

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 01 October 2015 Certificate N° 08674



AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk

Page 1 of 3 Pages

Approved Signatory

G. Parry [] B. Baker []

Acoustics Noise and Vibration Ltd trading as AV Calibration

CLIENT Peak Acoustics Ltd
Fernbank House
Springwood Way
Macclesfield
Cheshire
SK10 2XA

F.A.O. Tom Brown

ORDER No - Job No UKAS15/09261/01

DATE OF RECEIPT 22 September 2015

PROCEDURE AV Calibration Engineer's Handbook, section 25: periodic testing of sound level meters to IEC 61672-3:2006 (BS EN 61672-3:2006) as modified by UKAS TPS 49 Edition 2: June 2009

IDENTIFICATION Sound level meter Svantek type SVAN 971 serial No 40305 connected via a preamplifier type SV 18 serial No 41651 to a half-inch microphone type ACO 7052E serial No 56663. Associated calibrator Svantek type SV 31 serial No 32507 with a half-inch housing.

CALIBRATED ON 01 October 2015

PREVIOUS CALIBRATION None known

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

Certificate N° 08674

Page 2 of 3 Pages

The sound level meter was set up using the type SV 31 sound calibrator supplied; it was set to frequency weighting A, and initially read 112.7 dB. It was then adjusted to read 114.2 dB (corresponding to 114.1 dB at standard atmospheric pressure). This reading was derived from Calibration Certificate no. 08660 supplied by this laboratory and manufacturers' information on the free-field response of the sound level meter (see note 1). The calibration check frequency was 1kHz, and the resulting calibration factor calculated and stored by the meter was 1.78 dB.

Procedures from IEC 61672-3:2006 (BS EN 61672-3:2006) as modified by UKAS TPS 49 Edition 2: June 2009 were used to perform the periodic tests.

RESULTS

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006 (BS EN 61672-3:2006), 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 requirements of IEC 61672-1 : 2002 (BS EN 61672-1 : 2003) because 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 requirements in IEC 61672-1 : 2002 (BS EN 61672-1 : 2003) and because the periodic tests of IEC 61672-3:2006 (BS EN 61672-3:2006) cover only a limited subset of the specifications in IEC 61672-1 : 2002 (BS EN 61672-1 : 2003).

The self-generated noise recorded with the microphone replaced by the electrical input device was:

13.9 dB (A) 13.9 dB (C) 18.9 dB (Z)

The measured A-, C- & Z-weighted self-generated noise exceed the maximum expected values published by the manufacturer.

The environmental conditions recorded at the start and end of testing were:

Start: 23 to 24 °C, 42 to 52 %RH and 102.5 to 102.6 kPa

End: 23 to 24 °C, 43 to 53 %RH and 102.4 to 102.5 kPa

Technical information including adjustment data specified in the manufacturers' User Manual dated December 2012, with Appendix C downloaded on 8 July 2015, has been used to carry out this verification. No information on the uncertainty of measurement, required by 11.7 of IEC 61672-3:2006 (BS EN 61672-3:2006), of the adjustment data given in the instruction manual or obtained from the manufacturer or supplier of the sound level meter was published in the instruction manual or made available by the manufacturer or supplier. The uncertainty of measurement of the adjustment data has therefore been assumed to be numerically zero for the purpose of this periodic test. If these uncertainties are not actually zero, there is a possibility that the frequency response of the sound level meter may not conform to the requirements of IEC 61672-1:2002 (BS EN 61672-1:2003).

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

No adjustment data for frequencies below 250 Hz have been published in the instruction manual or made available by the manufacturer of the sound level meter to account for the average effects of reflections from the case of the sound level meter and diffraction of sound around the microphone, as required by subclauses 11.4 and 12.6 of IEC 61672-3:2006. For these frequencies the average effects of reflections from the case of the sound level meter and diffraction of sound around the microphone have therefore been assumed to be numerically zero for the purposes of this periodic test. If these adjustment data are not actually zero, there is a possibility that the frequency response of the sound level meter may not conform to the requirements of IEC 61672-1:2002 (BS EN 61672-1:2003). For frequencies of 250 Hz and higher, typical data published by the manufacturer have been used.

cf

CERTIFICATE OF CALIBRATION

UKAS ACCREDITED CALIBRATION LABORATORY No 0653

Certificate N° 08674

Page 3 of 3 Pages

NOTES

Any opinions or interpretations which may be expressed in the following notes are not UKAS Accredited.

- 1 The stated level refers to the indicated A-weighted sound pressure level with the compensation filter set to Microph., not to the reading in calibration mode.
- 2 As specified by the manufacturers all acoustic tests were carried out with the microphone filter set to Microph., as was the test of self-generated noise; the remaining electrical tests were performed with the filter switched OFF. An additional electrical test was carried out, in which the effect of the filter was measured at octave intervals from 63Hz to 16kHz; the resulting frequency response was incorporated into the electrical signal tests of frequency weightings.
All sound measurements made using the sound level meter in the configuration specified on page 1 of this certificate should have the microphone filter set to Microph..
- 3 The instrument was running firmware version 1.08.3 & FS version 1.07
- 4 No suitable microphone frequency response information was supplied with the instrument. It was therefore measured by this laboratory using the electrostatic actuator method. This response in isolation is not UKAS accredited.
- 5 No publicly-available evidence has been found that the SvanTek SVAN 971 sound level meter design has successfully undergone pattern evaluation in accordance with IEC 61672-2:2002 (BS EN 61672-2:2003) by an independent testing organisation responsible for pattern approvals. It has therefore been tested as a Class 1 instrument in accordance with the manufacturer's claims.
- 6 All measurement data are held at AV Calibration for a period of at least six years.
- 7 The self-generated noise figures shown on page 2 were measured with the "Microph." compensation filter switched on. With all compensation filters switched off the readings were 8.4 dBA, 7.2 dBC and 12.5 dBZ, all of which are below the published maximum expected levels.
- 8 All tests were carried out with the "Dif. Field", "Windscreen" and "Outdoor" compensation filters turned off.

END