

APPENDIX 11-2

CALIBRATION CERTIFICATES



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 28 July 2017

Certificate Number: UCRT17/1627

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01903 642814

E-Mail: info@noise-and-vibration.co.uk

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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer
Grenke Ltd
Unit 5D
Fifth Floor
Co. Cork
Ireland

Order No. 1741

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00575785
Rion	Firmware		1.8
Rion	Pre Amplifier	NH-25	65812
Rion	Microphone	UC-59	11406
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received 27 July 2017

ANV Job No. UKAS17/07375

Date Calibrated 28 July 2017

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	Initial Calibration		

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CERTIFICATE OF CALIBRATION

Certificate Number

UCRT17/1627

UKAS Accredited Calibration Laboratory No. 0653

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52
SLM instruction manual ref / issue		11-03
SLM instruction manual source	Manufacturer	
Internet download date if applicable	N/A	
Case corrections available	Yes	
Uncertainties of case corrections	Yes	
Source of case data	Manufacturer	
Wind screen corrections available	Yes	
Uncertainties of wind screen corrections	Yes	
Source of wind screen data	Manufacturer	
Mic pressure to free field corrections	Yes	
Uncertainties of Mic to F.F. corrections	Yes	
Source of Mic to F.F. corrections	Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002	Yes	
Specified or equivalent Calibrator	Specified	
Customer or Lab Calibrator	Lab Calibrator	
Calibrator adaptor type if applicable	NC-74-002	
Calibrator cal. date	14 July 2017	
Calibrator cert. number	UCRT17/1591	
Calibrator cal cert issued by	0653	
Calibrator SPL @ STP	94.03	dB Calibration reference sound pressure level
Calibrator frequency	1001.93	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Wind Shield WS-10

Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	22.56	22.97	± 0.20 °C
Humidity	47.6	43.3	± 3.00 %RH
Ambient Pressure	99.76	99.75	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	93.9	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A	C	Z
	13.5	15.6	21.1
	dB	dB	dB
	UR	UR	UR

Uncertainty of the electrical self generated noise ± 0.12 dB

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

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: A Patel

R 1

Additional Comments

None



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 28 July 2017

Certificate Number: UCRT17/1624

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer Grenke Ltd
Unit 5D
Fifth Floor
Co. Cork
Ireland

Order No. 1741

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	00575802
	Rion	Firmware		1.8
	Rion	Pre Amplifier	NH-25	75829
	Rion	Microphone	UC-59	11426
	Rion	Calibrator	NC-74	34536109
		Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received 27 July 2017

ANV Job No. UKAS17/07375

Date Calibrated 28 July 2017

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	Initial Calibration		

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CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number

UCRT17/1624

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52
SLM instruction manual ref / issue		11-03
SLM instruction manual source	Manufacturer	
Internet download date if applicable	N/A	
Case corrections available	Yes	
Uncertainties of case corrections	Yes	
Source of case data	Manufacturer	
Wind screen corrections available	Yes	
Uncertainties of wind screen corrections	Yes	
Source of wind screen data	Manufacturer	
Mic pressure to free field corrections	Yes	
Uncertainties of Mic to F.F. corrections	Yes	
Source of Mic to F.F. corrections	Manufacturer	
Total expanded uncertainties within the requirements of IEC 61672-1:2002	Yes	
Specified or equivalent Calibrator	Specified	
Customer or Lab Calibrator	Lab Calibrator	
Calibrator adaptor type if applicable	NC-74-002	
Calibrator cal. date	14 July 2017	
Calibrator cert. number	UCRT17/1591	
Calibrator cal cert issued by	0653	
Calibrator SPL @ STP	94.03	dB Calibration reference sound pressure level
Calibrator frequency	1001.93	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Wind Shield WS-10

Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	21.72	22.23	± 0.20 °C
Humidity	51.2	47.3	± 3.00 %RH
Ambient Pressure	99.76	99.75	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	93.9	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB

Microphone replaced with electrical input device - UR = Under Range Indicated

Weighting	A	C	Z
	10.9	15.7	21.4
	dB	dB	dB
	UR	UR	UR

Uncertainty of the electrical self generated noise ± 0.12 dB

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

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: A Patel

R 1

Additional Comments

None



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 20 April 2018

Certificate Number: UCRT18/1440

Issued by:

ANV Measurement Systems

Beaufort Court

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Milton Keynes MK5 8HL

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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer **AWN Consulting Limited**
The Tecpro Building
Clonsillaugh Business and Technology Park
Dublin 17
Ireland
D17 NX50

Order No.

Description

Identification

Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00186669
Rion	Firmware		1.9
Rion	Pre Amplifier	NH-25	76819
Rion	Microphone	UC-59	12814
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class

1

Test Procedure

TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002

YES

Approval Number

21.21 / 13.02

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received

20 April 2018

ANV Job No.

UKAS18/04261

Date Calibrated

20 April 2018

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate

Dated

Certificate No.

Laboratory

Initial Calibration

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CERTIFICATE OF CALIBRATION

Certificate Number

UCRT18/1440

UKAS Accredited Calibration Laboratory No. 0653

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	Sound Level Meter	NL-42 / NL-52
SLM instruction manual ref / issue		11-03
SLM instruction manual source		Manufacturer
Internet download date if applicable		N/A
Case corrections available		Yes
Uncertainties of case corrections		Yes
Source of case data		Manufacturer
Wind screen corrections available		Yes
Uncertainties of wind screen corrections		Yes
Source of wind screen data		Manufacturer
Mic pressure to free field corrections		Yes
Uncertainties of Mic to F.F. corrections		Yes
Source of Mic to F.F. corrections		Manufacturer
Total expanded uncertainties within the requirements of IEC 61672-1:2002		Yes
Specified or equivalent Calibrator		Specified
Customer or Lab Calibrator		Lab Calibrator
Calibrator adaptor type if applicable		NC-74-002
Calibrator cal. date		05 April 2018
Calibrator cert. number		UCRT18/1348
Calibrator cal cert issued by		0653
Calibrator SPL @ STP	93.98	dB Calibration reference sound pressure level
Calibrator frequency	1001.90	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15
 Note - if a pre-amp extension cable is listed then it was used between the SLM and the pre-amp.

Environmental conditions during tests	Start	End	
Temperature	23.35	23.84	± 0.30 °C
Humidity	38.4	35.6	± 3.00 %RH
Ambient Pressure	101.37	101.36	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.0	dB	Adjusted indicated level	94.0	dB
The uncertainty of the associated calibrator supplied with the sound level meter ±				0.10	dB

Self Generated Noise This test is currently not performed by this Lab.

Microphone installed (if requested by customer) = Less Than	N/A	dB	A Weighting
Uncertainty of the microphone installed self generated noise ±	N/A	dB	

Microphone replaced with electrical input device - UR = Under Range indicated

Weighting	A	C	Z
	11.6	15.5	21.4
	dB	dB	dB
	UR	UR	UR

Uncertainty of the electrical self generated noise ± 0.12 dB

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

For the test of the frequency weightings as per paragraph 12. of IEC 61672-3:2006 the actual microphone free field response was used.

The acoustical frequency tests of a frequency weighting as per paragraph 11 of IEC 61672-3:2006 were carried out using an electrostatic actuator.

END

Calibrated by: A Patel

R 1

Additional Comments

None



CERTIFICATE OF CALIBRATION



0853

Date of Issue: 28 July 2017

Certificate Number: UCRT17/1627

Issued by:

ANV Measurement Systems
Beaufort Court
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Page 1 of 2 Pages
Approved Signatory K. Mistry

Customer
Grenke Ltd
Unit 5D
Fifth Floor
Co. Cork
Ireland

Order No.	1741		
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator		
Identification	<i>Manufacturer</i>	<i>Instrument</i>	<i>Type</i>
	Rion	Sound Level Meter	NL-52
	Rion	Firmware	1.8
	Rion	Pre Amplifier	NH-25
	Rion	Microphone	UC-59
	Rion	Calibrator	NC-74
		Calibrator adaptor type if applicable	NC-74-002
Performance Class	1		
Test Procedure	TP 2.SLM 61672-3 TPS-49		
	<i>Procedures from IEC 61672-3:2006 were used to perform the periodic tests.</i>		
Type Approved to IEC 61672-1:2002	YES	Approval Number	21.21 / 13.02
	<i>If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003</i>		
Date Received	27 July 2017	ANV Job No.	UKAS17/07375
Date Calibrated	28 July 2017		

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	<i>Dated</i>	<i>Certificate No.</i>	<i>Laboratory</i>
	Initial Calibration		

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