Testing Lab.
Shenzhen Southern LCS Compliance Testing Laboratory Ltd.
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Report No.: LCS180904034BS

Type Test Report

IEC 62262

Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts(IK code)

Report reference No. ..... :	LCS180904034BS
Tested by(name + signature)..... :	Lance Mo
(Test engineer)	(Engineer)
Check by(name +signature) ..... :	Eko Yang
(Director)	(Director)
Approved by(name +signature)..... :	Jesse Liu
(Manager)	(Manager)
Date of issue ..... :	September 10, 2018
Contents..... :	8 pages

Testing laboratory

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Testing location ..... :	As above

Client

Name ..... :	**SHENZHEN Dualrays Optoelectronics Co., LIMITED**
Address..... :	6th Floor, Building 10, Gangzai Industrial Park, Furong Industrial Park,Xinqiao Industrial District, Bao'an District,Shenzhen 518125, P.R.China

Manufacturer

Name ..... :	**SHENZHEN Dualrays Optoelectronics Co., LIMITED**
Address..... :	6th Floor, Building 10, Gangzai Industrial Park, Furong Industrial Park,Xinqiao Industrial District, Bao'an District,Shenzhen 518125, P.R.China

Test specification

Standard..... :	IEC 62262: 2002
Test procedure ..... :	Compliance with IEC 62262: 2002
Procedure deviation ..... :	N/A

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Test item	
Description	LED Tri-ptoof Light
Trademark	N/A
Model and/or type reference	DR-TPL020-BG21, DR-TPL040-BG41, DR-TPL050-BG51, DR-TPL060-BG51
Rating(s)……..…….	N/A

Test case verdicts	
Test case does not apply to the test object :	N(N/A)
Test item does meet the requirement ..... :	P(Pass)
Test item does not meet the requirement ...:	F(Fail)

Testing	
Date of receipt of test item ..... :	September 07, 2018
Date(s) of performance of test..... :	September 07, 2018 - September 10, 2018

General remarks

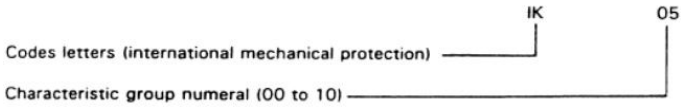
This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

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

Modified Information

Version	Report No.	Revision Data	Summary
V1.0	LCS180904034BS	/	Original Version

IEC 62262			
Clause	Requirement – Test	Result - Remark	Verdict
4	**Designations**		
4.1	Arrangement of the IK code 	IK10	--
4.2	Characteristic group numerals of the IK code and their meanings Each characteristic group numeral, represents an impact energy value as shown in Table1.	See able 1 of IEC 62262, IK09 Impact energy Joule 20 J	--
4.3	Application of the IK code In general the degree of protection applies to the complete enclosure. If parts of the enclosure have differing degrees of protection, the latter shall be separately indicated.		N
4.4	**Marking**		
	In case where the relevant product committee decides that marking of the IK-code shall be required, the marking requirements shall be detailed in the relevant product standard.	IK10	P
	Where appropriate, such a standard should also specify the method of marking which is to be used when:		--
	— one part of an enclosure has different degree of protection to that of another part of the same enclosure;		N
	— the mounting position has an influence on the degree of protection.		N
5	**General requirements for tests**		
5.1	Atmospheric conditions for tests		P
	Unless otherwise specified in the relevant product standard, the test shall be carried out under the standard atmospheric conditions for tests described in IEC60068-1as:		--
	Temperature range15°C to 35°C	25°C	P
	Air pressure 86kPa to 106kPa (860mbar to 1060mbar)	95kPa	P
	When the altitude at which the test is performed is higher than 2000m the height of fall shall be adjusted where necessary to result in the specified impact energy.	Below 2000m	N
5.2	Enclosures under test		

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	Each enclosure under test shall be in a clean and new condition, complete with all their parts in place unless otherwise specified in the relevant product standard.		P
5.3	Specifications to be given in the relevant product standard		
	The relevant product standard shall specify:		--
	— the definition of “enclosure” as it applies to the particular type of equipment;		N
	— the test equipment (e.g. pendulum hammer, spring hammer or vertical hammer, seeClause7);		P
	— the number of samples to be tested;	1	P
	— the conditions for mounting, assembling and positioning the samples, e.g. by the use of an artificial surface(ceiling, floor or wall), in order to stimulate intended service conditions as far as possible;		P
	— the pre-conditioning, if any, which is to be used;		N
	— whether to be tested energized;	No energized	N
	— whether to be tested with any moving parts in motion;	No moving parts	N
	— the number of impacts and their points of application (see6.3).		P
	In the absence of such specifications in the relevant product standard, conditions of this standard shall apply.		P
6	**Test to verify the protection against mechanical impacts**		
6.1	The tests specified in this standard are type tests.		--
6.2	In order to verify the protection against mechanical impacts blows shall be applied to the enclosure to be tested. The device to be used for this test are described in Clause7.		P
6.3	During the test the enclosure shall be mounted, according to the manufacturer instructions for use, on a rigid support. A support is considered to be sufficiently rigid if its displacement is less than or equal to 0,1mm under the effect of an impact directly applied and whose energy corresponds to the degree of protection. Alternative mounting and support, suitable for the product, may be specified in the relevant product standard.	Displacement is less than or equal to 0,1mm	P

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6.4	The number of impacts shall be five on each exposed face unless otherwise specified in the relevant product standard. The impacts shall be evenly distributed on the faces of the enclosure (s) under test. In no case shall more than three impacts be applied in the surroundings of the same	5 points, 3 times per point	P
6.5	Test evaluation The relevant product standard shall specify the criteria upon which the acceptance or rejection of the enclosure is to be based on particularly:		P
	—admissible damages;	No damage	P
	—verification criteria relative to the continuity of the safety and reliability of the equipment.	No broken	P
7	**Test apparatus**		
	The test shall be done by using one of the test apparatus as described in EN60068-2-75.		P
	The striking surface shall be visually examined before each impact in order to ensure that there is no damage that might affect the result of the test.	See Figure 1	P
7.1	Test Ehc: Vertical hammer		--
7.2	The hammer consists basically of a striking element which falls freely from rest through a vertical height, selected from table2, on to the specimen surface held in a horizontal plane. The characteristics of the striking element shall comply with table 1. The fall of the striking element shall be along a guide way, for example a tube, with negligible braking. This guide way shall not rest on the specimen and the striking element shall be free of the guide way on striking the specimen. In order to reduce the friction, the length l of the striking element shall not be smaller than its diameter D, and a small gap (for example 1 mm) shall be provided between the striking element and the guide way.	See table 1 of IEC 60068-2-75	P
7.3	Height of fall		--
	The height of fall shall be as given in table2, the equivalent mass stated therein being equal to the actual mass of the striking element.	400mm	P

IEC 62262			
Clause	Requirement – Test	Result - Remark	Verdict

REMARKS:

1. The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory

2. Characterization & Condition of Sample: Normal

Table 1 of IEC 62262-2002:

Table 1- Relation between IK code and impact energy

IKcode	IK00	IK01	IK02	IK03	IK04	IK05	IK06	IK07	IK08	IK09	IK10
Impact energy Joule	a	0,14	0,2	0,35	0,5	0,7	1	2	5	10	20
Not protected according to this standard											

NOTE 1 When higher impact energy is required the value of 50 Joule is recommended.

NOTE 2 A characteristic group numeral of two figures has been chosen to avoid confusion with some former national standards which used a single numeral for a specific impact energy.

Table 2 of IEC 60068-2-75:

Table 2- Height of tall

Energy J	0,14	0,2		(0,3)	0,35	(0,4)	0,5		0,7	1	2	5	10	20	50
Equivalent mass kg	0,25	(0,2)	0,25	(0,2)	0,25	(0,2)	(0,2)	0,25	0,25	0,25	0,5	1,7	5	5	10
Height of tall mm±1%	56	(100)	80	(150)	140	(200)	(250)	200	280	400	400	300	200	400	500
NOTES 1 See note in 3.2.2. 2 In this part of IEC 60068, the energy, J, is calculated taking the standard acceleration clue to the earth's Gravity(g_n), rounded up to the nearest whole number, that is 10m/s².															

IEC 62262			
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Table 1 of IEC 60068-2-75

Table 1 - Co-ordinated charateristics of the striking elements

Energy value J	≤1 ±10%	2 ±5%	5 ±5%	10 ±5%	20 ±5%	50 ±5%
Equivalent mass ±2% kg	0,25 (0,2)	0,5	1,7	5	5	10
Material	Polyamide[1)]	Steel[2)]				
R mm	10	25	25	50	50	50
D mm	18,5 (20)	35	60	80	100	125
f mm	6,2 (10)	7	10	20	20	25
r mm	--	--	6	--	10	17
l mm	To be adjusted to match the equivalent mass, see annex A.					

1) 85≤HRR≤100, Rockwell hardness according to ISO 2039-2.
2) Fe 490-2, according to ISO 1052: Rockwell hardness: HRE 80...85 according to ISO 6508.

NOTE - The values shown in brackets for the equivalent mass and the diameter of the striking element for the energy value equal to or less than 1 J are those in the current test Ef. The values currently in test Eg are also shown for these two parameters. For co-ordination purposes, the values in brackets will be deleted five years from the publication of this standard.

Figure1— Example sketch of a striking element

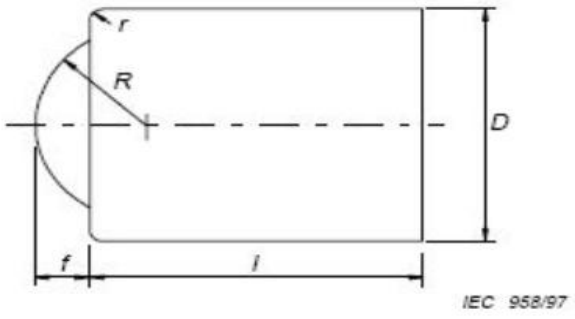

Figure 1 – Example sketch of a striking element

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Attachment of Report — Photos

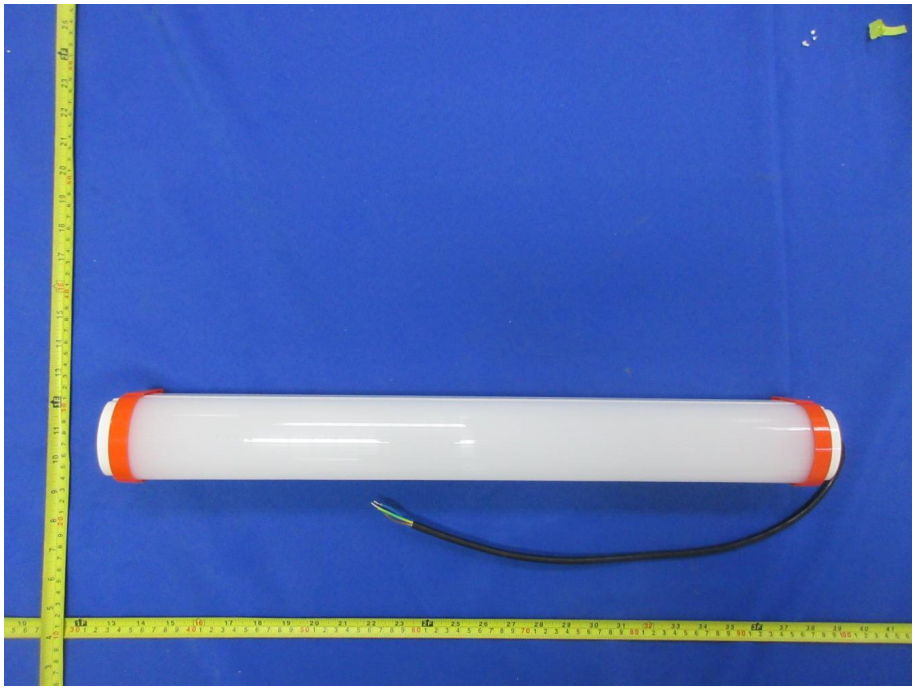

Fig. 1 Photo of Sample (DR-TPL060-BG51)

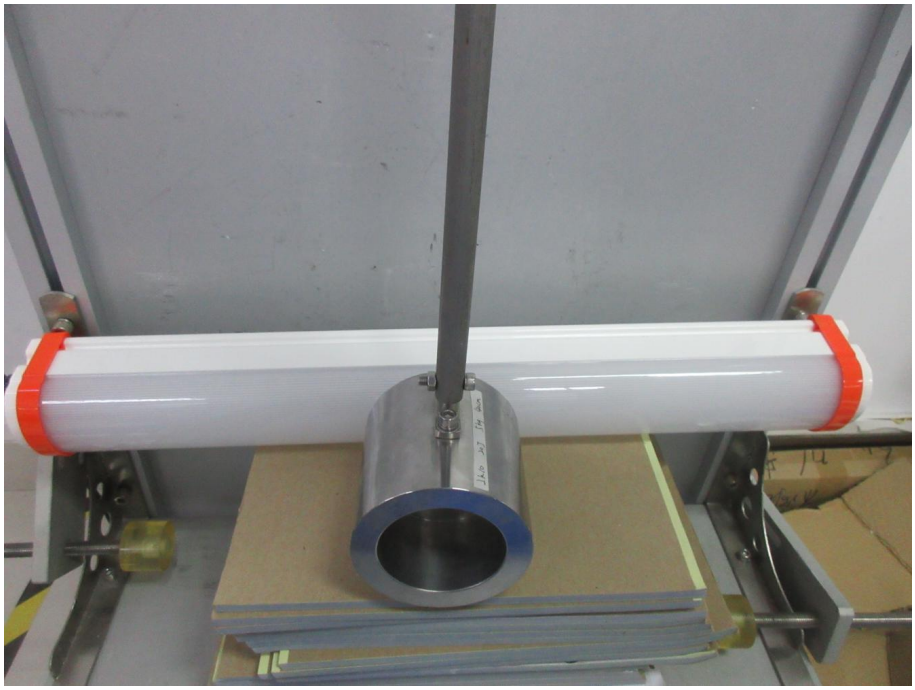

Fig. 2 Photo of Sample (DR-TPL060-BG51)

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