Intertek

SWEDAC ACKREDITERING 1003 ISO/IEC 17025

RAPPORT
utfärdad av ackrediterat laboratorium
REPORT issued by an Accredited Laboratory

TEST REPORT

IEC 60529: Edition 2.2, 2013-08

Degrees of protection provided by enclosures (IP Code)

Report reference No. ..... : 1402856STO-001
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Contents ..... : 11 pages

Testing laboratory

Name..... : Intertek Semko AB
Address ..... : P.O. Box 1103, SE-164 22 Kista, Sweden
Testing location..... : as above
Test date.....: 2 October 2014

Client

Name..... : Orbiloc ApS
Address ..... : Langdyssen 5, Lisbjerg, DK-8200 Aarhus N, DENMARK

Test specification

Standard..... : IEC 60529: Edition 2.2, 2013-08
Specified IP-code ..... : **IPX8**
TRF date..... : -

Equipment Under Test (EUT)

Type of test object ..... : LED Lamp
Trademark ..... : Orbiloc
Model and/or type reference ..... : Orbiloc Dual
Article No..... : -
Manufacturer ..... : Orbiloc ApS
Rating(s)..... : -

S 114 14-05 Strömberg 214248

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Possible test case verdicts: Test case does not apply to the test object .....: N/A (Not Applicable) Test object does meet the requirement.....: P(ass) Test item does not meet the requirement.....: F(ail) Test case has not been checked .....: Not Checked
General remarks: "(see remark #)" refers to a remark 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. The test results presented in this report relate only to the object tested. This test report shall not be reproduced except in full without the written approval of the testing laboratory.
General description:

10	**Marking.**		
	Marking		N/A
11	**General requirement for tests.**		
11.1	Tests should be carried out under the standard atmospheric conditions described in IEC 68-1		P
11.2	Test samples shall be in a clean and new condition.		P
	The relevant product standard shall specify details such as:The number of samples to be tested;		N/A
	-conditions for mounting, assembling and positioning of the samples;		P
	-the pre-conditioning, if any, which is to be used;		N/A
	-whether to be tested energized or not;	Two samples were tested: one was switched-on and the other was switched-off during the test.	P
	-whether to be tested with its parts in motion or not;		N/A
11.5	**Empty enclosures**		
	If the enclosure is tested without equipment inside, the manufacturer shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of protection of the final product.		N/A
12	**Tests for protection against access to hazardous parts indicated by the first characteristic numeral.**		**-**
	Test conditions for IP 0X:	No test required	N/A
	Test conditions for IP 1X: The sphere of 50 mm ∅		N/A
	Test conditions for IP 2X: The jointed test finger may penetrate up to its 80 mm length ,but adequate clearance shall be kept.		N/A
	Test conditions for IP 3X: The test rod of 2,5 mm ∅ shall not penetrate and adequate clearance shall be kept.		N/A
	Test conditions for IP 4X: The test wire of 1,0 mm ∅ shall not penetrate and adequate clearance shall be kept.		N/A
	Test conditions for IP 5X: Same as above.		N/A
	Test conditions for IP 6X: Same as above.		N/A

13	**Tests for protection against solid foreign objects indicated by the first characteristic numeral.**				
First, characteristic numeral.	Test means (object probes and dust chamber)	Test force	Test conditions,see		N/A
0	No test required	-	-		N/A
1	Rigid sphere without handle or guard $50_0^{+0,05\ mm}$ diameter.	50 N ± 10%	13.2		N/A
2	Rigid sphere without or guard $12,5_0^{+0,2}$ mm diameter.	30 N ± 10%	13.2		N/A
3	Rigid steel rod $2,5_0^{+0,05}$ mm diameter with edges free from burrs	3 N ± 10%	13.2		N/A
4	Rigid steel wire $1,0_0^{+0,05}$ mm diameter with edges free from burrs.	1N ± 10%	13.2		N/A
5	Dust chamber, with or without underpressure	-	13.4+13.5		N/A
6	Dust chamber, with underpressure	-	13.4+13.6		N/A
13.4	**Acceptance conditions for the first characteristic numeral 5**. The protection is satisfactory if the access probe of 1,0 mm ⌀ do not penetrate and the deposit of dust observable inside the enclosure at the end of test do not interfere with satisfactory operation of the apparatus or impairs safety. According to Clause 5 the enclosure shall also comply with all lower degrees of protection.				N/A

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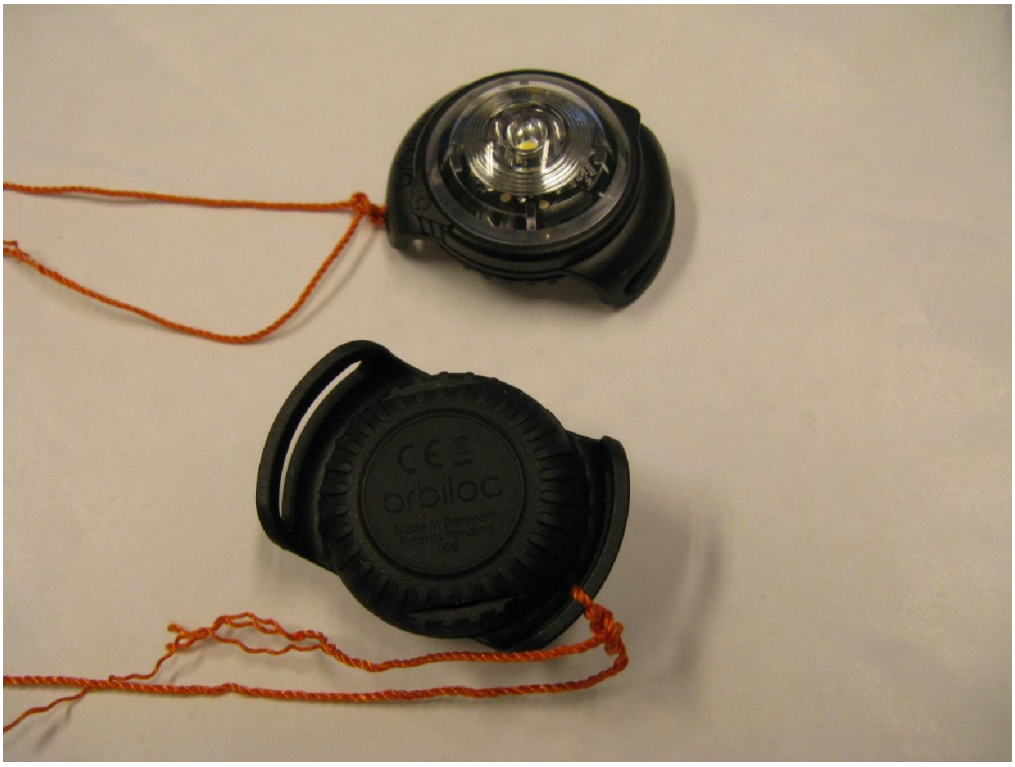
14	**Tests for protection against water indicated by the second characteristic numeral.**		
14.2.0	No test required	IPX0	P
14.2.1	Test for second characteristic numeral 1 with a drip box.		N/A
14.2.2	Test for second characteristic numeral 2 with a drip box.		N/A
14.2.3	Test for second characteristic numeral 3 with an oscillating tube or spray nozzle.		N/A
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle.		N/A
14.2.5	Test for second characteristic numeral 5 with a 6.3-mm nozzle,tested with a spraying nozzle.		N/A
14.2.6	Test for second characteristic numeral 6 with a 12.5-mm nozzle		N/A
14.2.7	Test for second characteristic numeral 7:		N/A
14.2.8	Test for second characteristic numeral 8: Continuos immersion subject to agreement.	Pressure: 10 bar (corresponding to 100 meters depth) Duration: 1 hour	**P**
14.2.9	Test for second characteristic numeral 9 by high pressure and temperature water jetting.		N/A
14.3	Acceptance conditions for IPX8: The protection is satisfactory if any water has entered, it shall not be sufficient to interfere the correct operation or impair the safety of the equipment.	No ingress of water. Both samples are fully functional after the test.	**P**
15.	Tests for protection against access to parts indicated by the additional letter.		N/A

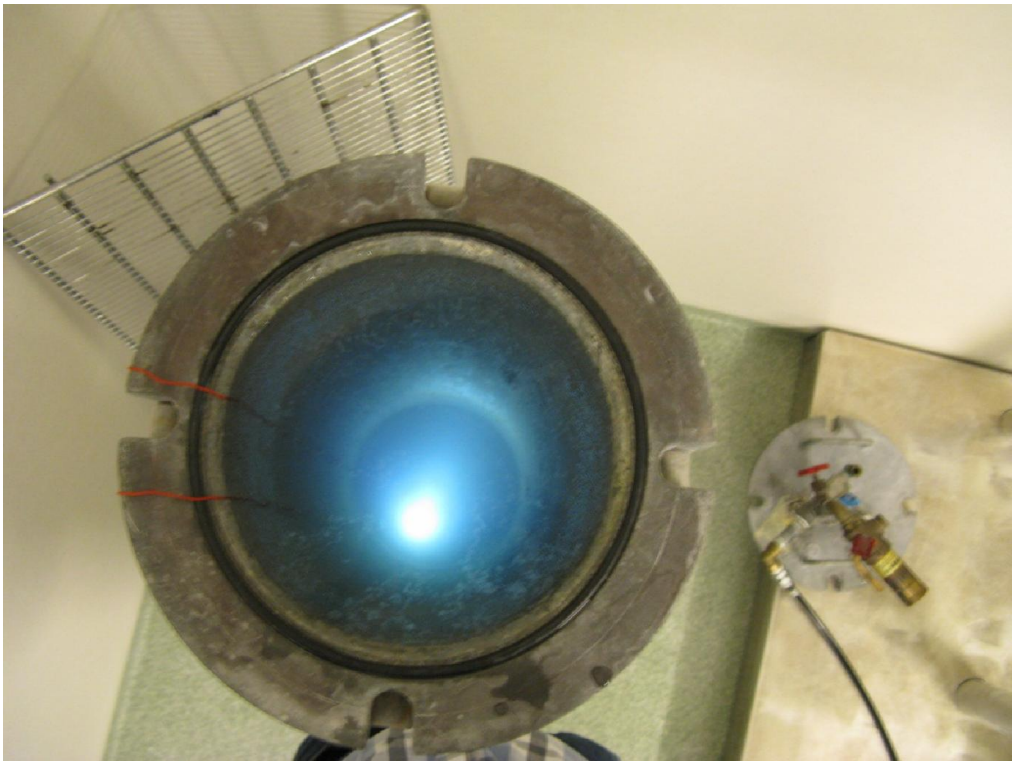
SUMMARY OF ENCAPSULATION TESTS ACCORDING TO IEC 60 529: 2013

Conclusion of the IPX8 test: PASS

The result of the test was in compliance with the requirements in the standard IEC 60 529 Ed 2.2: (2013)

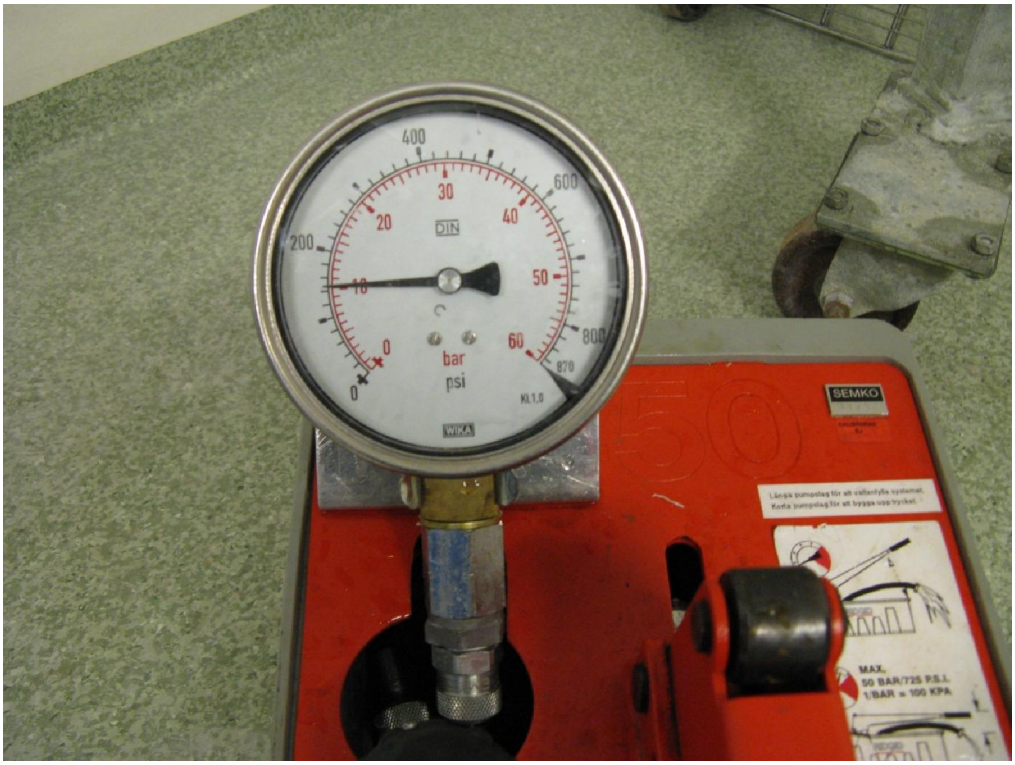


Picture 1: EUT before the IPX8-test.



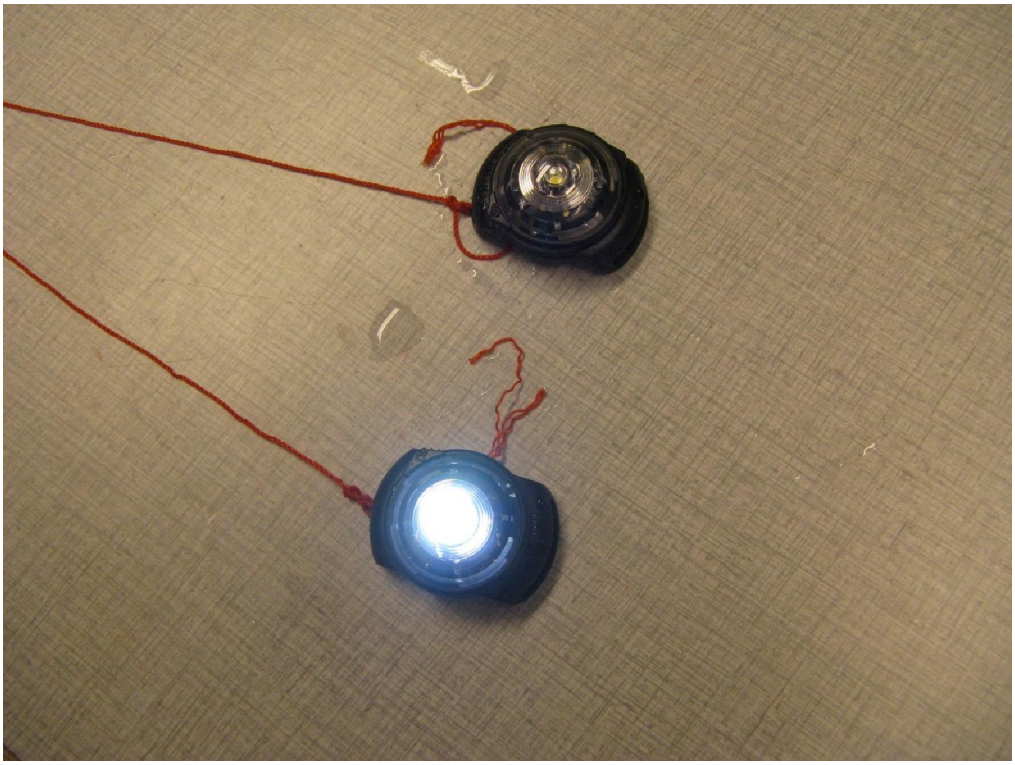
Picture 2: EUT inside the pressure vessel before the IPX8-test.

Picture 3: EUT during the IPX8-test.

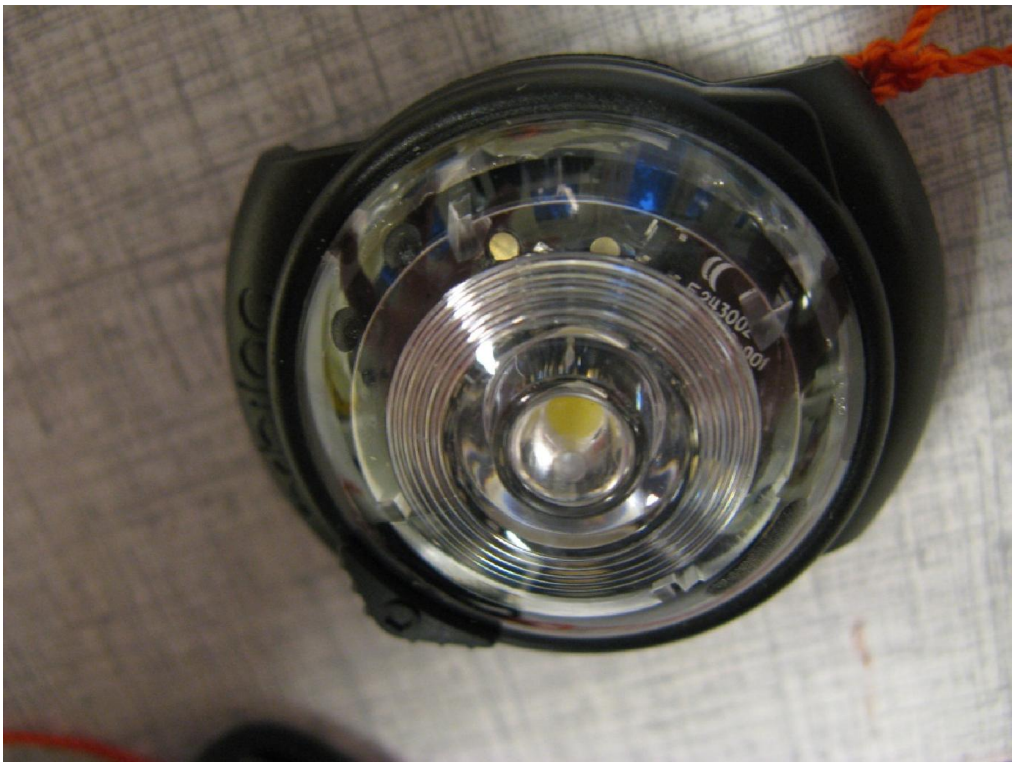


Picture 4: The water pressure during the IPX8-test.

Picture 5: EUT inside the pressure vessel after the IPX8-test.

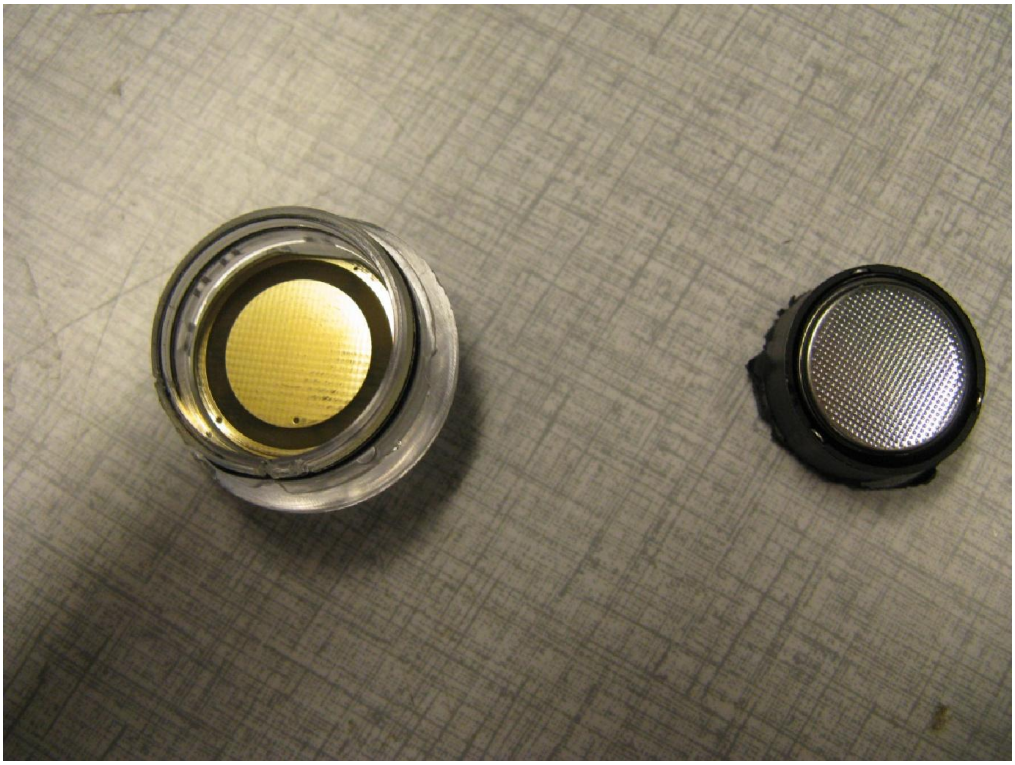


Picture 6: EUT after the IPX8-test; before the inspection.



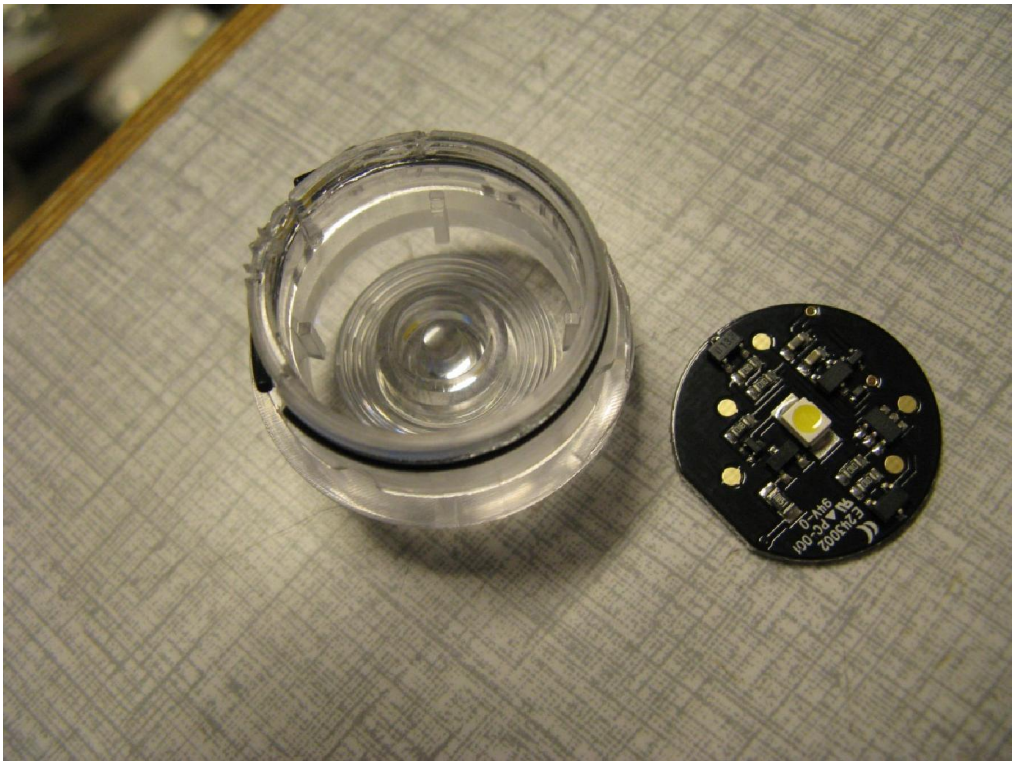
Picture 7: EUT after the IPX8-test; no ingress of water.

Picture 8: EUT after the IPX8-test; no ingress of water.



Picture 9: EUT after the IPX8-test; no ingress of water.

Picture 10: EUT after the IPX8-test; no ingress of water.



Picture 11: EUT after the IPX8-test; no ingress of water.