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Report No. 1402856STO-001

TEST REPORT IEC 60529: Edition 2.2, 2013-08 Degrees of protection provided by enclosures (IP Code) Report reference No. 1402856STO-001 Compiled by (+ signature) Daniel Pimenov Approved by (+ signature) Mats Nyström Mutual Mats Nyström Date of issue 3 October 2014 Contents Contents 11 pages Testing laboratory Name Intertek Semko AB Address P.O. Box 1103, SE-164 22 Kista, Sweden Testing location 2 October 2014 Client Name 2 October 2014 Client Name 2 October 2014 Client Name 2 Orbiloc ApS Address Langdyssen 5, Lisbjerg, DK-8200 Aarhus N, DENMARK Test specification	N Contraction of the second seco						
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Address : Langdyssen 5, Lisbjerg, DK-8200 Aarhus N, DENMARK Test specification	Client						
Test specification	Name:	Orbiloc ApS					
•	Address:	Langdyssen 5, Lisbjerg, DK-82	00 Aarhus N, DENMARK				
	Test specification						
Standard: IEC 60529: Edition 2.2, 2013-08	Standard:	IEC 60529: Edition 2.2, 2013-08	8				
Specified IP-code: IPX8	Specified IP-code:	IPX8					
TRF date : -	TRF date						
Equipment Under Test (EUT)	Equipment Under Test (EUT)		~				
Type of test object: LED Lamp	Type of test object:	LED Lamp					
Tradomark	Trademark:	Orbiloc					
	Model and/or type reference :	Orbiloc Dual					
Model and/or type reference: Orbiloc Dual							
	Manufacturer	Orbiloc ApS	0				
Model and/or type reference: Orbiloc Dual Article No	Rating(s):						
Type of test object: LED Lamp	Type of test object:	LED Lamp					
		14 1947 - 14 1948					
		14 1947 - 14 1948					
Tradomark							
Model and/or type reference: Orbiloc Dual	Article No:	-					
Model and/or type reference: Orbiloc Dual Article No							
Model and/or type reference : Orbiloc Dual Article No	Rating(s):						

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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:

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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		Р
11.2	Test samples shall be in a clean and new condition.		Р
	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;		Ρ
	-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.	Ρ
	-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 haza the first characteristic numeral.	ardous parts indicated by	-
	Test conditions for IP 0X:	No test required	N/A
	Test conditions for IP 1X: The sphere of 50 mm \varnothing		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 \emptyset shall not penetrate and adequate clearance shall be kept.		N/A
	Test conditions for IP 4X: The test wire of 1,0 mm \emptyset 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

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13	Tests for protect first characterist	-	olid foreign o	bjects indicated by the	
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 $50^{+0.05 \text{ mm}}_{0}$ 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 cond characteristic nu The protection is s probe of 1,0 mm ø deposit of dust ob enclosure at the e with satisfactory o or impairs safety. enclosure shall als degrees of protect	meral 5. satisfactory if do not penel servable insic nd of test do peration of th According to so comply wit	the access trate and the le the not interfere e apparatus Clause 5 the		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	Р
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	Ρ
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.	Ρ
15.	Tests for protection against access to parts indicated by the additional letter.		N/A

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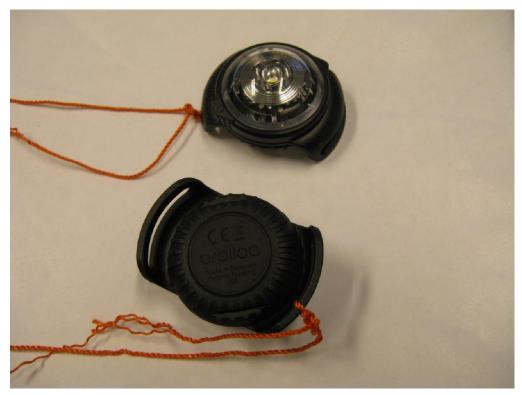
IEC 60529: Edition 2.2, 2013-08

SUMMARY OF ENCAPSULATION TESTS ACCORDING TO IEC 60 529: 2013

Conclusion of the IPX8 test:

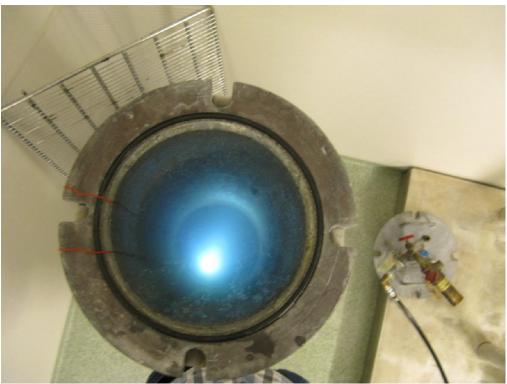
PASS

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.

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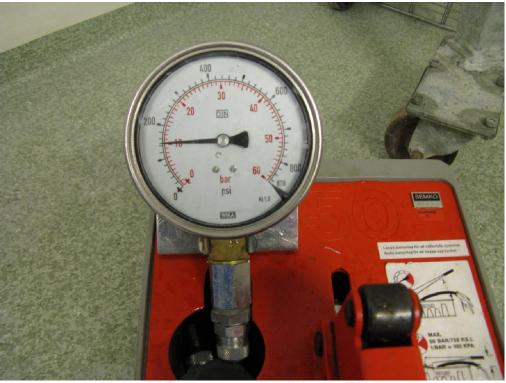


Picture 2: EUT inside the pressure vessel before the IPX8-test.



Picture 3: EUT during the IPX8-test.

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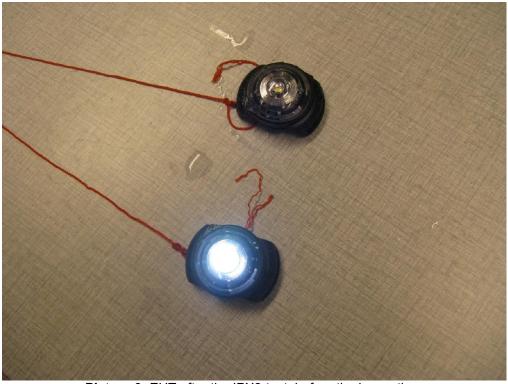


Picture 4: The water pressure during the IPX8-test.



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

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

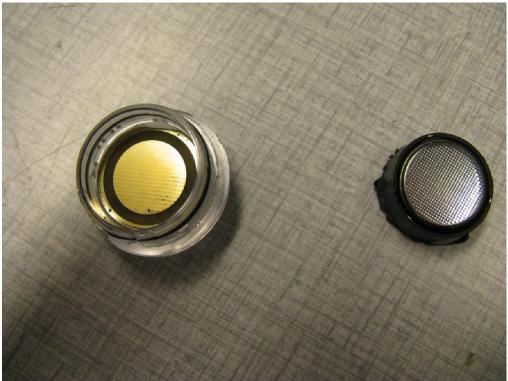


Picture 7: EUT after the IPX8-test; no ingress of water.

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



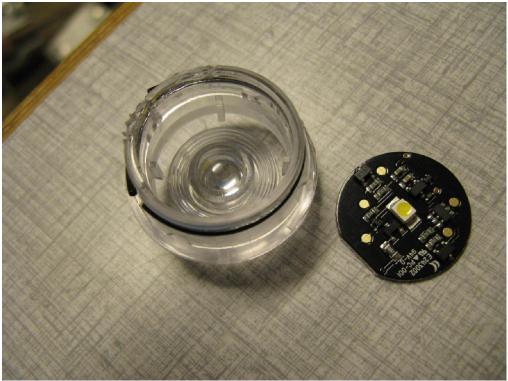
Picture 9: EUT after the IPX8-test; no ingress of water.

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



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