI) is at least 20K greater than the temperature of the hottest point of the sealing ring made of silicon rubber.	Pass
7.3	Resistance to light	No non-metallic materials expose to light.	N/A
7.4	Electrostatic charges on external non-metallic materials		
7.4.1	Applicability	No electrostatic charges on external non-metallic materials.	N/A
7.4.2	Avoidance of a build-up of electrostatic charge on Group I or Group II electrical equipment		N/A
7.4.3	Avoidance of a build-up of electrostatic charge on equipment for Group III		N/A
7.5	Threaded holes		N/A
8	METALLIC ENCLOSURES AND METALLIC PARTS OF ENCLOSURES		
8.1	Material Composition	ADC12 aluminum alloy is used, see the manufacturer's documents.	Pass
8.1.1	Group I		N/A
8.1.2	Group II	The content of Mg is 0.28%.The content of Ti is 0.04%.	Pass
8.1.3	Group III	The content of Mg is 0.28%.The content of Ti is 0.04%.	Pass
8.2	Threaded Holes	Threaded holes are provided on the cover, the wiring cavity cover and the housing. The thread form is compatible with the material of the cover and the enclosure.	Pass
9	FASTENERS		
9.1	General	M6 hexagon socket screws used for fastening the cover, the wiring cavity cover, and the housing are made of stainless steel. It can only be released or removed by tools.	Pass
9.2	Special fasteners	M6 hexagon socket screws are used for fastening the cover, the wiring cavity cover, and the housing. The tolerance fit of thread is 6g/6H.	Pass
9.3	Holes for special fasteners	Heading only	Pass
9.3.1	Thread engagement	The holes for special fasteners are through holes.	Pass

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
9.3.2	Tolerance and clearance	The holes under the head of the M6 special fasteners have a tolerance of H13.	Pass
9.3.3	Hexagon socket set screw	No hexagon socket set screw.	N/A
10	INTERLOCKING DEVICES	No interlocking devices.	N/A
11	BUSHINGS	The bushings are screwed into the threaded holes of the partition separating two compartments. Pin and bushing are injection and press together. See part IEC 60079-0 clause 26.6	Pass
12	MATERIALS USED FOR CEMENTING	Double component silicone is used to cement the light-transmitting part and the cover. Range of service temperature is -60 C~200 C.	Pass
13	EX COMPONENTS	No Ex component.	N/A
13.1	General		N/A
13.2	Mounting		N/A
13.3	Internal Mounting		N/A
13.4	External Mounting		N/A
14	CONNECTION FACILITIES AND TERMINAL COMPARTMENTS		
14.1	General	There are terminals inside the termination compartment.	Pass
14.2	Termination compartment	The opening size of the termination compartment is 59mm × 118mm so that the conductors can be readily connected.	Pass
14.3	Type of protection	The terminal compartment is of type "d" and "t".	Pass
14.4	Creepage and clearance		N/A
15	CONNECTION FACILITIES FOR EARTHING OR BONDING CONDUCTORS		
15.1	Equipment requiring earthing	This light has internal and external earthing screws.	Pass
15.1.1	Internal	A stainless steel screw M4×8 is used; the cross sectional area of internal earthing conductor is greater than 1.5mm <sup>2</sup> ; the tightening torque is 2Nm.	Pass

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
15.1.2	External	A stainless steel screw M4×8 is used; the cross sectional area of external earthing conductor is greater than 4mm <sup>2</sup> ; the tightening torque is 2Nm.	Pass
15.2	Equipment not requiring earthing	No equipment not requiring earthing.	N/A
15.3	Size of conductor connection	See IEC 60079-0 clause 15.	Pass
15.4	Protection against corrosion	The material of screws and washer for the earthing facilities is stainless steel.	Pass
15.5	Secureness of electrical connections	All the connecting facilities have spring washers to prevent loosening.	Pass
16	ENTRIES INTO ENCLOSURES		
16.1	General	The entries are two threaded holes located in the wall of the enclosure.	Pass
16.2	Identification of entries	The dimension of entry and the type of thread is specified in the instruction and drawings.	Pass
16.3	Cable glands	No cable glands.	N/A
16.4	Blanking elements	No blanking elements	N/A
16.5	Temperature at branching point and entry point	See IEC 60079-0 clause 26.5.1.3.	Pass
16.6	Electrostatic charges of cable sheaths	Reference only.	N/A
17	SUPPLEMENTARY REQUIREMENTS FOR ROTATING ELECTRICAL MACHINES		N/A
17.1	Fans and fan hoods	No rotating electrical machines.	N/A
17.2	Ventilation openings for external fans		
17.3	Construction and mounting of the ventilation systems		N/A
17.4	Clearances for the ventilating systems		N/A

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
17.5	Materials for external fans and fan hoods		N/A
17.6	Equipotential bonding conductors		N/A
18	SUPPLEMENTARY REQUIREMENTS FOR SWITCHGEAR		
18.1	Flammable dielectric	No switchgear.	N/A
18.2	Disconnectors		N/A
18.3	Group I – Provisions for locking		N/A
18.4	Doors and covers		N/A
19	SUPPLEMENTARY REQUIREMENTS FOR FUSES	No fuses.	N/A
20	SUPPLEMENTARY REQUIREMENTS FOR PLUGS, SOCKETS OUTLETS AND CONNECTORS		
20.1	Interlocking	No plugs, sockets outlets and connectors.	N/A
20.1.1	Explosive gas atmospheres		N/A
20.1.2	Explosive dust atmospheres		N/A
20.2	Energized plugs	Energized plugs are not included.	N/A
21	SUPPLEMENTARY REQUIREMENTS FOR LUMINAIRES		
21.1	General		N/A
21.2	Covers for luminaires of EPL Gb or EPL Db	<ol style="list-style-type: none"> <li>1. Having warning text "WARNING-DO NOT OPEN WHEN ENERGIZED", which is printed on the nameplate.</li> <li>2. Having warning text "WARNING – AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING", which is printed on the nameplate.</li> </ol>	Pass
21.3	Covers for luminaires of EPL Gc or EPL Dc	Gb and Db equipment.	N/A
21.4	Special lamps	No special lamps.	N/A



IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
22	SUPPLEMENTARY REQUIREMENTS FOR CAPLIGHTS AND HANDLIGHTS		
22.1	Group I caplights	No caplights and handlights.	N/A
22.2	Group II and Group II caplights and handlights		N/A
23	APPARATUS INCORPORATING CELLS AND BATTERIES		
23.1	General	No cells and batteries.	N/A
23.2	Batteries		N/A
23.3	Cell types		N/A
23.4	Cells in a battery		N/A
23.5	Ratings of batteries		N/A
23.6	Interchangeability		N/A
23.7	Charging of primary batteries		N/A
23.8	Leakage		N/A
23.9	Connections		N/A
23.10	Orientation		N/A
23.11	Replacement of cells or batteries		N/A
23.12	Replaceable battery pack		N/A
24	DOCUMENTATION	The relevant documents provided by the manufacturer had been evaluated.	Pass
25	COMPLIANCE OF PROTOTYPE OR SAMPLE WITH DOCUMENTS		Pass
26	TYPE TESTS		
26.1	General	Tests are carried out according to IEC 60079-0:2007, IEC 60079-1:2007 and IEC 60079-31:2008.	Pass

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
26.2	Test configuration	The KArowana explosion-proof flood light was used in the temperature measurement. And the most unfavorable condition was considered.	Pass

26.3	Tests in explosive test mixtures	See the tests in relevant standards.	Pass
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26.4	Tests of enclosures		
26.4.1	Order of tests		
26.4.1.1	Metallic enclosures, metallic parts of enclosures and glass of parts of enclosures	The enclosure of KArowana explosion-proof flood light is comprised of a cover, a wiring cavity cover, a housing, and a light-transmitting part. For test order refers to clause 26.4.1.2.2.	Pass
26.4.1.2	Non-metallic enclosures or non-metallic parts of enclosures	The KArowana explosion-proof flood light has two flame-proof compartments. Two bushings made of PA66 are used for blanking the part between these two compartments. The sealing rings are considered as the non-metallic parts.	Pass
26.4.1.2.1	Group I electrical equipment	Group II and Group III equipment.	N/A
26.4.1.2.2	Group II and Group III electrical equipment	Tests were carried out on two samples. Tests were performed in the following order: 1. thermal resistance to heat; 2. thermal resistance to cold; 3. pressure test 4. test for resistance to impact; 5. test for degrees of protection; 6. test of ability of the enclosure to withstand pressure; 7. test of erosion by flame 8. test for non-transmission of an internal ignition.	Pass
26.4.2	Resistance to impact	Tests were carried out on two samples. The impact test was carried out on the wiring cavity cover, housing of each sample, impact energy 7J at room temperature of 15 °C.  The impact test to light-transmitting part was carried out on three samples, impact energy: 4J at room temperature of 15 °C.	Pass
26.4.3	Drop test	Not a portable device.	N/A
26.4.4	Acceptance criteria	No damage affecting the explosion-proof performance has been found.	Pass
26.4.5	Degree of protection (IP) by enclosures		
26.4.5.1	Test procedure	The test procedure is according to IEC60529. The protection degree is IP66.	Pass
26.4.5.2	Acceptance criteria	No ingress of dust or water.	Pass

26.5	Thermal tests		
26.5.1	Temperature measurement		Pass

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IEC 60079-0																														
Clause	Requirement – Test	Result – Remark	Verdict																											
26.5.1.1	General		Pass																											
26.5.1.2	Service temperature	Using maximum surface temperature instead of maximum service temperature is approved by the manufacturer.	Pass																											
26.5.1.3	Maximum surface temperature	<div>Test voltage is 1.1 times of rated voltage, i.e. AC264V; Tests were carried out on two directions: vertically downward and direction which forms 60° angle with horizon.</div> <table><tr><th>Part</th><th>vertically downward (°C)</th><th>direction which forms 60° angle with horizon (°C)</th></tr><tr><td>Housing</td><td>69</td><td>69</td></tr><tr><td>Sealing ring of wiring cavity</td><td>65</td><td>65</td></tr><tr><td>Sealing ring of light source cavity</td><td>70</td><td>74</td></tr><tr><td>Light-transmitting part</td><td>72</td><td>72</td></tr><tr><td>Cementing material</td><td>71</td><td>70</td></tr><tr><td>Entry</td><td>70</td><td>70</td></tr><tr><td>Heat sink</td><td>81</td><td>83</td></tr><tr><td>Ambient</td><td>55</td><td>55</td></tr></table> <div>The highest temperature measured on the enclosure was 74 °C. Comply with T6. After 10 minutes the temperature of the heat sink reduced to below 80 °C.</div>	Part	vertically downward (°C)	direction which forms 60° angle with horizon (°C)	Housing	69	69	Sealing ring of wiring cavity	65	65	Sealing ring of light source cavity	70	74	Light-transmitting part	72	72	Cementing material	71	70	Entry	70	70	Heat sink	81	83	Ambient	55	55	Pass
Part	vertically downward (°C)	direction which forms 60° angle with horizon (°C)																												
Housing	69	69																												
Sealing ring of wiring cavity	65	65																												
Sealing ring of light source cavity	70	74																												
Light-transmitting part	72	72																												
Cementing material	71	70																												
Entry	70	70																												
Heat sink	81	83																												
Ambient	55	55																												
26.5.2	Thermal shock test	The highest temperature part of light-transmitting part was sprayed by water of 12 °C and 1mm diameter. The light-transmitting part was not broken.	Pass																											
26.5.3	Small component ignition test (Group I and Group II)																													
26.5.3.1	General	No small component.	N/A																											
26.5.3.2	Procedure		N/A																											
26.5.3.3	Acceptance criteria		N/A																											
26.6	Torque test for bushings																													
26.6.1	Test procedure	Two M12×1 bushings are used between the two compartments. A torque of 25Nm was applied to the stem of bushing.	Pass																											
26.6.2	Acceptance criteria	Neither the stem in the bushing, nor the bushing itself turned when the stem is subjected to a torque of 25Nm.	Pass																											

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
26.7	Non-metallic enclosures or non-metallic parts of enclosures		
26.7.1	General		N/A
26.7.2	Test temperatures		N/A
26.8	Thermal endurance to heat	Keep in the condition of temperature 95 °C, relative humidity 90% for 28 days.	Pass
26.9	Thermal endurance to cold	Continuously stored in the condition of temperature -45 °C for 24h; all cemented joints, the bushing between the two flame-proof compartments and sealing ring were not broken or damaged.	Pass
26.10	Resistance to light		
26.10.1	Test procedure	No non-metallic materials expose to light.	N/A
26.10.2	Acceptance criteria	No non-metallic materials expose to light.	N/A
26.11	Resistance to chemical agents for Group I electrical equipment	Group II equipment.	N/A
26.12	Earth continuity	Metallic enclosure.	N/A
26.13	Surface resistance test of parts of parts of enclosures of non-metallic materials	Metallic enclosure.	N/A
26.14	Charging tests		N/A
26.14.1	Introduction	The enclosure is not made of non-metallic material.	N/A
26.14.2	Principle of the test	The enclosure is not made of non-metallic material.	N/A
26.14.3	Samples and test apparatus	The enclosure is not made of non-metallic material.	N/A
26.14.4	Ambient conditions	The enclosure is not made of non-metallic material.	N/A
26.14.5	Conditioning	The enclosure is not made of non-metallic material.	N/A
26.14.6	Determination of the most efficient charging method		
26.14.6.1	Method A: Rubbing with a pure polyamide cloth	The enclosure is not made of non-metallic material.	N/A
26.14.6.2	Method B: Rubbing with a cotton cloth	The enclosure is not made of non-metallic material.	N/A
26.14.6.3	Method C: Charging by influence with a d.c. high-voltage power supply	The enclosure is not made of non-metallic material.	N/A
26.14.7	Assessment of discharge	The enclosure is not made of non-metallic material.	N/A

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
26.15	Measurement of capacitance		N/A
26.15.1	Test procedure	The enclosure is not made of non-metallic material.	N/A
26.15.2	Acceptance criteria	The enclosure is not made of non-metallic material.	N/A
27	Routine tests	The product shall be submitted to static pressure test at 1.5 times the reference pressure for 1minute.	Pass
28	MANUFACTURER'S RESPONSIBILITY		
28.1	Conformity with the documentation	The manufacturer carried out the verification to ensure the explosion-proof flood light complied with the documentation.	Pass
28.2	Certificate	See documents provided by the manufacturer.	Pass
28.3	Responsibility for marking	See documents provided by the manufacturer.	Pass
29	MARKING	Reference only.	Pass
29.1	Location	The nameplate of the explosion-proof flood light is riveted on the cover. The nameplate is made of stainless steel.	Pass
29.2	General	See test report cover.	Pass
29.3	Ex marking for explosive gas atmospheres	Ex d IIB T6 Gb.	Pass
29.4	Ex marking for explosive dust atmospheres	Ex t IIIC T80 C Db IP66	Pass
29.5	Combined types of protection	No combined types of protection.	N/A
29.6	Multiple types of protection	No multiple types of protection.	N/A
29.7	Ga using two independent Gb types of protection	Not Ga using two independent Gb types of protection	N/A
29.8	Ex components	No Ex components	N/A
29.9	Small equipment and small Ex components	No small equipment and small Ex components.	N/A

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
29.10	Extremely small equipment and extremely small Ex components	No extremely small equipment and extremely small Ex components.	N/A
29.11	Warning markings	The warning texts "DO NOT OPEN WHEN ENERGIZED" and "AFTER DE-ENERGIZING, DELAY 10 MINUTES BEFORE OPENING" are printed on the nameplate.	Pass
29.12	Alternate marking of equipment protection levels (EPLs)	No alternate marking of equipment protection levels (EPLs).	N/A
29.12.1	Alternate marking of type of protection for explosive gas atmospheres		N/A
29.12.2	Alternate marking of type of protection for explosive dust atmospheres		N/A
29.13	Cells and batteries	No cells and batteries.	N/A
30	INSTRUCTIONS		
30.1	General	The instruction manual includes summary, structure, parameters, installation instruction, notes, caution, analysis and solution, transportation and storage, after-sales service and contact.	Pass
30.2	Cells and batteries	No cells and batteries.	N/A
Annex A (Normative)	SUPPLEMENTARY REQUIREMENTS FOR CABLE GLANDS		
A.1	General	No cable glands.	N/A
A.2	Constructional requirements		
A.2.1	Cable sealing		N/A
A.2.2	Filling compounds		N/A
A.2.3	Clamping		
A.2.3.1	General		N/A
A.2.3.2	Group II or Group III cable glands		N/A
A.2.4	Lead-in of cable		
A.2.4.1	Sharp edges		N/A
A.2.4.2	Point of entry		N/A
A.2.5	Released by a tool		N/A
A.2.6	Fixing		N/A
A.2.7	Degree of protection		N/A
A.3	Type tests		
A.3.1	Tests of clamping of non-armoured and braided cables		
			N/A

IEC 60079-0			
Clause	Requirement – Test	Result – Remark	Verdict
A.3.1.1	Cable glands with clamping by the sealing ring		N/A
A.3.1.2	Cable glands with clamping by the filling compound		N/A
A.3.1.3	Cable glands with clamping by means of a clamping device		N/A
A.3.1.4	Tensile test		N/A
A.3.1.5	Mechanical strength		N/A
A.3.2	Tests of clamping of armoured cables		N/A
A.3.2.1	Tests of clamping where the armourings are clamped by a device within the gland		N/A
A.3.2.1.1	Tensile test		N/A
A.3.2.1.2	Mechanical strength		N/A
A.3.2.2	Tests of clamping where the armourings are not clamped by a device within the gland		N/A
A.3.3	Type test for resistance to impact		N/A
A.3.4	Test for degree of protection (IP) of cable glands		N/A
A.4	Marking		
A.4.1	Marking of cable glands		N/A
A.4.2	Marking of cable sealing rings		N/A
Annex B (Normative)	Table B.1 – Clauses with which Ex components shall comply		N/A



**IECEX TEST REPORT**  
**IEC 60079-1**  
**Explosive atmospheres - Part 1:**  
**Equipment protection by flameproof enclosures "d"**

ExTR Reference Number.....:			
ExTR Free Reference Number.....:	PCEC/TR12013		
Complied by + signature (ExTL).....:	Bao Yuxin	<i>Bao Yuxin</i>	
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Date of issue.....:	Jun. 7, 2012		
Ex Testing Laboratory (ExTL).....:	Supervision & Test Center of Ex-products of China Petroleum & Chemical Industry		
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Applicant's name.....:	SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD		
Address.....:	4-5 Floor, Building 7, HuangBeiLingJingXuan Industrial park, No.2 Dong Huan Rd, Yousong, LongHua town, Bao'an District, Shenzhen, China.		
Standard.....:	IEC 60079-1:2007, Sixth edition		
Test procedure.....:	IECEX Scheme		
Test Report Form No. ....:	ExTR60079-1_6A		
TRF Originator.....:	Underwriters Laboratories Inc.		
Master TRF.....:	dated 2007-05		
<b>Instructions for Intended Use of Ex Test Report:</b> This ExTR blank document is to be compiled and reviewed by the ExTL. The ExTR package in which this ExTR is incorporated (comprised of a single ExTR document or multiple ExTR documents) is to be accompanied by a single ExTR Cover Sheet, which is to be approved by the ExCB. IECEX Test Report Addendum(s) and/or IECEX Test Report of National Differences may also supplement this ExTR.			
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<b>Possible test case verdicts:</b> - test case does not apply to the test object .....:N / A - test object does meet the requirement.....:Pass			
<b>General remarks:</b> The tests 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 testing laboratory.  "(see Attachment #)" refers to additional information appended to the report. "(see Appended table)" refers to a table appended to the report.  Throughout this report, a point is used as the decimal separator.			



IEC 60079-1			
Clause	Requirement – Test	Result – Remark	Verdict
1	SCOPE		
2	NORMATIVE REFERENCES		
3	TERMS AND DEFINITIONS		
4	EQUIPMENT GROUPING AND TEMPERATURE CLASSIFICATION	IIB T6 IIIC T80°C	Pass
5	FLAMEPROOF JOINTS		
5.1	General requirements	For the dimensions of flameproof joints see part IEC 60079-1 clauses 5.2 and 5.3	Pass
5.2	Non-threaded joints		
5.2.1	Width of joints (L)	The joint between cover and housing is a flange joint. Volume of the light source compartment: $\leq 0.88L$ $L=13.5\text{mm}$ $i=0.2\text{mm}$ Roughness: $3.2\text{ }\mu\text{m}$ The joint between wiring cavity cover and housing is a flange joint. Volume of the terminal compartment: $\leq 0.3L$ $L=13.5\text{mm}$ $i=0.2\text{mm}$ Roughness: $3.2\text{ }\mu\text{m}$	Pass
5.2.2	Gap (i)	See part IEC 60079-0 clause 5.2.1.	Pass
5.2.3	Spigot joints	No spigot joints	N/A
5.2.4	Holes in joint surfaces	The flameproof joint L is not interrupted by holes.	N/A
5.2.4.1	Flanged joints with holes outside the enclosure (see Figures 3 and 5)		N/A
5.2.4.2	Flanged joints with holes inside the enclosure (see Figure 4)		N/A
5.2.4.3	Spigot joints where, to the edges of the holes, the joint consists of a cylindrical part and a plane part (see Figure 6)		N/A
5.2.4.4	Spigot joints where, to the edges of the holes, the joint consists only of the plane part (see Figures 7 and 8), in so far as plane joints are permitted (see 5.2.7)		N/A

IEC 60079-1			
Clause	Requirement – Test	Result – Remark	Verdict
5.2.5	Conical joints	No conical joints.	N/A
5.2.6	Joints with partial cylindrical surfaces (not permitted for Group IIC)		N/A
5.2.7	Flanged joints for acetylene atmospheres		N/A
5.2.8	Serrated joints	No serrated joints.	N/A

5.3	Threaded joints	Bushing and housing: M12×1-6H/6g; the length of engagement is 11mm; the number of engaged threads is 11.	Pass
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5.4	Gaskets (including O-rings)	One sealing ring is between cover and housing. The other sealing ring is between wiring cavity cover and housing. All sealing rings are stuck by double component silicone.	Pass
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5.5	Equipment using capillaries	No equipment using capillaries.	N/A
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6	CEMENTED JOINTS		
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6.1	General	There is a cemented joint between light-transmitting part and housing. The light transmitting-part is cemented to the cover by double component silicone.	Pass
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6.2	Mechanical strength	A pressing ring is used for ensuring the strength of cemented joint. The sample was submitted to static pressure test. For pressure test, see part IEC 60079-1 clause 15.1.3.	Pass
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6.3	Width of cemented joints	The width of cemented joint $L > 10\text{mm}$	Pass
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7	OPERATING RODS		
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7.1	Diameter of operating rod	No operating rods.	N/A
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7.2	Diametrical clearance		N/A
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8	SUPPLEMENTARY REQUIREMENTS FOR SHAFTS AND BEARINGS		
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8.1	Joints of shafts	No shafts and bearings.	N/A
8.1.1	Cylindrical joints		N/A

IEC 60079-1			
Clause	Requirement – Test	Result – Remark	Verdict
8.1.2	Labyrinth joints		N/A
8.1.3	Joints with floating glands		N/A
8.2	Bearings		
8.2.1	Sleeve Bearings	No shafts and bearings.	N/A
8.2.2	Rolling-element bearings		N/A
9	LIGHT-TRANSMITTING PARTS	The light transmitting-part is cemented to the cover by double component silicone. A pressing ring is used for ensuring the strength of cemented joint.	Pass
10	BREATHING AND DRAINING DEVICES WHICH FORM PART OF A FLAMEPROOF ENCLOSURE	No breathing and draining devices.	N/A
10.1	Openings for breathing or draining		N/A
10.2	Composition limits		N/A
10.3	Dimensions		N/A
10.4	Elements with measurable paths		N/A
10.5	Elements with non-measurable paths		N/A
10.6	Removable devices		N/A
10.7	Mounting arrangements of the elements		N/A
10.8	Mechanical strength		N/A
10.9	Breathing devices and draining devices when used as Ex components		N/A
10.9.1	Mounting arrangements of the elements and components		N/A
10.9.2	Type tests for breathing and draining devices used as Ex components		N/A
10.9.2.1	Test of the ability of the breathing and draining device to withstand pressure		
10.9.2.1.1	Test procedure		N/A
10.9.2.1.2	Acceptance criteria		N/A
10.9.2.2	Thermal tests		N/A
10.9.2.2.1	Test procedure		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
10.9.2.2.2	Acceptance criteria		N/A
10.9.2.3	Test for non-transmission of an internal ignition		N/A
10.9.2.3.1	Test procedure		N/A
10.9.2.3.2	Acceptance criteria		N/A
10.9.3	Ex component certificate		N/A

11	FASTENERS, ASSOCIATED HOLES AND CLOSING DEVICES		
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11.1	Type of fastener	9 M6×25 screws are used for fastening the cover and the housing. 5 M6×25 screws are used for fastening the wiring cavity cover and the housing. All the screws are made of stainless steel. They can only be released or removed by tools.	Pass
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11.2	Plastic material or light alloys	No plastic material or light alloys.	N/A
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11.3	Yield stress	With a label as "USE FASTENERS WITH YIELD STRESS $\geq$ 450MPa" The property class of the M6 screw is A-70. The yield stress is 450MPa.	Pass
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11.4	Studs	No studs.	N/A
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11.5	Fasteners through walls	No fasteners through walls	N/A
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11.6	Blind holes	The remaining thickness of the wall of the flameproof enclosure around blinded holes is 4 mm.	Pass
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11.7	Screws into blind holes	When screws are fully tightened into blind holes in enclosure walls, with no washer fitted, at least one full thread shall remain free at the base of the hole.	Pass
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11.8	Closing of through holes	No through holes.	N/A
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11.9	Closure of apertures and compliance of blanking elements	No blanking elements.	N/A
11.9.1	Closing device removable from outside		N/A
11.9.2	Tool used to remove closing device		N/A
11.9.3	Special removal technique		N/A
11.9.4	Blanking element used with an adapter		N/A

11.10	Separate fastening arrangements for threaded doors/covers	No threaded doors/covers.	N/A
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IEC 60079-1			
Clause	Requirement – Test	Result – Remark	Verdict
12	MATERIALS AND MECHANICAL STRENGTH OF ENCLOSURES – MATERIALS INSIDE THE ENCLOSURES		
12.1	Tests prescribed by Clauses 14 to 16	See relevant reports.	Pass
12.2	Assembly of multiple flameproof enclosures	The two explosion-proof compartments of the explosion-proof flood light are separated by a partition and two bushings pass through the partition.	Pass
12.3	Intercommunicating enclosure compartments	No intercommunicating enclosure compartments.	N/A
12.4	Use of cast iron	No use of cast iron.	N/A
12.5	Use of liquids	No use of liquids.	N/A
12.6	Insulating materials for Group I apparatus	No insulating materials for Group I apparatus.	N/A
12.7	Zinc content	The zinc content of enclosure is 0.93%; see manufacturer's documents.	Pass
13	ENTRIES FOR FLAMEPROOF ENCLOSURES		
13.1	Cable glands	No cable glands.	N/A
13.2	Conduit sealing devices	No conduit sealing devices.	N/A
13.2.1	Permitted for Group II only		N/A
13.2.2	Requirements for sealing device		N/A
13.3	Plugs and sockets and cable couplers		
13.3.1	Construction & mounting	No plugs and sockets and cable couplers.	N/A
13.3.2	Flameproof joints of contact parts		N/A
13.3.3	Flameproof properties in the event of internal explosion		N/A
13.3.4	Exemption & warning label		N/A
13.4	Bushings	The bushings meet the requirements of this standard, the relevant requirements of Annex C and create, on the enclosure, the joint widths and gaps prescribed in Clause 5	Pass