



Łukasiewicz
Instytut Technik
Innowacyjnych
EMAG



AB 261



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LABORATORY OF CABLE TESTING AND ENVIRONMENTAL TESTS

TEST REPORT №

7733-ZLK/2023

ZESPÓŁ LABORATORIÓW
BADAWCZYCH

Świadczy usługi
w zakresie badań:

- kompatybilności elektromagnetycznej (EMC)
- środowiskowych
- elektrycznych
- mechanicznych
- trudnopalności materiałów
- funkcjonalności
- iskrobezpieczeństwa
- stopnia ochrony IP
- UN DOT 38.3

- ♦ aparatury rozdzielczej
- ♦ stacji transformatorowych
- ♦ akumulatorów
- ♦ kabli i przewodów
- ♦ urządzeń gazometrycznych
- ♦ podzespołów stosowanych w kolejnictwie, branży automotive i siłach zbrojnych RP
- ♦ pozostałych urządzeń elektrycznych i elektronicznych

**IP69K tests of object:
Fristom FT-372 LED lamp with integrated cable**

Customer:

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

Order:

6/23 of November 3, 2023

Test report prepared by

Marcin Patoła

Test report reviewed by

Robert Ulfig

Test report authorized by

Robert Ulfig
Head of laboratory

Katowice, November 30, 2023

Report contains pages	8	Version of the form PL-1/11ZLK/1-en w.6	Copy №	1
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TESTING LABORATORY UNIT
LABORATORY OF CABLE TESTING AND ENVIRONMENTAL TESTS

TEST REPORT №

7733-ZLK/2023

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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-372 LED lamp	N/A	Fristom	October 30, 2023	7733.01.01
2	FT-372 LED lamp	N/A	Fristom	October 30, 2023	7733.02.01



Photo 1-1: General view of samples (the samples are identical)

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	Sample ID 7733.01.01	A
2	Protection against high pressure steam-jet cleaning: IPX9K test ISO 20653:2013	Sample ID 7733.02.01	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 - 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 – IP6X test. The test was performed on November 29, 2023.



Photo 3-1: Sample 7733.01.01 before IP6X test placed in the dust chamber.

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.



Photo 3-2: The sample 7733.01.01 after the IP6X exposure.



Photo 3-3: No dust found in sample 7733.01.01

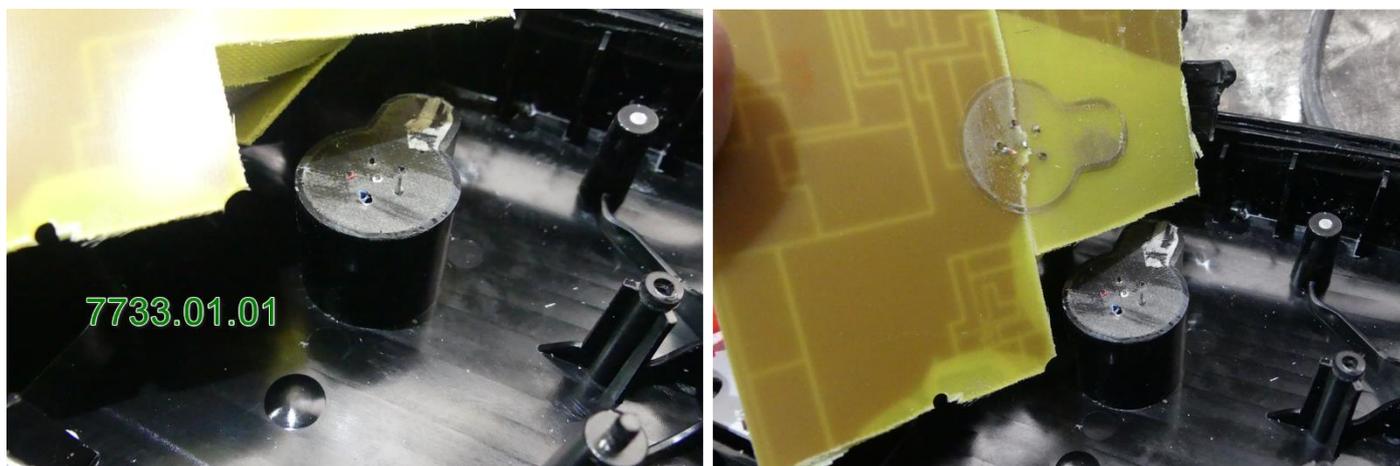


Photo 3-4: No dust found in sample 7733.01.01.

The dust was not found inside the object.

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 November 30, 2023.

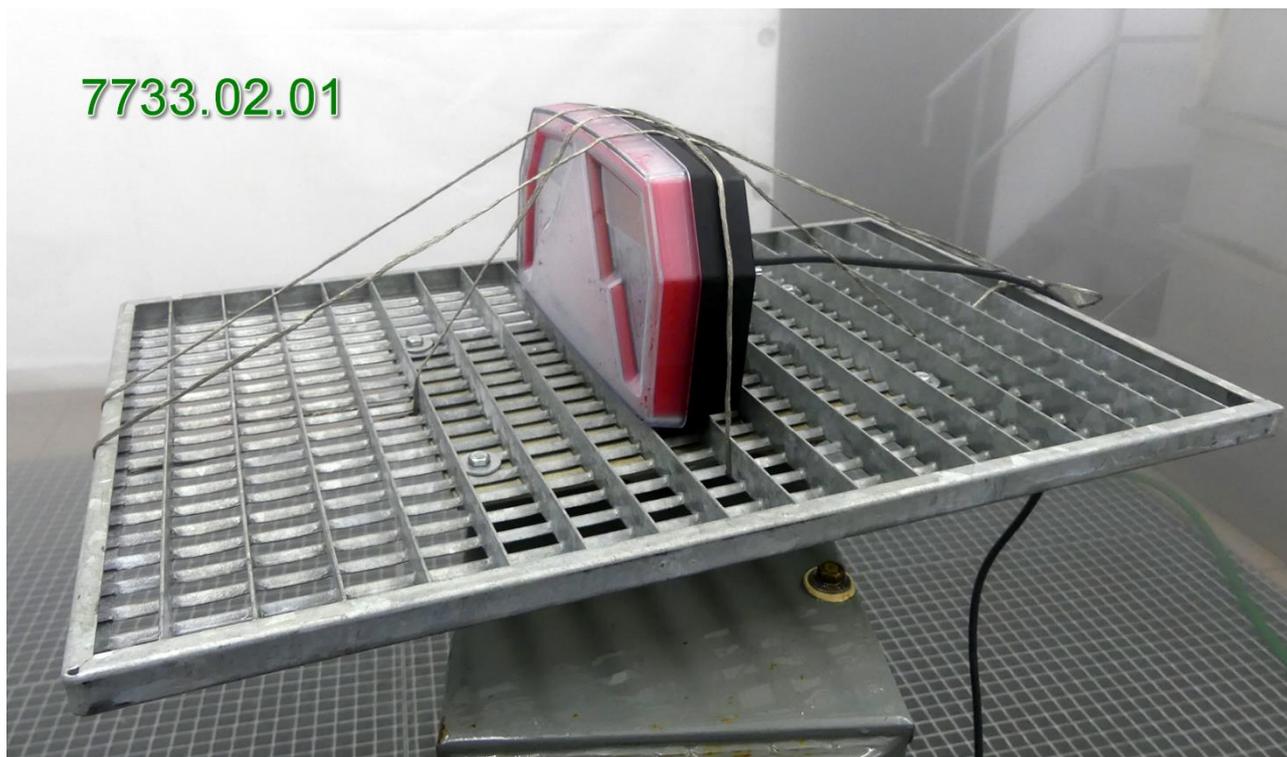


Photo 3-5: Sample 7733.02.01 before IPX9K test.

3.2.2. Test equipment

- | | | |
|--|----------------------|-----------|
| • High Pressure Washer with nozzle size 110 | Kärcher HDS 10/20-4M | ZL/1171/P |
| • Rotary table | – | ZL/1172/B |
| • Flowmeter | IFM SM 6000 | ZL/1521/A |
| • Multisensor | LAB-EL TWP-717 | ZL/1514/A |
| • Set for measuring the temperature and humidity | LAB-EL 706/701H | ZL/0454/A |
| • Thermometer | LAB-EL 706/701T | ZL/1155/A |
| • Thermometer | Lutron TM-917 | ZL/1152/A |
| • Ruler | Linear 1m | ZL/0225/A |
| • Stopwatch | SMJSport JS-6618 | ZL/1102/A |

3.2.3. Test result

After the test, the EUT was opened and inspected.

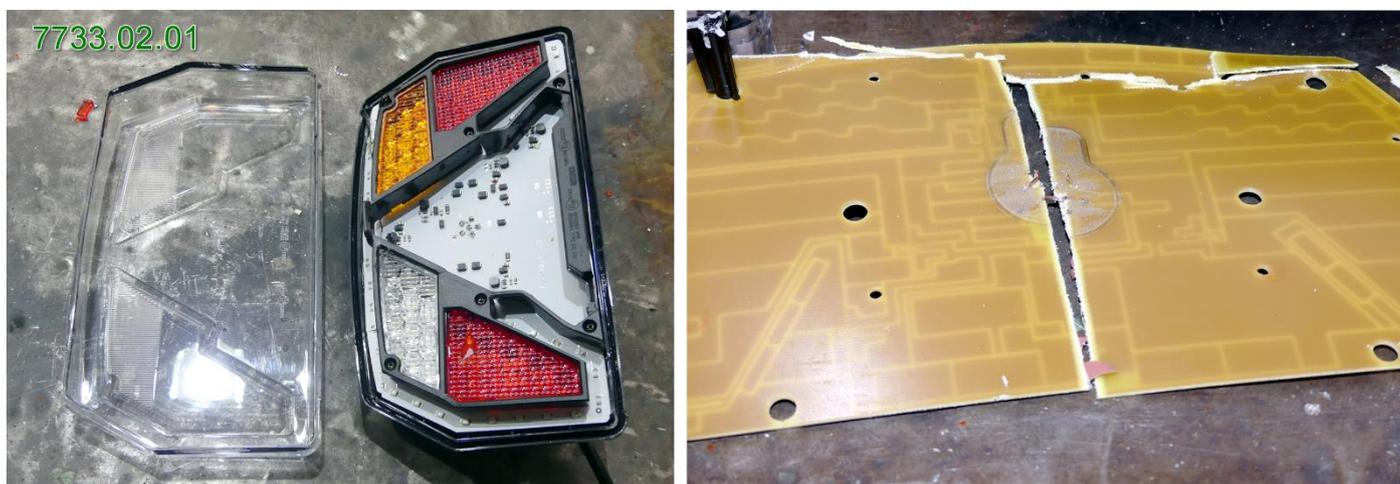


Photo 3-6: No water found in sample 7733.02.01.

7733.02.01



Photo 3-7: No water found in sample 7733.02.01

The water was not found inside the object.

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 № According to Table 2-1	Test feature / Test method	Result
1	Protection against penetration of dust: IP6X test PN-EN 60529:2003+A2:2014-07+AC:2017-12	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 November 29-30, 2023.

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