SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11418

Date of issue: *October 29, 2025*

Status: FINAL REPORT

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ISO 3746

SOUND POWER LEVELS AND SOUND ENERGY LEVELS OF NOISE SOURCES - SURVEY METHOD USING AN ENVELOPING MEASUREMENT SURFACE OVER A REFLECTING PLANE

Program: SQ-7508.V4

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Prepared by:	Reviewed by:	Approved by:
cn=BERENICE C. FERREL, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=tech@ptsouthquality.com, c=AR 2025.10.29 16:20:01 -03'00'	cn=ESTHER CASAS, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=ecasas@ptsouthquality.com, c=AR 2025.10.31 14:45:11 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2025.11.03 17:35:37 -03'00'
Berenice Ferrel Assistant Technician	**Lic. Esther Casas** Physics expert	**Eng. Emiliano Medina** Quality Assurance Lead

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1. FOREWORD

This report summarizes the results of the **SQ-7508.V4** proficiency testing program on the determination of the sound power level of a noise source. This program is carried out under a Bilateral format, according to 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:	Lic. Esther Casas
Assistant Technicians:	Berenice Ferrel
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine of the sound power level of a noise source from sound pressure levels measured on a surface enveloping the noise source, using the following standard:

Standard
ISO 3746: 2010

To verify this, batches of electric drills have been selected.

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

4. PARTICIPANT

Company:	**LABOR S.A.**
Laboratory:	**LABOR S.A.**
Country:	Greece
Client ID:	E474
Contact person:	Ilias Kantas Laboratory Manager ilias.kantas@labor.gr

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 Guide 35: 2017, clause 7.4.1.2. Stratified random sampling was employed, and samples were chosen using random number generation software.

The results of this test are presented below:

Size of each batch: **30 units** Tested samples from each batch: **6 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LAU3141	BATCH: LAU3142	BATCH: LAU3143
LwA	YES	YES	NO

Samples for this program are taken from selected batch identified as **LAU3142.**

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

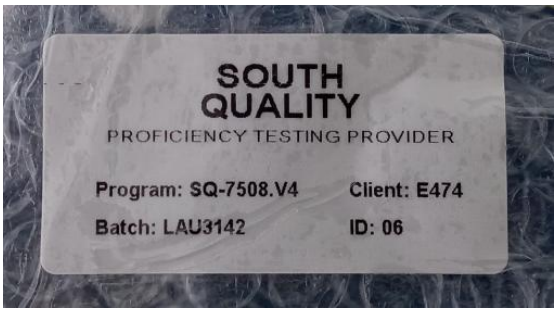
The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following sample was sent for testing:

Batch:	LAU 3142
Sample ID:	06
Characteristics:	Electric drill 220-240 V - 50/60Hz - 420W - 4200 r/min Trademark: Dong Cheng Model: DJZ03-6

7. IMAGES

SAMPLE
 

8. ASSIGNED VALUES

BATCH	LwA	
	(dB)	SD
LAU3142	90.3	0.26

9. PARTICIPANT RESULTS (SEE APPENDIX B)

CODE	LwA (dB)
LAU3142-06	90.6

10. STATISTICS

The results must be treated as quantitative.

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 ***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	LwA (dB)		| z score |	PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE		
LAU3142	90.6	90.3	**1.2**	**SATISFACTORY**

12. CONCLUSIONS

The overall performance on this **SQ-7508.V4** program from the participant laboratory **LABOR S.A.**, is **SUFFICIENT** based on expected results.

The criteria used for the evaluation of the overall performance is the following:

- **SUFFICIENT** performance: No unsatisfactory/questionable result was obtained.
- **ALMOST SUFFICIENT** performance: A questionable result was obtained
- **INSUFFICIENT** performance: An unsatisfactory result was obtained.

APPENDIX A

INSTRUCTIONS

SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	Sound power levels and sound energy levels of noise sources - Survey method using an enveloping measurement surface over a reflecting plane
CODE:	SQ-7508
VERSION:	4
STANDARD:	ISO 3746
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-7508.V4 1 de 3

1 - **General**

This document serves as a guide for managing the results of the **SQ-7508.V4** program.

2 - **Standard**

ISO 3746: 2010

3 - **Tests involved**

TEST
Determination of the sound power level of a noise source from sound pressure levels measured on a surface enveloping the noise source (LwA)

4 - **Samples**

CODE	SAMPLE	QUANTITY
LAU3142-06	Electric drill - 220-240 V - 50/60Hz - 420W - 4200 r/min Trademark: Dong Cheng Model: DJZ03-6	1

5 - **Notes**

a) Being a bilateral program, there is no deadline for submitting results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to ISO 3746.
d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) 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 #0685.012.3.01)

Labor s.a.

TEST REPORT
ISO 3746
Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane

Report Number :	0685.012.3.01
Date of issue :	07/10/2025
Total number of pages :	11
Applicant's name :	Labor S.A.
Address :	Ethikis Antistaseos 84, Pallini 15351, Greece
Test specification:	
Standard(s) :	ISO 3746:2010
Test procedure :	As above mentioned standard
Non-standard test method :	NA
Test Report Form No :	TRF ISO 3746 V1.0
Test Report Form(s) Originator :	Labor S.A.
Master TRF :	25/09/2025
Test item description :	Electric drill
Trade Mark :	Dong Cheng
Manufacturer :	Dong Cheng
Model/Type reference :	DJZ03-6

Tested by (name + signature) :	**Approved by (name + signature) :**
ΜΑΡΚΟΥΛΗΣ ΒΑΓΓΕΛΗΣ ΗΛΕΚΤΡΟΝΙΚΟΣ ΜΗΧΑΝΙΚΟΣ	ILIAS KANTAS MECHANICAL ENGINEER NTUA LAB MANAGER

LABOR S.A. 84, ETHNIKIS ANTISTASEOS STR. – 15351 PALLINI – GREECE
TEL.: +30-210-60.33.377 – FAX: +30-210-60.33.378 e-mail: labor@labor.gr, website: www.labor.gr

Testing procedure and testing location:	
Testing Laboratory ..... :	LABOR S.A.
Testing location/ address ..... :	84 ETHNIKIS ANTISTASEOS STR 15351 PALLINI
Associated Testing Laboratory ..... :	NA
Testing location/ address ..... :	NA

List of Attachments (including a total number of pages in each attachment):
Schematic of the measurement area (1)
Photo Documentation (3)

Summary of testing:

LwA =91dB

Tests performed (name of test and test clause):	**Testing location:** LABOR S.A. 84 ETHNIKIS ANTISTASEOS STR 15351 PALLINI

Summary of compliance with National Differences: --

Copy of marking plate:

The artworks below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Test item particulars:

..... : Sample Tested: LAU3142-06

Possible test case verdicts:

- test case does not apply to the test object ..... : NA (Not Applicable)
- test object does meet the requirement ..... : P (Pass)
- test object is not tested the requirement ..... : NT (Not Tested)
- test object does not meet the requirement ..... : F (Fail)

Testing:

Date of receipt of test item ..... : 23/09/2025

Date (s) of performance of tests ..... : 01/10/2025

General remarks:

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

This test report does not entitle to carry or approval any safety mark on this or similar(s) products.

General product information:

Electric drill - 220-240 V - 50/*60Hz - 420W - 4200 r/min*

1. INSTRUMENTATION

Measurement Equipment	Model.	Serial No.
Sound level meter	NTI XL2-TA	A2A-16422-E0
Microphone	NTI M 4260	8466
Calibrator	NTI/Larson Davis	16760

2. TECHNICAL DATA

Description of test objects (According to manufacturer data):
Electric Drill
Rated Power Input: 420W
No-load Speed: 0-4200r/min
Max. Drilling Capacity:
Steel: 6.5mm
Wood:15mm
Net Weight:1.0kg

3. TEST ENVIRONMENT

Description and dimensions: Open Air, Free Field Acoustic Measurements. (See Diagram 1)
Environmental correction K2 : 0 dB

4. ATMOSPHERIC CONDITIONS

Air temperature	21°C
Barometric pressure	100.0 kPa
Relative humidity	51%
Wind velocity	<4m/sec

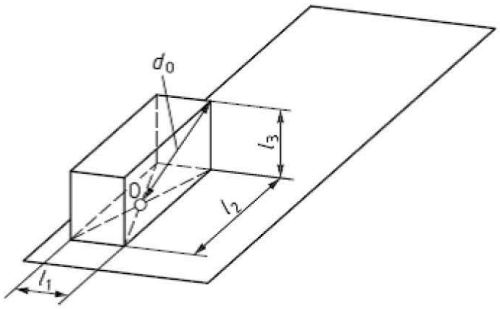
5. BACKGROUND NOISE

Background sound level	< 62 dB(A)
Background noise correction K1	0 dB

6. INSTALLATION AND OPERATING CONDITIONS

The DUT was placed 1m above ground, asphalt covered, in free field environment (no objects or obstacles) on radius >10m. Extreme care was taken for the secure mounting of the DUT in order to suppressed any unwanted oscillation. The DUT is supplied using one AC outlet 230V AC / 50Hz.

7. REFERENCE BOX CALCULATIONS

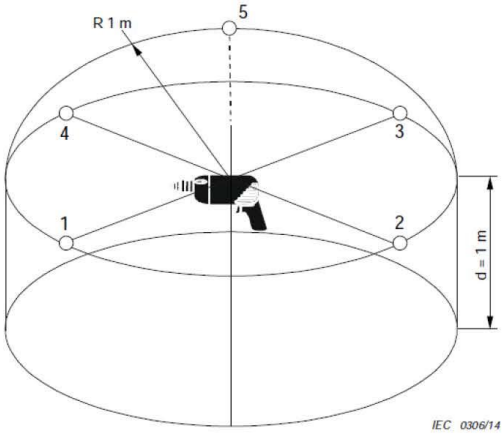


$$d_O = \sqrt{(l_1/2)^2 + (l_2/2)^2 + l_3^2}$$

do was set to 1m due to particular test requirements and it is fully compatible with ISO 3746:2010

8. MEASUREMENT SURFACE AND MICROPHONE POSITIONS

5 microphone positions were located on the hemispherical measurement surface according to EN IEC 62841-1:2014, with radius r = 1 m, according to the Figure below.



9. TEST RESULTS

9.1 Test Results

Microphone position	Sound pressure level [dB(A)]	Surface avg. L'_p
1	79,5	79.6dB(A)
2	79,7	
3	80,4	
4	79,3	
5	79,0	

Measurement radius r = 1m Measuring surface area, S = 4πm^2

Condition	Surface average L'_p [dB]	Correction K_1	Correction K_2	Surface sound pressure level L_{pA} [dB]	Sound power level L_{WA} [dB]
Normal Load	79.6	0	0	79.6	90.6

$$\overline{L_{pA,1m}} = 10\lg\left[\frac{1}{5}\sum_{i=1}^{5} 10^{0,1L'_{pA,i}}\right] - K_{1A} - K_{2A}$$

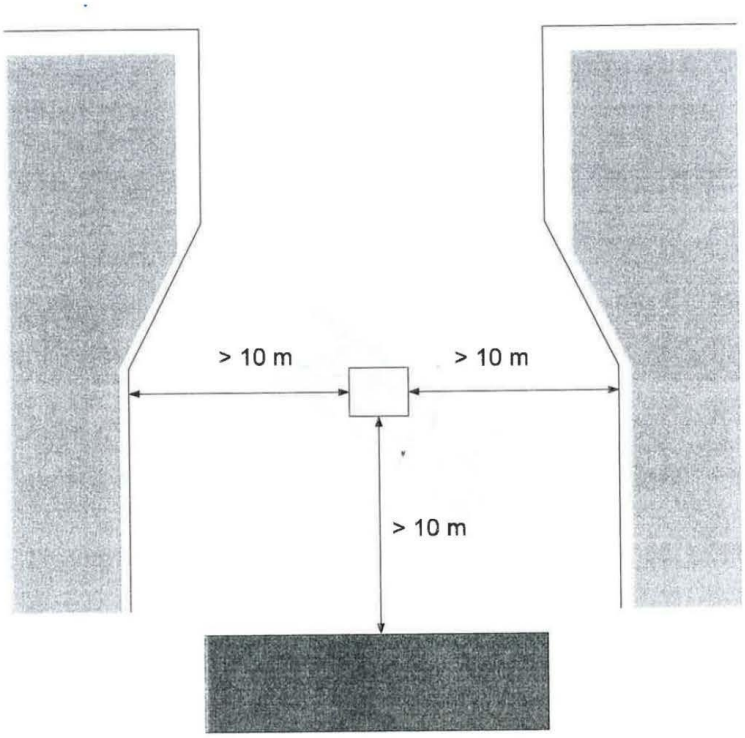
$$L_{WA} = \overline{L_{pA,1m}} + 10\lg\left(\frac{S}{S_0}\right), \text{ in dB}$$

$$S = 4\pi\,\text{m}^2$$

$$L_{WA} = \overline{L_{pA,1m}} + 11, \text{ in dB}$$

Annex 1

DIAGRAM 1 Schematic of the measurement area



	Soil
	Asphalt without barriers
	Building

PHOTO DOCUMENTATION
DIFFERENT VIEWS OF DUT

Image 1

Image 2

Image 3

Image 4

Image 5

----- END OF REPORT -----