



Calibration Laboratory
SVANTEK
04-872 Warsaw, ul. Strzygłowska 81
POLAND

Calibration laboratory accredited by
Polish Center for Accreditation, a signatory to EA MLA and ILAC MRA
that include recognition of calibration certificates
Accreditation No AP 146



AP 146



CALIBRATION CERTIFICATE

Date of issue: 6th September, 2024**Certificate No:** 00099997/02/2024**Page:** 1/6**OBJECT OF
CALIBRATION**

Sound level meter type SV 971A, number 001001, manufacturer SVANTEK
with preamplifier type SV 18A, number 002002, manufacturer SVANTEK
and microphone type 7152, number 003003, manufacturer ACO.

APPLICANT

SVANTEK

**CALIBRATION
METHOD**

Method described in instruction IN-02 "Calibration of the sound level meter",
issue number 15 date 23.08.2019, written on the basis of international standard
EN IEC 61672-3:2013 Electroacoustics. Part 3: Periodic tests.

**ENVIRONMENTAL
CONDITIONS**

Temperature: $(22,7 \pm 23,0) ^\circ\text{C}$
Ambient pressure: $(100,4 \pm 100,5) \text{ kPa}$
Relative humidity: $(50 \pm 53) \%$

**DATE OF
CALIBRATION**16th September, 2024**TRACEABILITY**

This certificate is issued under the agreement EA MLA in the field of calibration
and provides traceability of measurement results to the standards maintained in
the Central Office of Measures.
SVANTEK Laboratory uses guidance documents to clarify the requirements in
EN ISO/IEC 17025 "General requirements for the competence of testing and
calibration laboratories", where this is considered to be necessary.

**CALIBRATION
RESULTS**

The results apply only to the calibrated object and are presented on pages 2 ÷ 6
of this certificate including measurement uncertainty.

**UNCERTAINTY OF
MEASUREMENTS**

Uncertainty of measurement has been evaluated in compliance with
EA-4/02 M:2022. The expanded uncertainty assigned corresponds to a coverage
probability of 95 % and the coverage factor $k = 2$.

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CONFORMITY WITH REQUIREMENTS

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specification of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 or corrections data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

CALIBRATION RESULTS

Calibration results are the following:

1. Indication at the calibration check frequency

The sound level meter was calibrated in compliance with the instruction manual. During this process, the indication of this SLM was adjusted to the sound pressure level of the sound level calibrator type SV 30A, No 7921, from SVANTEK. The sound pressure level was corrected by the free-field factor.

Deviation of the acoustic pressure measurement of the A-weighted sound level using the sound calibrator type SV 30A, No 7921, from SVANTEK, was made according to the standard reference conditions: for static pressure 101,325 kPa, for temperature 23 °C and for relative humidity 50 %, results:

(0,0 ± 0,2) dB

The deviation was determined as a difference between the measured sound level and the sound level corrected by the free-field factor appropriate to mentioned sound calibrator.

2. Self-generated noise with microphone installed

Frequency weighting	A
The highest level of self-generated noise stated in the instruction manual [dB]	17,0
Indication [dB]	15,4

3. Self-generated noise with microphone replaced by the electrical input signal device

Frequency weighting	A	C	Z
The highest expected level of self-generated noise stated in the instruction manual [dB]	12,0	12,0	20,0
Level of self-generated noise [dB]	9,8	9,0	14,8

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4. Acoustical signal tests of a frequency weighting C

Frequency	Relative frequency-weighted free-field response	Design-goal frequency weighting	The deviation of frequency weighting	Extended uncertainty	Acceptable limits
Hz	dB	dB	dB	dB	dB
125	-0,1	-0,2	0,1	0,3	±1,0
1000	0,0	0,0	0,0	0,3	±0,7
8000	-4,1	-3,0	-1,1	0,4	-2,5; +1,5

5. Electrical signal tests of frequency weightings

Frequency	Design-goal frequency weighting			The deviation of frequency weighting			Extended uncertainty	Acceptable limits
	A	C	Z	A	C	Z		
Hz	dB	dB	dB	dB	dB	dB	dB	dB
63	-26,2	-0,8	0,0	0,2	0,2	0,2	0,3	±1,0
125	-16,1	-0,2	0,0	0,1	0,1	0,1	0,3	±1,0
250	-8,6	0,0	0,0	0,0	0,0	0,0	0,3	±1,0
500	-3,2	0,0	0,0	0,0	0,1	0,0	0,3	±1,0
1000	0,0	0,0	0,0	0,0	0,0	0,0	0,3	±0,7
2000	1,2	-0,2	0,0	0,3	0,4	0,3	0,3	±1,0
4000	1,0	-0,8	0,0	-0,3	-0,3	-0,4	0,3	±1,0
8000	-1,1	-3,0	0,0	-1,0	-1,0	-1,2	0,4	-2,5; +1,5
16000	-6,6	-8,5	0,0	-2,9	-2,9	-2,7	0,6	-16,0; +2,5

6. Frequency and time weightings at 1 kHz

	Sound level				Time-averaged sound level
Frequency weighting	A	A	C	Z	A
Time weighting	Fast	Slow	Fast	Fast	-
Indication [dB]	114,0	114,0	114,0	114,0	114,0
The deviation of indication from the indication of A-weighted sound level with Fast time weighting [dB]		0,0	0,0	0,0	0,0
Extended uncertainty [dB]		0,1			
Acceptable limits [dB]		±0,1	±0,2	±0,2	±0,1

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7. Level linearity on the reference level range

Range: „NORMAL”

Expected sound level	Indication	Level linearity error	Extended uncertainty	Acceptable limits
dB	dB	dB	dB	dB
136,0	136,0	0,0	0,2	±0,8
135,0	135,0	0,0		
134,0	134,0	0,0		
133,0	133,0	0,0		
132,0	132,0	0,0		
129,0	129,0	0,0		
124,0	124,0	0,0		
119,0	119,0	0,0		
114,0	114,0	0,0		
109,0	109,0	0,0		
104,0	104,0	0,0		
99,0	99,0	0,0		
94,0	94,0	0,0		
89,0	89,0	0,0		
84,0	84,0	0,0		
79,0	79,0	0,0		
74,0	74,0	0,0		
69,0	69,0	0,0		
64,0	64,0	0,0		
59,0	59,0	0,0		
54,0	54,0	0,0		
49,0	49,0	0,0		
44,0	44,0	0,0		
39,0	39,0	0,0		
34,0	34,0	0,0		
30,0	29,9	-0,1	0,3	
29,0	29,1	0,1		
28,0	28,0	0,0		
27,0	26,8	-0,2		

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8. Level linearity including the level range control

Level range	NORMAL	LOW
Indication for the reference sound pressure level [dB]	114,0	114,0
The deviation of indication [dB]		0,0
Anticipated level that is 5 dB more than the lower limit specified in the instruction manual for level range at 1 kHz [dB]	32,0	29,0
Indication [dB]	32,0	29,0
The deviation of indication [dB]	0,0	0,0
Extended uncertainty [dB]	0,1	
Acceptable limits [dB]	±0,8	

9. Toneburst response

Measurement quantity	Time weighting	Toneburst duration	The indications in response to toneburst relative to the steady sound level	Reference toneburst response relative to the steady sound level	The deviations of the measured toneburst in responses from the corresponding reference toneburst	Extended uncertainty	Acceptable limits
		ms	dB	dB	dB	dB	dB
Time-weighted sound level	Fast	200	-1,0	-1,0	0,0	0,3	±0,5
		2	-18,0	-18,0	0,0		-1,5; +1,0
		0,25	-27,1	-27,0	-0,1		-3,0; +1,0
Time-weighted sound level	Slow	200	-7,5	-7,4	-0,1		±0,5
		2	-27,1	-27,0	-0,1		-1,5; +1,0
Sound exposure level	-	200	-7,0	-7,0	0,0		±0,5
		2	-27,0	-27,0	0,0		-1,5; +1,0
		0,25	-36,1	-36,0	-0,1		-3,0; +1,0

10. Peak C sound level

Numbers of cycles in test signal	Frequency of test signal	The deviation of indication	Extended uncertainty	Acceptable limits
	Hz	dB	dB	dB
One	8000	-0,4	0,2	±2,0
Positive half-cycle	500	-0,2		±1,0
Negative half-cycle	500	-0,2		

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11. Overload indication

Frequency weighting A

The difference between the levels of the positive and negative one-half-cycles input signals that first cause the displays of overload indication	Extended uncertainty	Maximum value of the difference
dB	dB	dB
0,1	0,3	1,5

12. High-level stability

A-weighted sound level indicated in response to a steady 1 kHz electrical signal		The difference between the initial and final indications	Extended uncertainty	Acceptable limits
at the beginning of a 5 min period of continuous exposure to the signal	at the end of a 5 min period of continuous exposure to the signal			
dB	dB	dB	dB	dB
136,0	136,0	0,0	0,1	±0,1

13. Long-term stability

A-weighted sound level indicated in response to steady 1 kHz electrical signal		The difference between the initial and final indications	Extended uncertainty	Acceptable limits
at the beginning of a period of operation	at the end of a period of operation			
dB	dB	dB	dB	dB
114,0	114,0	0,0	0,1	±0,1

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