
APPENDIX 12.1 – CALIBRATION CERTIFCATES

HMP 57 SLM



CERTIFICATE OF CALIBRATION

Date of Issue: 24 August 2020

Certificate Number: TCRT20/1478

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages
Approved Signatory

B. Bogdan

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer
Hayes McKenzie Partnership Ltd
Unit 3
Oakridge Office Park
Whaddon
Salisbury
SP5 3HT

Order No. 1001/205
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

Manufacturer	Instrument	Type	Serial No. / Version
Rion	Sound Level Meter	NL-52	00921232
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	21274
Rion	Microphone	UC-59	04267
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

Type Approved to IEC 61672-1:2002 YES *Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*

Approval Number 21.21 / 13.02

Date Received 20 August 2020

Date Calibrated 24 August 2020

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

ANV Job No. TRAC20/08277

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
	13 July 2018	TCRT18/1603	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1478

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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	19 August 2020	
Calibrator cert. number	UCRT20/1789	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	94.02	dB Calibration reference sound pressure level
Calibrator frequency	1001.89	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	23.47	23.59	± 0.30 °C
Humidity	59.1	58.8	± 3.00 %RH
Ambient Pressure	100.46	100.46	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	93.6	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
	12.9	17.2	22.4
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Giles

R 1

Additional Comments

None



CERTIFICATE OF CALIBRATION

Date of Issue: 17 March 2021

Certificate Number: TCRT21/1185

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages
Approved Signatory

B. Giles

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury SP5 3HT			
Order No.	1001/219			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	00810320 - HMP37
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	98923
	Rion	Microphone	UC-59	18638
	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 <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	16 March 2021	ANV Job No.	TRAC21/03108	
Date Calibrated	17 March 2021			

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>
	13 January 2020	TCRT20/1018	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT21/1185

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	11 February 2021		
Calibrator cert. number	UCRT21/1195		
Calibrator cal cert issued by	0653		
Calibrator SPL @ STP	94.00	dB	Calibration reference sound pressure level
Calibrator frequency	1002.00	Hz	Calibration check frequency
Reference level range	25 - 130	dB	
Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)			
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	23.65	23.84	± 0.30 °C
Humidity	37.5	37.7	± 3.00 %RH
Ambient Pressure	102.33	102.33	± 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
	10.7	15.8	22.2
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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 R 2

Calibrated by: B. Bogdan

Additional Comments

Prior to calibration the instrument's microphone and pre-amp were replaced and the meter was re-aligned.



CERTIFICATE OF CALIBRATION

Date of Issue: 24 March 2020

Certificate Number: TCRT20/1183

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

B. Bogdan

Customer Hayes McKenzie Partnership Ltd
Unit 3
Oakridge Office Park
Whaddon
Salisbury
SP5 3HT

Order No. 1001/200

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

Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	01032451
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	32479
	Rion	Microphone	UC-59	05842
	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 23 March 2020

ANV Job No. TRAC20/03111

Date Calibrated 24 March 2020

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
	27 February 2018	TCRT18/1187	ANV Measurement Systems

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CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1183

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	25 February 2020	
Calibrator cert. number	UCRT20/1226	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	93.99	dB Calibration reference sound pressure level
Calibrator frequency	1001.96	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	23.51	23.60	± 0.30 °C
Humidity	35.4	33.8	± 3.00 %RH
Ambient Pressure	101.46	101.44	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.6	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
	13.0	17.1	23.0
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Bogdan

Additional Comments

None

R 2



HMP54

CERTIFICATE OF CALIBRATION

Date of Issue: 19 June 2020

Certificate Number: TCRT20/1309

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 Hayes McKenzie Partnership Ltd
Unit 3
Oakridge Office Park
Whaddon
Salisbury
SP5 3HT

Order No. 1001/202

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

Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	01032450
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	32478
	Rion	Microphone	UC-59	16933
	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 16 June 2020

ANV Job No. TRAC20/06176

Date Calibrated 19 June 2020

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
	06 February 2020	TCRT20/1076	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1309

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	Manufacturér	
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	11 June 2020	
Calibrator cert. number	UCRT20/1487	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	94.00	dB Calibration reference sound pressure level
Calibrator frequency	1001.96	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	22.62	22.58	± 0.30 °C
Humidity	54.3	53.5	± 3.00 %RH
Ambient Pressure	100.35	100.35	± 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
	11.3	15.8	21.2
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Giles

R 3

Additional Comments

Prior to calibration the instrument's microphone was replaced and the meter was re-aligned.



CERTIFICATE OF CALIBRATION

Date of Issue: 22 October 2020

Certificate Number: TCRT20/1628

Issued by:
ANV Measurement Systems
Beaufort Court
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Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages
Approved Signatory

B. Giles

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer Hayes McKenzie Partnership Ltd
Unit 3, Oakridge Office Park
Whaddon
Salisbury
SP5 3HT

Order No.	1001/208			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	<i>Manufacturer</i>	<i>Instrument</i>	<i>Type</i>	<i>Serial No. / Version</i>
	Rion	Sound Level Meter	NL-52	00620893
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	76939
	Rion	Microphone	UC-59	03786
	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 21 October 2020

ANV Job No. TRAC20/10358

Date Calibrated 22 October 2020

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>
	10 October 2018	TCRT18/1828	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1628

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	22 September 2020	
Calibrator cert. number	UCRT20/1900	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	94.02	dB Calibration reference sound pressure level
Calibrator frequency	1001.91	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	24.06	24.02	± 0.30 °C
Humidity	49.1	49.2	± 3.00 %RH
Ambient Pressure	99.77	99.78	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.1	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
	13.1	18.0	22.7
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: C. Hirlav

R 3

Additional Comments

None

HMP52 SLM



CERTIFICATE OF CALIBRATION

Date of Issue: 23 January 2020

Certificate Number: TCRT20/1044

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
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Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages
Approved Signatory

B. Giles

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury Wiltshire SP5 3HT			
Order No.	1001/197			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	<i>Manufacturer</i>	<i>Instrument</i>	<i>Type</i>	<i>Serial No. / Version</i>
	Rion	Sound Level Meter	NL-52	01032422
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	32450
	Rion	Microphone	UC-59	16453
	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 <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	22 January 2020	ANV Job No.	TRAC20/01032	
Date Calibrated	23 January 2020			

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>
	29 January 2018	TCRT18/1085	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1044

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	21 January 2020	
Calibrator cert. number	UCRT20/1082	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	93.98	dB Calibration reference sound pressure level
Calibrator frequency	1001.97	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	23.24	23.30	± 0.30 °C
Humidity	34.9	36.4	± 3.00 %RH
Ambient Pressure	102.01	101.95	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.1	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	
	10.7	15.2	20.1	dB 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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Bogdan

R 2

Additional Comments

Prior to calibration the instrument's microphone was replaced and the meter was re-aligned.



CERTIFICATE OF CALIBRATION

Date of Issue: 09 September 2021

Certificate Number: TCRT21/1604

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

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

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury Wiltshire SP5 3HT			
Order No.	1001/230			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	<i>Manufacturer</i>	<i>Instrument</i>	<i>Type</i>	<i>Serial No. / Version</i>
	Rion	Sound Level Meter	NL-52	00231707 (HMP48)
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	21655
	Rion	Microphone	UC-59	04776
	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 <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	03 September 2021	ANV Job No.	TRAC21/09354	
Date Calibrated	09 September 2021			

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>
	15 August 2019	TCRT19/1645	ANV Measurement Systems

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CERTIFICATE OF CALIBRATION



Certificate Number

TCRT21/1604

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	09 September 2021		
Calibrator cert. number	UCRT21/2099		
Calibrator cal cert issued by	ANV Measurement Systems		
Calibrator SPL @ STP	94.01	dB	Calibration reference sound pressure level
Calibrator frequency	1002.00	Hz	Calibration check frequency
Reference level range	25 - 130	dB	
Accessories used or corrected for during calibration - Extension Cable & 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	24.16	24.08	± 0.30 °C
Humidity	45.2	45.0	± 3.00 %RH
Ambient Pressure	99.66	99.64	± 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
	12.6	17.7	23.4
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Bogdan

Additional Comments

None

R 2

HMP 56 SLM



CERTIFICATE OF CALIBRATION

Date of Issue: 24 August 2020

Certificate Number: TCRT20/1475

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages
Approved Signatory

B. Bogdan

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury SP5 3HT		
Order No.	1001/205		
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator		
Identification	Manufacturer	Instrument	Type Serial No. / Version
	Rion	Sound Level Meter	NL-52 01032452
	Rion	Firmware	2.0
	Rion	Pre Amplifier	NH-25 32480
	Rion	Microphone	UC-59 05843
	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 <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	20 August 2020		
Date Calibrated	24 August 2020		
	ANV Job No.	TRAC20/08277	

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
	16 February 2018	TCRT18/1169	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1475

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	19 August 2020	
Calibrator cert. number	UCRT20/1789	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	94.02	dB Calibration reference sound pressure level
Calibrator frequency	1001.89	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	23.39	23.48	± 0.30 °C
Humidity	59.9	58.9	± 3.00 %RH
Ambient Pressure	100.53	100.51	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	95.8	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
	11.9	16.4	22.1
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Giles

Additional Comments

None

R 1



CERTIFICATE OF CALIBRATION

Date of Issue: 09 September 2021

Certificate Number: TCRT21/1604

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

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Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury Wiltshire SP5 3HT			
Order No.	1001/230			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	<i>Manufacturer</i>	<i>Instrument</i>	<i>Type</i>	<i>Serial No. / Version</i>
	Rion	Sound Level Meter	NL-52	00231707 (HMP48)
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	21655
	Rion	Microphone	UC-59	04776
	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 <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	03 September 2021	ANV Job No.	TRAC21/09354	
Date Calibrated	09 September 2021			

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>
	15 August 2019	TCRT19/1645	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION



Certificate Number

TCRT21/1604

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	09 September 2021	
Calibrator cert. number	UCRT21/2099	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	94.01	dB Calibration reference sound pressure level
Calibrator frequency	1002.00	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable & 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	24.16	24.08	± 0.30 °C
Humidity	45.2	45.0	± 3.00 %RH
Ambient Pressure	99.66	99.64	± 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
	12.6	17.7	23.4
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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: B. Bogdan

R 2

Additional Comments

None

HMP 53 SLM



CERTIFICATE OF CALIBRATION

Date of Issue: 23 January 2020

Certificate Number: TCRT20/1046

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

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

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages

Approved Signatory

B. Giles

Customer	Hayes McKenzie Partnership Ltd Unit 3 Oakridge Office Park Whaddon Salisbury Wiltshire SP5 3HT			
Order No.	1001/197			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NL-52	01032423
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	32451
	Rion	Microphone	UC-59	05798
	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 <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	22 January 2020	ANV Job No.	TRAC20/01032	
Date Calibrated	23 January 2020			

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>
	06 February 2018	TCRT18/1120	ANV Measurement Systems

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CERTIFICATE OF CALIBRATION



Certificate Number

TCRT20/1046

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	21 January 2020	
Calibrator cert. number	UCRT20/1082	
Calibrator cal cert issued by	ANV Measurement Systems	
Calibrator SPL @ STP	93.98	dB Calibration reference sound pressure level
Calibrator frequency	1001.97	Hz Calibration check frequency
Reference level range	25 - 130	dB

Accessories used or corrected for during calibration - Extension Cable (No Wind Shield)

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	23.50	23.34	± 0.30 °C
Humidity	36.6	35.9	± 3.00 %RH
Ambient Pressure	101.92	101.86	± 0.03 kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	94.3	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
	11.7	16.3	22.0
	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 the Guide to the Expression of Uncertainty in Measurement published by ISO.

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.Escalona

R 3

Additional Comments

None



CERTIFICATE OF CALIBRATION



0653

Date of Issue: 06 August 2021

Certificate Number: UCRT21/1967

Calibrated at & Certificate issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

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

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page 1 of 2 Pages
Approved Signatory
B. Giles

Customer Hayes McKenzie Partnership Ltd
Unit 3
Oakridge Office Park
Whaddon
Sailsbury
SP5 3HT

Order No. MDH Calibration

Test Procedure Procedure TP 1 Calibration of Sound Calibrators

Description Acoustic Calibrator

Identification	Manufacturer	Instrument	Model	Serial No.
	Brüel & Kjær	Calibrator	4231	3025352

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2003.

ANV Job No. UKAS21/08521

Date Received 05 August 2021

Date Calibrated 06 August 2021

Previous Certificate	Dated	28 July 2020
	Certificate No.	CDK2004728
	Laboratory	DANAK

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Brüel & Kjær 

The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark



CERTIFICATE OF CALIBRATION

No: CDK2004728

Page 1 of 4

CALIBRATION OF

Supplied Calibrator: Brüel & Kjær Type 4231
½ Inch adaptor: Brüel & Kjær Type UC-0210
Pattern Approval: PTB-1.61-4057176

No: 3025352 Id: -

CUSTOMER

Hayes McKenzie Partnership
Lodge Park,
Tre'r-ddol,
SY20 8PL Machynlleth
Powys, United Kingdom

CALIBRATION CONDITIONS

Preconditioning: 4 hours at $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$
Environment conditions: Pressure: 99.99 kPa. Humidity: 58 % RH. Temperature: 23.4°C .

SPECIFICATIONS

The Supplied Calibrator Brüel & Kjær Type 4231 has been calibrated in accordance with the requirements as specified in IEC60942:2003 Annex B Class 1. The accreditation assures the traceability to the international units system SI.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær acoustic calibrator calibration application software Type 7794 (version 2.5) by using procedure P_4231_D07.

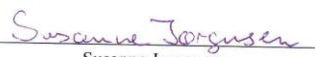
RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the 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 EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

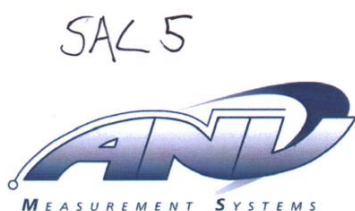
Date of calibration: 2020-07-28

Date of issue: 2020-07-28


Susanne Jorgensen
Calibration Technician


Erik Bruus
Approved Signatory

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CERTIFICATE OF CALIBRATION



0653

Date of Issue: 07 December 2020

Certificate Number: UCRT20/2192

Calibrated at & Certificate issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone 01908 642846 Fax 01908 642814

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

Web: www.noise-and-vibration.co.uk

Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Page	1	of	2	Pages
Approved Signatory				
K. Mistry				

Customer Hayes McKenzie Partnership Ltd
Unit 3
Oakridge Office Park
Whaddon
Salisbury
SP5 3HT

Order No. 1001/210

Test Procedure Procedure TP 1 Calibration of Sound Calibrators

Description Acoustic Calibrator

Identification	Manufacturer	Instrument	Model	Serial No.
	Brüel & Kjær	Calibrator	4231	3022368

The calibrator has been tested as specified in Annex B of IEC 60942:2003. As public evidence was available from a testing organisation (PTB) responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2003.

ANV Job No. UKAS20/12676

Date Received 04 December 2020

Date Calibrated 07 December 2020

Previous Certificate

Dated	02 December 2019
Certificate No.	UCRT19/2317
Laboratory	0653

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	Certificate Number
UKAS Accredited Calibration Laboratory No. 0653	UCRT20/2192
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Measurements

The sound pressure level generated by the calibrator in its WS2 configuration was measured five times by the Insert Voltage Method using a microphone as detailed below. The mean of the results obtained is shown below. It is corrected to the standard atmospheric pressure of 101.3 kPa (1013 mBar) using original manufacturers information.

Test Microphone	<i>Manufacturer</i>	<i>Type</i>
	Brüel & Kjær	4134

Results

The level of the calibrator output under the conditions outlined above was

94.08 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1000.03 Hz	±	0.13 Hz
The total distortion was	0.18 %	±	12.2 % of Reading

During the measurements environmental conditions were

Temperature	22	to	23 °C
Relative Humidity	28	to	35 %
Barometric Pressure	98.8	to	98.9 kPa

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.

The uncertainties refer to the measured values only with no account being taken of the ability of the instrument to maintain its calibration.

A small correction factor may need to be applied to the sound pressure level quoted above if the device is used to calibrate a sound level meter which is fitted with a free-field response microphone. See manufacturers handbook for details.

..... END

Note:

Calibrator adjusted prior to calibration?	NO
Initial Level	N/A dB
Initial Frequency	N/A Hz

Additional Comments The results on this certificate only relate to the items calibrated as identified above.

None

Calibrated by: B. Bogdan

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