SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11502

Date of issue: *December 17, 2025*

Status: FINAL REPORT

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IEC 61034-2

MEASUREMENT OF SMOKE DENSITY OF CABLES BURNING UNDER DEFINED CONDITIONS

Program: SQ-2543

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1. FOREWORD

This report summarizes the results of the **SQ-2543** proficiency testing program on the measurement of the density of smoke emitted by burning cables. This program is conducted in a bilateral format, following the A.3.3 classification of the ISO 17043 standard ("Split-sample testing schemes").

South Quality conducted the testing program in October 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Eng. Erika Brest
Assistant Technician:	Mateo Giovanni
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the light transmittance, using the following standard:

Standard
IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019

To verify this, batches of cables have been selected.

Participant in this program have not been previously informed about the expected values or value ranges of the samples they receive.

4. PARTICIPANT

Company:	**ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE**
Laboratory:	**TESTING LABORATORY FOR ELECTRICAL PRODUCTS CERTIFICATION - LICPE**
Country:	Romania
Client ID:	E478
Contact person:	Razvan Neacsu Quality Manager razvan.neacsu@oicpe.ro

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **40 units** Tested samples from each batch: **8 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LEM3305	BATCH: LEM3306	BATCH: LEM3307
Light transmittance	YES	YES	NO

Size of each batch: **40 units** Tested samples from each batch: **8 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LEM3406	BATCH: LEM3407	BATCH: LEM3408
Light transmittance	YES	YES	YES

Samples for this program are taken from the selected batches identified as **LEM3306** and **LEM3408**.

For the indicated batches, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following samples were sent for testing:

Batch:	LEM3306
Sample ID:	08
Characteristics:	Black cable - 1 x 1 mm^2 - Cu/PVC - 50 m

Batch:	LEM3408
Sample ID:	05
Characteristics:	Red cable - 1 x 1.5 mm^2 - Cu/LSOH - 50 m

7. IMAGES

SAMPLES

8. ASSIGNED VALUES

BATCH	MINIMUM LIGHT TRANSMITTANCE	
	(%)	SD
LEM3306	54.32	0.99
LEM3408	88.03	0.51

9. PARTICIPANT RESULTS (SEE APPENDIX B)

CODE	MINIMUM LIGHT TRANSMITTANCE (%)
LEM3306-08	55.56
LEM3408-05	87.61

10. STATISTICS

The results must be treated as quantitative.

The comparison is made according B.3.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values. The results can be compare using percent difference z ***score.***

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ **indicates "satisfactory" performance and generates no signal;**

$2.0 < |z| < 3.0$ **indicates "questionable" performance and generates a warning signal;**

$|z| \geq 3.0$ **indicates "unsatisfactory" performance and generates an action signal;**

11. EVALUATION OF PERFORMANCE

BATCH	MINIMUM LIGHT TRANSMITTANCE (%)		| z score |	PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE		
LEM3306	55.56	54.32	**1.25**	**SATISFACTORY**
LEM3408	87.61	88.03	**0.82**	**SATISFACTORY**

12. CONCLUSIONS

The overall performance on this **SQ-2543** program from the participant laboratory **ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY - OICPE - TESTING LABORATORY FOR ELECTRICAL PRODUCTS CERTIFICATION - LICPE**, is **SUFFICIENT** based on expected results.

The criteria used for evaluating the overall performance are as follows:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were obtained, but one questionable result was found.
- **INSUFFICIENT** performance: An unsatisfactory result or two questionable results were obtained.

APPENDIX A

INSTRUCTIONS

SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	Measurement of smoke density of cables burning under defined conditions
CODE:	SQ-2543
VERSION:	-
STANDARD:	IEC 61034-2
COORDINATOR:	Eng. Erika Brest (ebrest@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-2543 1 de 3

1 - **General**

This document serves as a guide for managing the results of the **SQ-2543** program.

2 - **Standard**

IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019

3 - **Tests involved**

TEST
Measurement of the density of smoke emitted by burning cables

4 - **Samples**

CODE	SAMPLE	QUANTITY
LEM3306-08	Black cable - 1 x 1 mm^2	50 m
LEM3408-05	Red cable - 1 x 1.5 mm^2	50 m

5 - **Notes**

a) Being a bilateral program there is no deadline to accomplish sending results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) Samples must be retained until the end of the program, which concludes with the submission of the final report.
d) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TEST REPORT # 297/2025)

OICPE
ELECTRIC PRODUCTS CERTIFICATION INDEPENDENT BODY
OICPE - ORGANISM INDEPENDENT PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
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LICPE

LABORATORUL DE ÎNCERCĂRI PENTRU CERTIFICAREA PRODUSELOR ELECTRICE
Testing Laboratory for Electrical Products Certification

RAPORT DE ÎNCERCĂRI
TEST REPORT

No. 297 / 27.10.2025
Pag. 1/ 8

Specimen no. 1 of 2

ÎNCERCAREA SOLICITATĂ Required Test	**Measurement of smoke density of cable burning under defined conditions – IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019**
PRODUSUL Equipment	**LEM3306-08: Black cable - 1 x 1 mm²** **LEM3408-05: Red cable - 1 x 1.5 mm²**
PRODUCĂTOR Manufacturer	**Unknown**
CLIENT (nume, adresă, cerere) Customer (name, address, order)	**PT SOUTH QUALITY SAS** Pareja 3981, Villa Devoto, Buenos Aires Argentina BILATERAL PT Scheme SQ-2543
MANAGER LABORATOR Laboratory Manager	**Eng. Răzvan NEACȘU**
DIRECTOR TEHNIC OICPE OICPE Technical Director	**Eng. Dragoș ROSMETENIUC**

Rezultatele încercărilor se referă numai la produsele încercate.
Acest document poate fi reprodus numai în întregime.

Test results refers only to tested products.
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LICPE Cod PG-24-F-27

Ediția din 17.02.2025

PRODUCT TECHNICAL DATA:

"Black cable" LEM3306-08
"Red cable" LEM3408-05

- **LEM3306-08**
- number of conductors *x* nominal conductor cross-section – 1 x 1 mm^2
- **LEM3408-05**
- number of conductors *x* nominal conductor cross-section – 1 x 1.5 mm^2

Drum no.	--------------------------------
Product sort	: samples
Product Reception date	: 08.08.2025
Test period	: 15 … 26.09.2025
Sampling method	: It is unknown. The client has selected the product submitted to test
Number of tested products	: 2 (**LEM3306-08** "Black cable" and LEM**3408-05** "Red cable")

Tested by	**Physicist Eng. Gabriel CONSTANTINESCU**	

Clause from ND	Requirement according to IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019	Results	Requirement fulfilling

Measurement of smoke density of cable burning under defined conditions				
Test method: IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019				
Test assembly				
Test sample				
Conditioning				
- temperature: (23±5) ^{0}C	(25 ± 1) ^{0}C			P
- relative humidity: (50±20) %	(50±3) %			P
- duration: min. 16 h	24 h			P
Cables with an overall diameter of less than or equal to 5,0 mm, but not less than 1,0 mm				
- cable diameter (D) :	LEM3306-08 measured D = 2.5 mm LEM3408-05 measured D = 3.0 mm			P
- bundles number N_2 = 45/3D for (1.0 mm < D ≤ 5.0 mm)	LEM3306-08 N_2 = 45/ (3x2.5) = **6 bundles** See Figure 1 and 2 of TR LEM3408-05 N_2 = 45/ (3x3.0) = **5 bundles** See Figure 5 and 6 of TR			P
- number of sample pieces per bundle	7 pieces			P
- bundle length (1±0.05) m	Compliant to requirement in the tolerance range of ±0.025 m			P
Test procedure				
Enclosure temperature before test (25±5) ^{0}C	24 ^{0}C (preheating not necessary)			P
Fire source shall be as defined in Clause 6 of IEC 61034-1.	Fire source as required			P
Recorded minimum light transmittance.	LEM3306-08 (Black cable)	**I_t = 55,56 %** See Figure 3 and Table 1 of TR	For A_m= 0,255 See Figure 4 and Table 1 of TR	P
	LEM3408-05 (Red cable)	**I_t = 87,61 %** See Figure 7 and Table 2 of TR	For A_m= 0,057 See Figure 8 and Table 2 of TR	
Annex B: Recommended performance requirement				
In the absence of any given requirement, it is recommended that a value of 60 % cable light transmittance is adopted as a minimum for any cable tested against this standard.	LEM3306-08 (Black cable)	**I_t = 55,56 % < I_t = 60 %**		NP
	LEM3408-05 (Red cable)	**I_t = 87,61 % > I_t = 60 %**		P

Requirement fulfilling: P – Requirement is meet; NP – the requirement is not met.
NA – The requirement does not apply

Clause from ND	Requirement according to IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019	Results	Requirement fulfilling

Measurement uncertainties

Test name (RI point)	Measured /calculated values	Measuring devices / Type/series or inventory number	Calibration certificate/ Issuer	Extended uncertainty [U]	Extension Factor [k]
0	1	2	3	4	5
Measurement of smoke densities released by burning cables under defined conditions	temperature conditioning	Climate Chamber / Atlas SC600MH / 58566104960010	24201-11.22/ METROMAT (LE 008)	0,8 °C	2
	length	Measuring tape / 710P/ MTM197987	23147-11-22 / METROMAT (LE 008)	0,2 mm	2
	Diameter	digital caliper serial no GF10595	07218-03.23 / METROMAT (LE 008)	0,02 mm	2
	temperature	Electronic Thermohygrometer / HTC-2 / M200544	23884-11-22 / METROMAT (LE 008)	0,3 °C 2,2 %	2
	Absorbance (Am)	Equipment for measuring the density of smoke emitted when burning cables	04.03 -357/2022 04.11.2022 INM (CIPM MRA)	0,5% (U_{Am})	2
	Transmittance (I_t)			0,5% (U_{It})	
	Transmittance (I_t)	COMPOSED UNCERTAINTY		0.524 %	2
	Absorbance (Am)			0.0025 d.o.	2

NOTE:
The assigned uncertainty is the extended uncertainty obtained by multiplying the standard uncertainty by the expansion factor k = 2 and has been estimated in accordance with SR ISO/IEC Guide 98-3:2010.
The value of the measurand is within the designated range of values with a probability of 95.45%.

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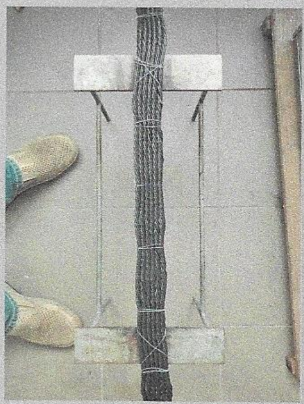

Figure 1 – LEM3306-08 cable bundles before burning

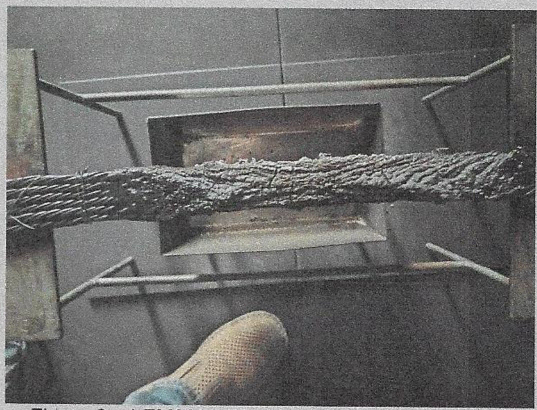

Figure 2 – LEM3306-08 cable bundles after burning

Figure 3 - LEM**3306-08** (Black cable) – Transmittance

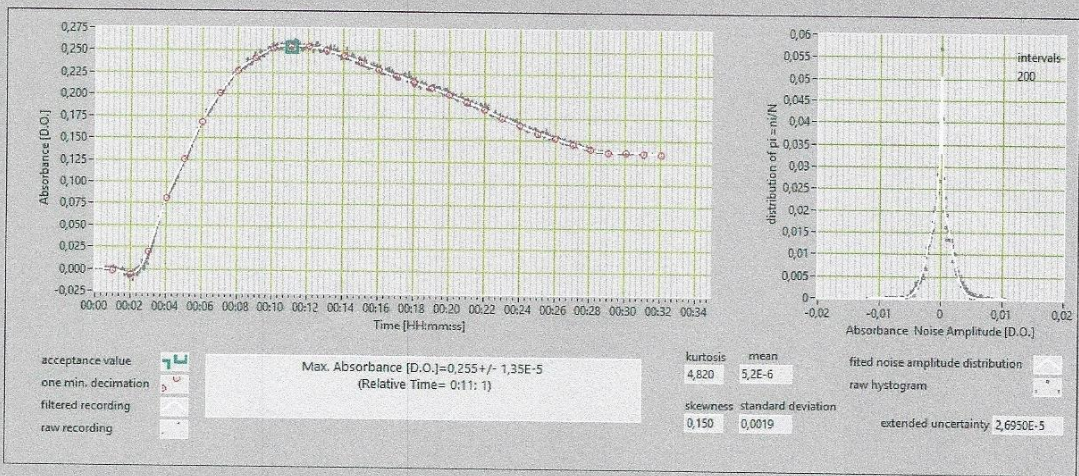

Figure 4 - LEM**3306-08** (Black cable) – Absorbance

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Table 1- LEM3408-05 (Red cable) – Transmittance/Absorbance

Time [HH:mm] - one min. decimation -	Transmittance [%] - one min. decimation -	Absorbance [D.O.] - one min. decimation -
00:01	100,271	-0,001
00:02	101,264	-0,006
00:03	95,507	0,020
00:04	83,049	0,081
00:05	74,973	0,125
00:06	67,857	0,168
00:07	62,902	0,201
00:08	59,336	0,227
00:09	57,361	0,241
00:10	55,936	0,252
00:11	**55,566**	**0,255**
00:12	55,672	0,254
00:13	56,141	0,251
00:14	56,925	0,245
00:15	57,913	0,237
00:16	58,981	0,229
00:17	59,89	0,223
00:18	60,894	0,215
00:19	61,811	0,209
00:20	62,911	0,201
00:21	64,192	0,193
00:22	65,379	0,185
00:23	66,845	0,175
00:24	68,187	0,166
00:25	69,43	0,158
00:26	70,437	0,152
00:27	71,455	0,146
00:28	72,411	0,140
00:29	72,97	0,137
00:30	73,071	0,136
00:31	73,094	0,136
00:32	73,28	0,135

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Clause from ND	Requirement according to IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019	Results	Requirement fulfilling

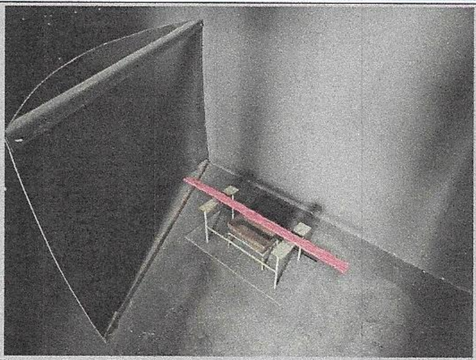

Figure 5 – LEM3408-05 cable bundles before burning

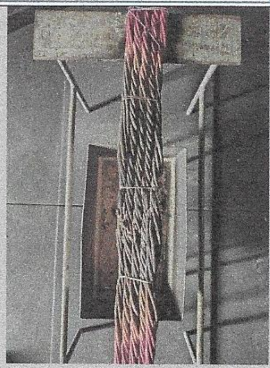

Figure 6 – LEM3408-05 cable bundles after burning

Figure 7- LEM3408-05 (Red cable) – Transmittance

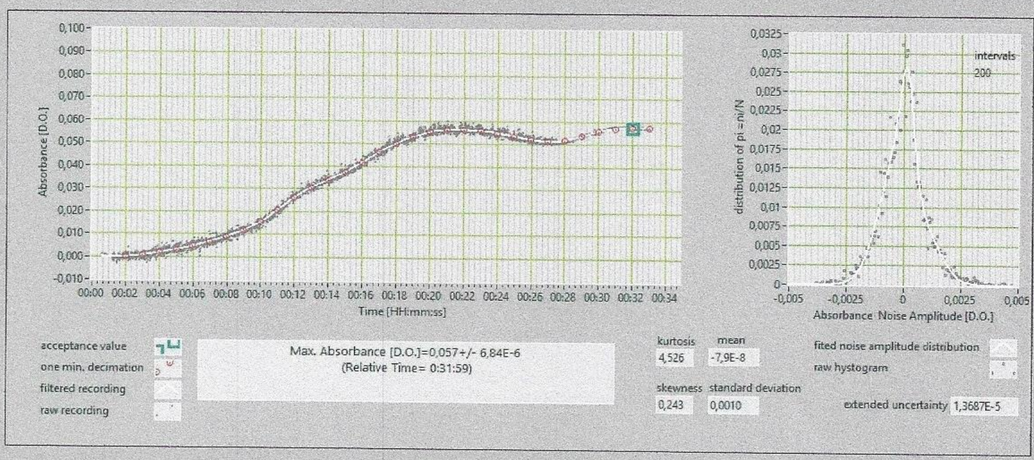

Figure 8- LEM3408-05 (Red cable) – Absorbance

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Clause from ND	Requirement according to IEC 61034-2: 2005 + AMD 1: 2013 + AMD 2: 2019	Results	Requirement fulfilling

Table 2 - LEM3408-05 (Red cable) – Transmittance/Absorbance

Time [HH:mm] - one min. decimation -	Transmittance [%] - one min. decimation -	Absorbance [D.O.] - one min. decimation -
00:01	100,01	0,000
00:02	99,85	0,001
00:03	99,60	0,002
00:04	99,29	0,003
00:05	98,95	0,005
00:06	98,51	0,007
00:07	97,98	0,009
00:08	97,37	0,012
00:09	96,54	0,015
00:10	95,38	0,021
00:11	94,19	0,026
00:12	93,21	0,031
00:13	92,48	0,034
00:14	91,75	0,037
00:15	90,85	0,042
00:16	89,90	0,046
00:17	89,13	0,050
00:18	88,50	0,053
00:19	88,06	0,055
00:20	87,88	0,056
00:21	87,86	0,056
00:22	87,95	0,056
00:23	88,15	0,055
00:24	88,40	0,054
00:25	88,70	0,052
00:26	88,88	0,051
00:27	88,77	0,052
00:28	88,39	0,054
00:29	87,94	0,056
00:30	87,67	0,057
00:31	**87,61**	**0,057**
00:32	87,62	0,057

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