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LABORATORY OF CABLE TESTING AND ENVIRONMENTAL TESTS

TEST REPORT №

8026-ZLK/2024

**IP69K tests of object:
Fristom FT-1 LED lamp**

Customer:

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp. k.
ul. Przemysłowa 5
86-014 Ścienko

Order:

6/24 of June 13, 2024

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Test report prepared by

Marcin Patola

Marcin Patola

Test report reviewed by

Robert Ulfig
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Test report authorized by

Robert Ulfig
Robert Ulfig
Head of laboratory

Katowice, June 28, 2024

Report contains pages

7

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1. Equipment Under Test (EUT)

Table 1-1: EUT data

No.	Name according to the supplier	Serial number	Producer	Date of delivery	Laboratory ID
1	FT-1 LED	N/A	Fristom	May 6, 2024	8026.01.01
2	FT-1 LED	N/A	Fristom	May 6, 2024	8026.02.01

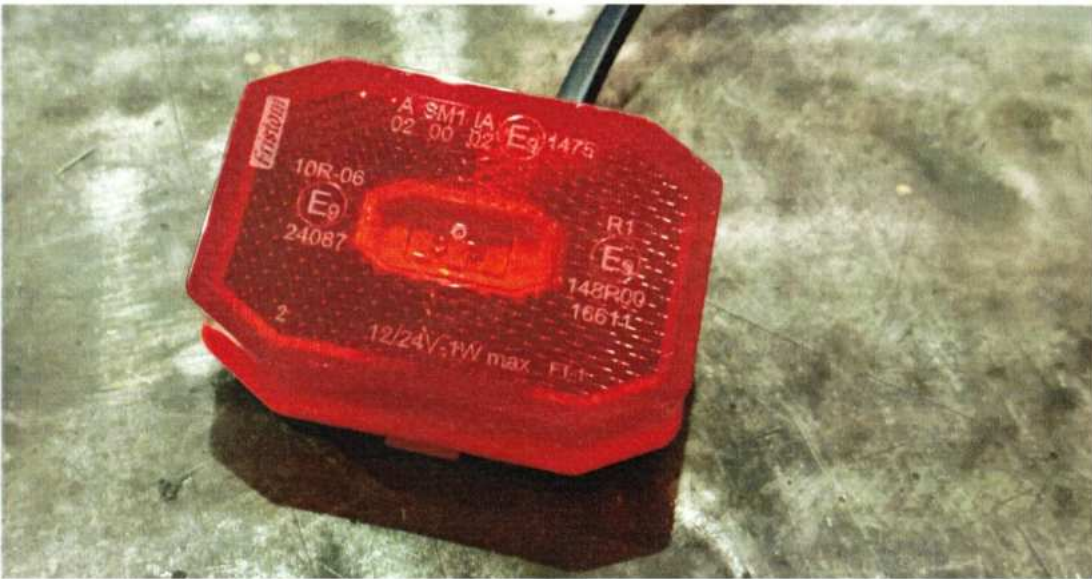


Photo 1.1: General view of sample (both are the same).

2. Test plan

Table 2-1: Scope of tests

No.	Tested feature / Test method	Remarks	Accreditation ¹⁾
1	Protection against penetration of dust: IP6X test PN-EN 60529:2003+A2:2014-07+AC:2017-12+AC:2020-01	Sample ID 8026.01.01	A
2	Protection against high pressure steam-jet cleaning: IPX9K test ISO 20653:2013	Sample ID 8026.02.01	A

1) „A” means accredited test; „-” means not accredited test. “A” means, that accreditation concerns only exposure.

Tests listed in Table 2-1 were performed in Research Network Łukasiewicz – Institute of Innovative Technologies EMAG in Katowice at 31 Leopolda Street.

2.1. Evaluation criteria

- IP6X test: according to PN-EN 60529:2003+A2:2014-07+AC:2017-12+AC:2020-01 - Clause 13.6.2.
- IPX9K test: according to ISO 20653:2013 - Clause 6 - Table 4.

2.2. Procedure of evaluation

- IP6X test: visual inspection of dust penetration.
- IPX9K test: visual inspection of water penetration.

3. Description and results of tests

3.1. Protection against penetration of dust: IP6X test

3.1.1. Test procedure

The test was performed in accordance with recommendations of standard PN-EN 60529:2003+A2:2014-07+AC:2017-12 clause 13.4 and 13.6.1 – IP6X test. The test was performed on June 24, 2024.

3.1.2. Test equipment

• Dust chamber	ACS SD-1000S	ZL/1160/P
• Multisensor	LB-717TWP	ZL/1514/A
• Set for measuring temperature and relative humidity	LB-701H/LB-706	ZL/0454/A
• Differential pressure sensor	MRC	ZL/1161/A
• Rotameter	ROS-06	ZL/0993/A
• Stopwatch	SMJSport JS-6618	ZL/1102/A

3.1.3. Test result

After the test the EUT was opened and inspected. The dust was not found inside the object.

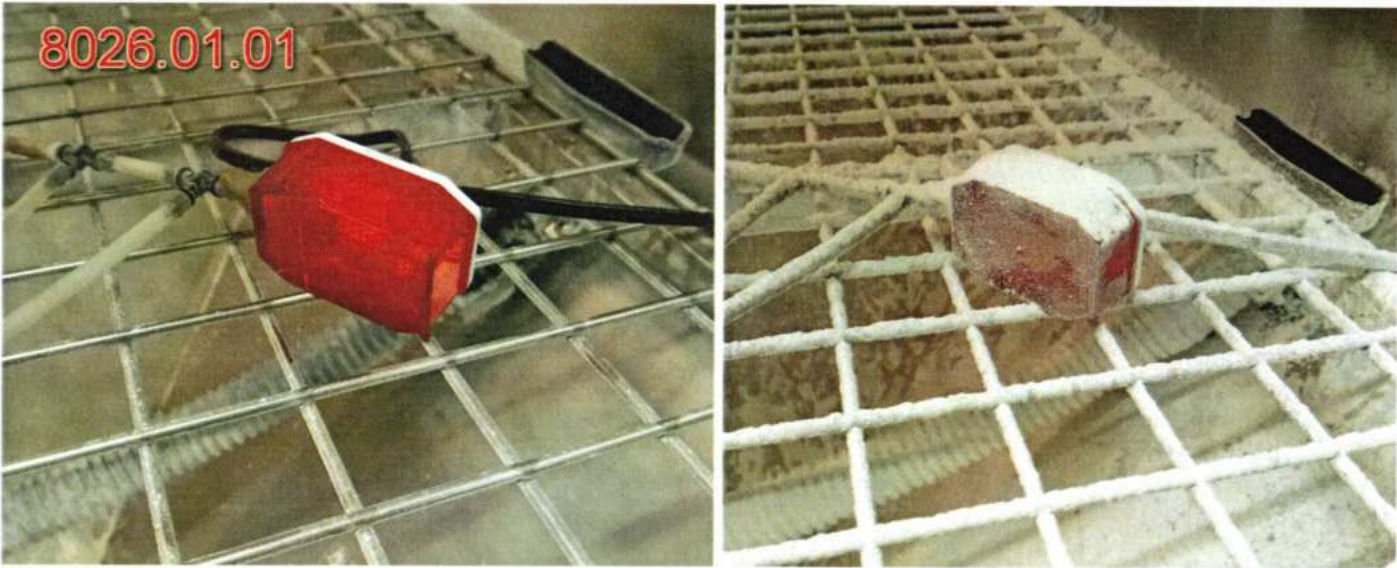


Photo 3.1: The sample 8026.01.01 in dust chamber: before and after the IP6X exposure.

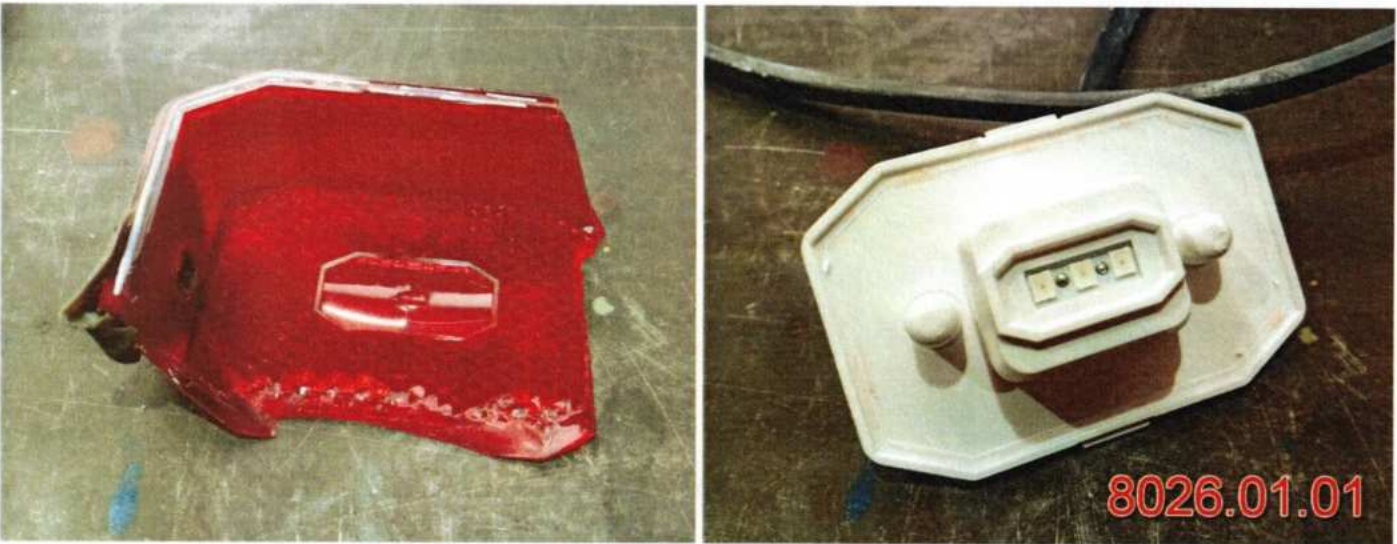


Photo 3.2: No dust found inside the sample 8026.01.01.

Summary: The test was carried out correctly, obtaining the results as described above.

3.2. Protection against high pressure steam-jet cleaning: IPX9K test

3.2.1. Test procedure

The test was performed in accordance with recommendations of standard ISO 20653:2013 – Chapter 9 – Table 7 – IPX9K test. The test was performed on June 25, 2024.

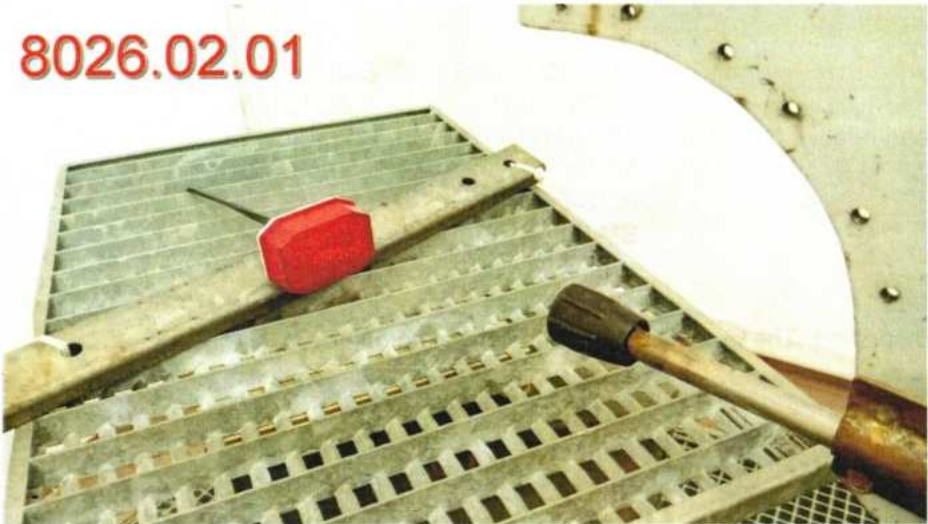


Photo 3.3: The sample 8026.02.01 before the IPX9k exposure.

3.2.2. Test equipment

• High Pressure Washer with the nozzle size 110	Kärcher HDS 10/20-4M	ZL/1171/P
• Rotary table	–	ZL/1172/B
• Flowmeter	IFM SM 6000	ZL/1521/A
• Multisensor	LB-717TWP	ZL/1514/A
• Set for measuring the temperature and humidity	LB-701H/LB-706	ZL/0454/A
• Thermometer	LB-701T/LB-706	ZL/1156/A
• Ruler	Linear 0,5 m	ZL/0225/A
• Stopwatch	SMJSport JS-6618	ZL/1102/A

3.2.3. Test result

After the test, the EUT was opened and inspected. The water was not found inside the object.



Photo 3.4: No water found inside the sample 8026.02.01.

Summary: The test was carried out correctly, obtaining the results as described above.

4. Summary of the results

Based on the obtained results and observations, it was found, that the objects meet the subsection's 2.1 criteria.

Table 4-1: Test summary

Test № <i>According to Table 2-1</i>	Test feature / Test method	Result
1	Protection against penetration of dust: IP6X test PN-EN 60529:2003+A2:2014-07+AC:2017-12+AC:2020-01	Positive.
2	Protection against high pressure steam-jet cleaning: IPX9K test ISO 20653:2013	Positive.

5. Laboratory staff and test dates

Tested by Marcin Patoła on June 24-25, 2024.

6. Distribution list of test reports

Table 6-1: Distribution list

Copy No.	Recipients
1	FRISTOM Spółka z ograniczoną odpowiedzialnością Sp. k. ul. Przemysłowa 5, 86-014 Sicienko
2	Research Network Łukasiewicz – Institute of Innovative Technologies EMAG Laboratory of Cable Testing and Environmental Tests

END OF TEST REPORT