Spiorad na Mara Offshore Wind Farm

Offshore Project

Environmental Impact Assessment Report

Appendix19.3: Baseline Noise Survey, Volume 2c

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Quality Control Page

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1.0	A	WSP	WSP	SnM Ltd	February 2026	Final for submission

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1.1 This appendix of the Environmental Impact Assessment Report (EIAR) presents the airborne noise survey and monitoring information for the baseline measurements relevant to the assessment of offshore airborne noise of the proposed Spiorad na Mara Offshore Wind Farm (hereafter referred to as 'the Offshore Project'). This appendix accompanies **Chapter 19: Offshore Airborne Noise, Volume 2a** of the EIAR.

1.1.1.2 This appendix should be read in conjunction with the project description provided in **Chapter 3: Project Description, Volume 1a** and the relevant parts of the following chapters and appendices:

- **Chapter 19, Volume 2a**;
- **Appendix 19.1: Policy, Guidance and Legislative Context, Volume 2c**;
- **Appendix 19.2: Noise Modelling and Prediction, Volume 2c**;
- **Appendix 19.4: Wind Shear Correction, Volume 2c**;
- **Appendix 19.5: Baseline Noise Conditions - All Wind Directions, Volume 2c**;
- **Appendix 19.6: Baseline Noise Analysis Comparison – Design Option 1 vs Design Option 2, Volume 2c**;
- **Appendix 19.7: Baseline Noise Conditions - Directional Split, Volume 2c**;
- **Appendix 19.8: Existing Wind Turbine Contribution Check, Volume 2c**;
- **Appendix 19.9: Modelled Receptor Noise Levels, Volume 2c**;
- **Appendix 19.10: Noise Limits, Volume 2c**;
- **Appendix 19.11: Cumulative Wind Turbine Noise Assessment, Volume 2c**.

1.1.2 PROJECT BACKGROUND

1.1.2.1 Spiorad na Mara Limited (hereafter referred to as 'the Applicant') is proposing to develop the Project. The Project is an offshore wind farm (OWF) that will consist of up to 60 fixed-bottom wind turbine generators (WTGs).

1.1.2.2 The Project will include both offshore and onshore infrastructure. This EIAR supports the application for the offshore components of the Project as outlined in **Chapter 1: Introduction, Volume 1a**. The offshore components of the Project (the 'Offshore Project') includes all infrastructure and activities located seaward of Mean High Water Springs (MHWS) within the Array Area and Offshore Cable Area of Search (OCAS) (**Figure 1.2: Offshore Project Location, Volume 1b**). Further detailed information is provided in **Chapter 3, Volume 1a**.

1.1.2.3 The Offshore Project is situated off the northwest coast of Isle of Lewis/*Eilean Leòdhais* and the Array Area is located approximately 5-13 km offshore and is approximately 161 km^2 in size. It will

comprise WTGs, foundations, Offshore Cables, Offshore Substation Platform (OSP) (if required), and Landfall. The Array Area combined with the OCAS is defined as the Offshore Project Boundary. The water depths across the Turbine Area range from 37 m-67 m with the southwest corner of the Array Area reaching 72 m. The proposed WTGs and fixed foundations will be located within a Turbine Area of approximately 140 km^2, within the Array Area.

1.2 PURPOSE OF THIS APPENDIX

1.2.1.1 This appendix describes the baseline noise survey completed for the Offshore Project.

2 BASELINE NOISE SURVEY SUMMARY

2.1.1.1 A total of 6 long-term unattended baseline noise measurements were undertaken at a sample of noise-sensitive receptors located along, but inside, the northwest coastline of the Isle of Lewis/*Eilean Leòdhais*. The measurement locations were selected as representative of the noise-sensitive receptors, see Table 19-16 in **Chapter 19, Volume 2a**; these are the properties with the greatest potential to be subject to a significant adverse effect from the Offshore Project, whilst also ensuring good geographic coverage across the local area.

2.1.1.2 The Institute of Acoustics: *A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise* (IOA GPG) advises that a survey duration of less than 2 weeks is unlikely to be sufficient to obtain a dataset covering the required range of wind speeds and directions. All measurement locations were significantly longer, to ensure that a representatively wide range of wind conditions were captured. The survey durations were governed by memory capacity but exceeded IOA GPG minimum requirements see Table 2-3 for details.

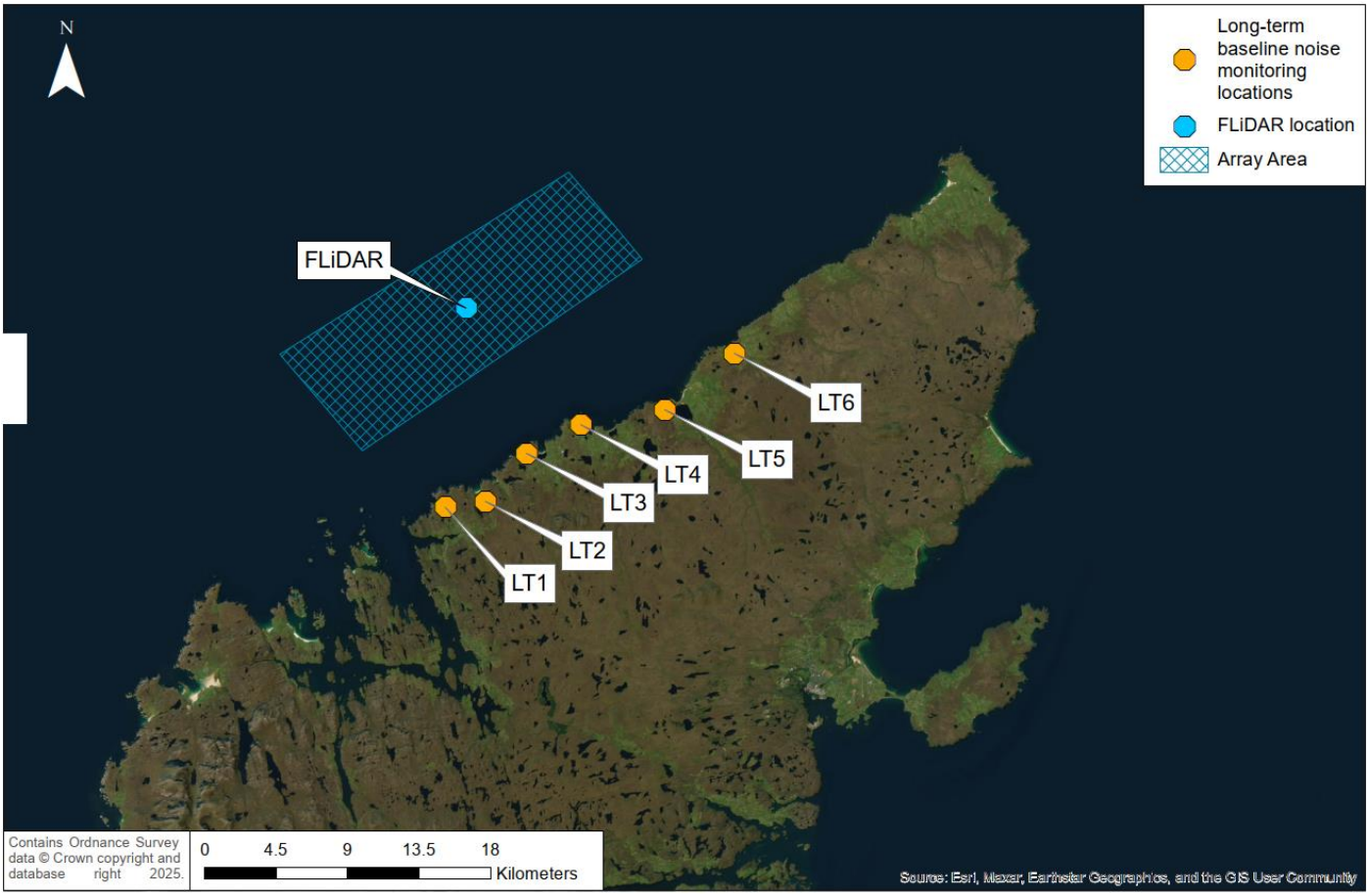
2.1.1.3 The IOA GPG provides guidance on siting noise measuring equipment. Measurement locations shall be representative of amenity areas at the property, microphones should be at a height of 1.2-1.5 m above ground and selected to minimise reflection effects and vegetation noise (e.g. trees), they will be positioned at least 3.5m away from reflective surfaces.

2.1.1.4 **Table 2-1** presents a summary of the measurement locations and durations, whilst **Plate 2-1** presents a plan of the locations.

Table 2-1 Summary of long-term baseline noise monitoring locations

ID	Location	Easting (m)	Northing (m)	Start	End	Duration
LT1	Garenin/*Na Gearrannan*	119452	944201	17/12/24 12:10	28/01/25 04:10	41days 16hrs
LT2	Dalmore/*Dail Mhor*	121964	944601	17/12/24 11:10	28/01/25 03:10	41days 16hrs
LT3	South Shawbost/*Siabost bho Dheas*	124564	947611	16/12/24 16:20	27/01/25 08:20	41days 16hrs
LT4	Labost	127978	949398	17/12/24 10:30	28/01/25 02:30	41days 16hrs
LT5	Brue/*Brù*	133293	950361	16/12/24 15:40	27/01/25 07:40	41days 16hrs
LT6	Ballantrushal/*Baile an Truiseil*	137650	953908	16/12/24 14:50	27/01/25 06:50	41days 16hrs

Plate 2-1 Plan of long-term baseline noise monitoring and FLiDAR locations



2.1.1.5 The noise survey was undertaken using British Standard (BS) EN 61672-1:2013 Class 1 specification sound pressure level measurement equipment. Further detail of the 6 deployed measurement systems is contained in Section 2.3 below.

2.1.1.6 Each sound pressure level measurement system had been laboratory calibrated to traceable standards within the preceding 2 years and the hand-held calibrators within the preceding 12 months. Each measurement system was field-calibration-checked at the point of installation and at collection using the stated handheld calibrators. No significant measurement drifts occurred.

2.1.1.7 Each measurement system was installed with its manufacturer specified outdoor windshield (WS) - 15. Those windshields are of substantial dimensions (reticulated foam with approx. 200 mm diameter).

2.1.1.8 Each measurement system was installed with the microphone mounted under free-field conditions, approximately 1.2 m above ground level. The measurement location at each property was selected to be representative of the primary external living spaces, but also to minimise the influence of any

local sources such as road traffic, water courses, wind through local trees/foliage and noise from property boiler flues.

2.1.1.9 The time clock of each measurement system was set to the Coordinated Universal Time (UTC)/Greenwich Mean Time (GMT). This was checked at the start and end of the survey, to ensure that no significant time drifts occurred in accordance with the IOA GPG, which states:

"A synchronisation drift of more than 1 minute over the duration of the survey should be reported and best avoided".

2.1.1.10 None of the measurement systems exhibited time drift to this degree.

2.1.1.11 Each measurement system was used to obtain noise level data in the $L_{A90,T}$ noise index (as well as other environmental monitoring indices), in continuous 10-minute intervals over the full measurement durations. Measurement data was obtained for the periods commencing on the hour, 10 minutes past, 20 minutes past, half past, 20 minutes to, and 10 minutes to each hour.

2.2 METEOROLOGICAL SURVEY

2.2.1.1 The survey was timed to be concurrent with a meteorological survey at the Offshore Project, in line with the requirements of ETSU-R-97. The meteorological survey was undertaken using a Floating Light Detection and Ranging (FLiDAR) system which obtained continuous, simultaneous, 10-minute meteorological measurements at the Array Area of the Offshore Project.

2.2.1.2 The approximate installation location of the FLiDAR system was Easting 120778 and Northing 956755. The obtained measurement data included rainfall, average wind speed and wind direction. Wind Speed and direction measurements were obtained at range of different heights. The data used for this assessment was that obtained at the heights of 150 m, 160 m, 170 m, and 180 m.

2.2.1.3 The FLiDAR measurements were accurate to within the IOA GPG requirements of +/- 0.2 m/s for wind speed and +/- 6° for wind direction.

2.3 NOISE MEASUREMENT: LT1

Table 2-2 Site information: LT1

Location ID	LT1
Receptor location	Garenin/*Na Gearrannan*
British National Grid	Easting 119452 / Northing 944201
Distance to Array Area	5.9 km
Microphone installation	Microphone mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed in the garden on soft ground, positioned 3.5 m away from the nearest property façade. Hedge line breaks line of sight to sea, as well as topography as the curvature of the bay screens the location from the shoreline. Approximately 4 m from the road edge, although position is slightly raised up. Overlooking Blackhouse village car park which was empty on installation and at collection.
Ambient sound observations	Distant sea noise and foliage rustling in the wind are the dominant noise sources. Occasional vehicle movements observed on the local road and will dictate the short term instantaneous/maximum sound levels. Likely to be some occupancy noise although residents were not present on installation or collection. Likely to be some distant agricultural noise from farm vehicles on the other side of the glen. Unlikely to be significant noise from the car park.

Table 2-3 Monitoring information: LT1

Sound level meter	Rion NL52 (serial number: 1021288) – Internal equipment ref.: 'Rion A'
Preamplifier	Rion NH25 (serial number: 21330)
Microphone	Rion UC59 (serial number: 08198)
Sound calibrator	Rion NC74 (serial number: 35173440)
Measurement start	17/12/2024 12:10
Measurement end	28/01/2025 04:10
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	94.0 dB
Calibration drift	0.0 dB (no drift)
Timeclock	GMT
Timeclock drift	None

Plate 2-2 Measurement location plan: LT1

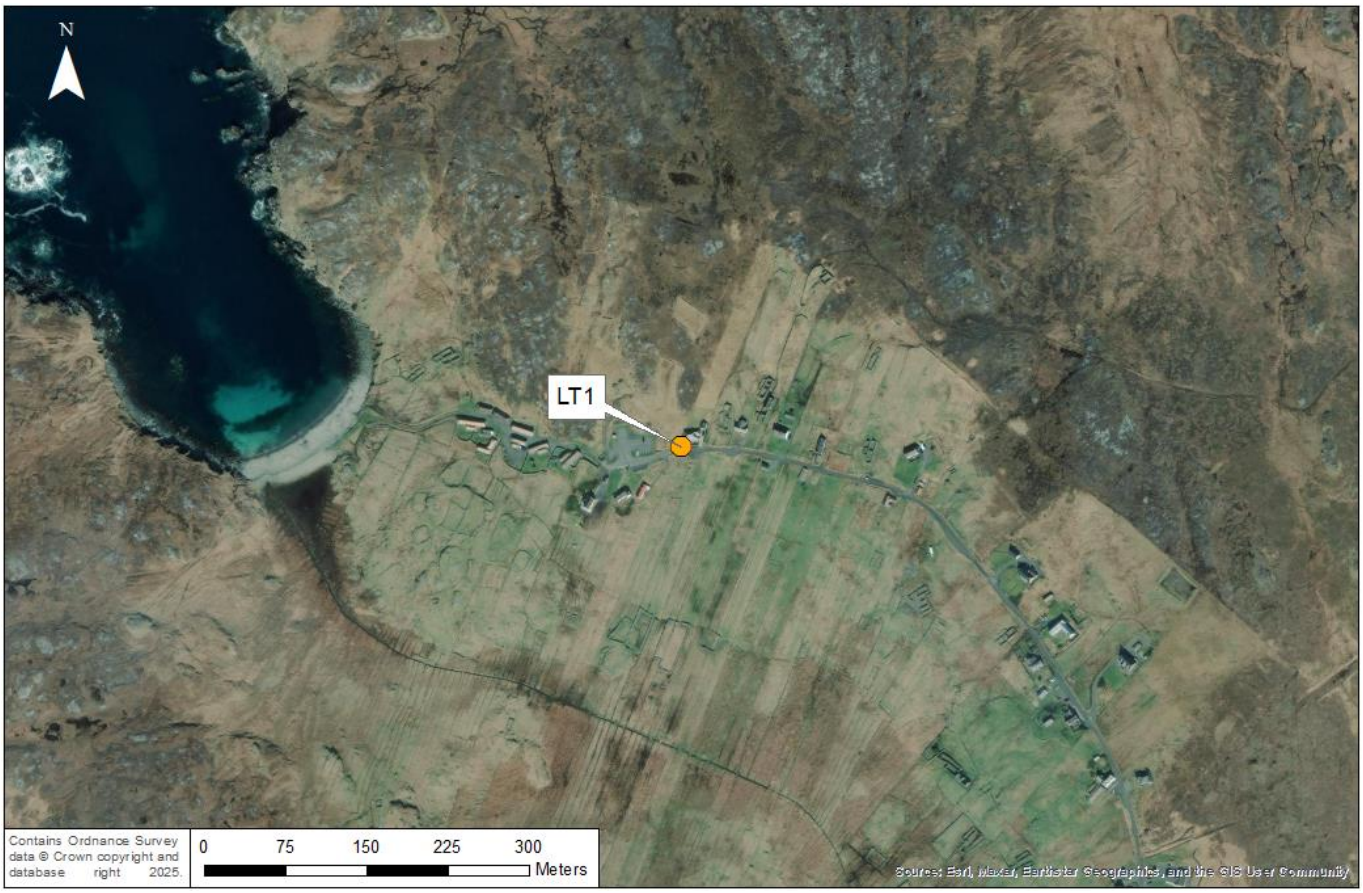


Plate 2-3 Measurement location photo: LT1 (looking northeast)

2.4 NOISE MEASUREMENT: LT2

Table 2-4 Site information: LT2

Location ID	LT2
Receptor location	Dalmore/*Dail Mhor*
British National Grid	Easting 121964 / Northing 944601
Distance to Array Area	7.0 km
Microphone installation	Microphone mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed on sloped incline behind the property, approximately in line with first floor height. Quiet area with line of sight to the sea but a narrow angle due to the topography of the glen. Only visible where it opens out onto the shoreline. There are 2 small/farm scale (circa 20 kW and less) wind turbines located across the glen to the northwest (1 x 20.6 m mast and 5.55 m blade and 1 x 15 m mast and 2.25 m blade). The meter was installed at a location which ensured fully obscured line of sight towards these turbines, behind the residential building.
Ambient sound observations	Sound climate dominated by sound of waves on the shoreline. Noise from heating system of house was present, but not dominant as screened by the residential building itself. Noise from the 2 small wind turbines was not audible above sea noise (during either windy periods or calmer periods). Likely to be very occasional noise from local traffic passing on the nearby road, but traffic very infrequent. Very occasional vehicle/occupant movements on the gravel drive of this property.

Table 2-5 Monitoring information: LT2

Sound level meter (SLM)	Rion NL52 (serial number: 00219913) - Internal equipment ref.: 'Scot 3'
Preamplifier	Rion NH25 (serial number: 00429)
Microphone	Rion UC59 (serial number: 18838)
Sound calibrator	Rion NC74 (serial number: 34251554)
Measurement start	17/12/2024 11:10
Measurement end	28/01/2025 03:10
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	93.9 dB
Calibration drift	-0.1 dB (not significant)
Timeclock	GMT
Timeclock drift	None

Plate 2-4 Measurement location plan: LT2

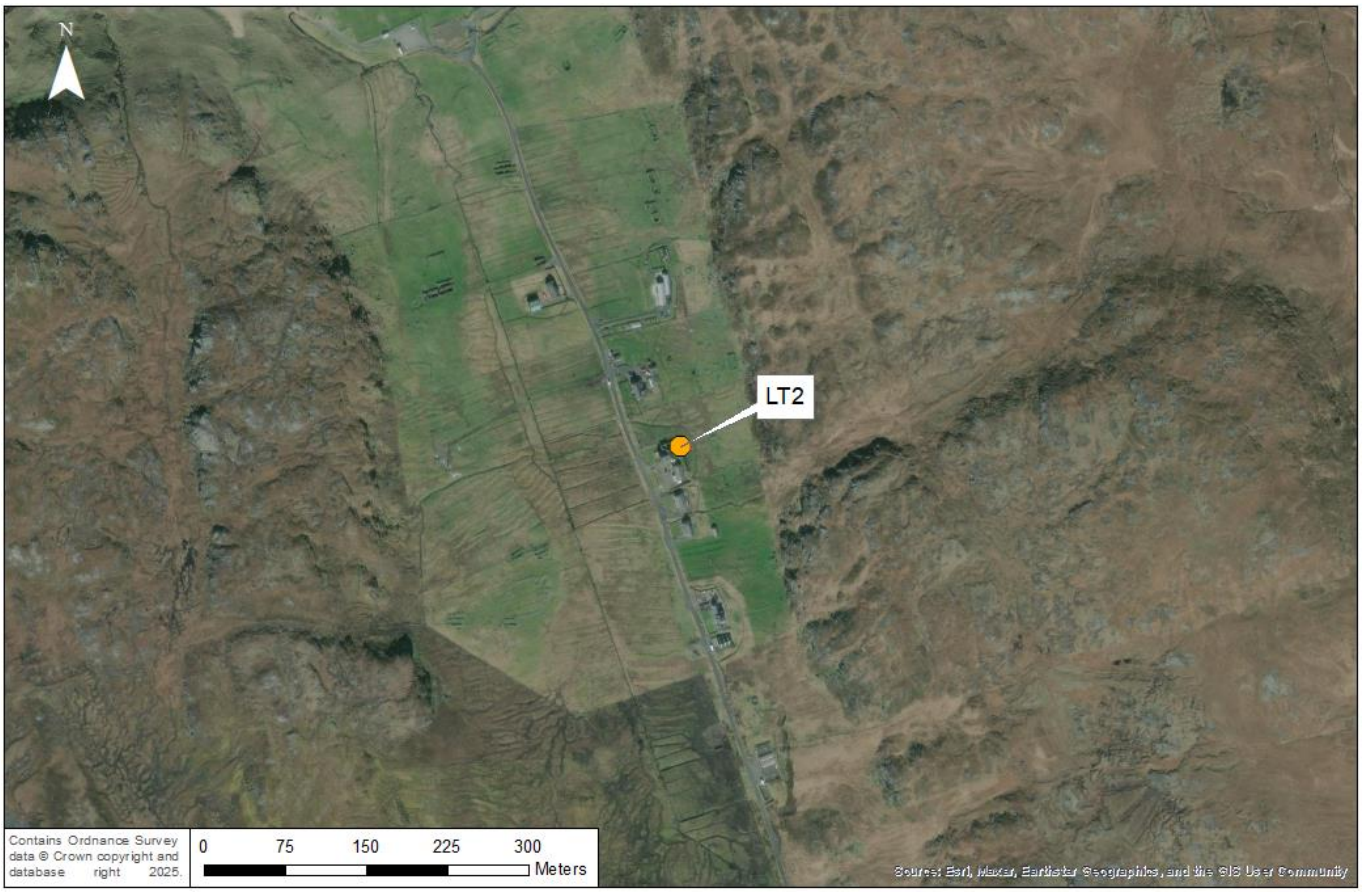


Plate 2-5 Measurement location photo: LT2 (looking north)

2.5 NOISE MEASUREMENT: LT3

Table 2-6 Site information: LT3

Location ID	LT3
Receptor location	South Shawbost/*Siabost bho Dheas*
British National Grid	Easting 124564 / Northing 947611
Distance to Array Area	6.0 km
Microphone installation	Microphone mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed at corner of garden 3.5 m away from façade of the building. Line of sight to the sea but partially screened by the building so approximately a 90-degree view. As well as this, a corrugated farm building/garage approximately 3 m in height partially obscures the line of sight to the sea.
Ambient sound observations	Noise climate dominated by sea noise, wind-induced noise (whistling through the overhead lines and some turbulence around the building on occasion. Rustling of foliage in the garden also present. People calling sheepdogs/distant barking audible. Likely to be very occasional noise from local traffic/vehicle pass-bys.

Table 2-7 Monitoring information: LT3

SLM	Rion NL52 (serial number: 01143531) - Internal equipment ref. 'Rion 4'
Preamplifier	Rion NH25 (serial number: 43548)
Microphone	Rion UC59 (serial number: 07391)
Sound calibrator	Rion NC74 (serial number: 34251556)
Measurement start	16/12/2024 16:20:00
Measurement end	27/01/2025 08:20:00
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	94.2 dB
Calibration drift	+0.2 dB (not significant)
Timeclock	GMT
Timeclock drift	None

Plate 2-6 Measurement location plan: LT3

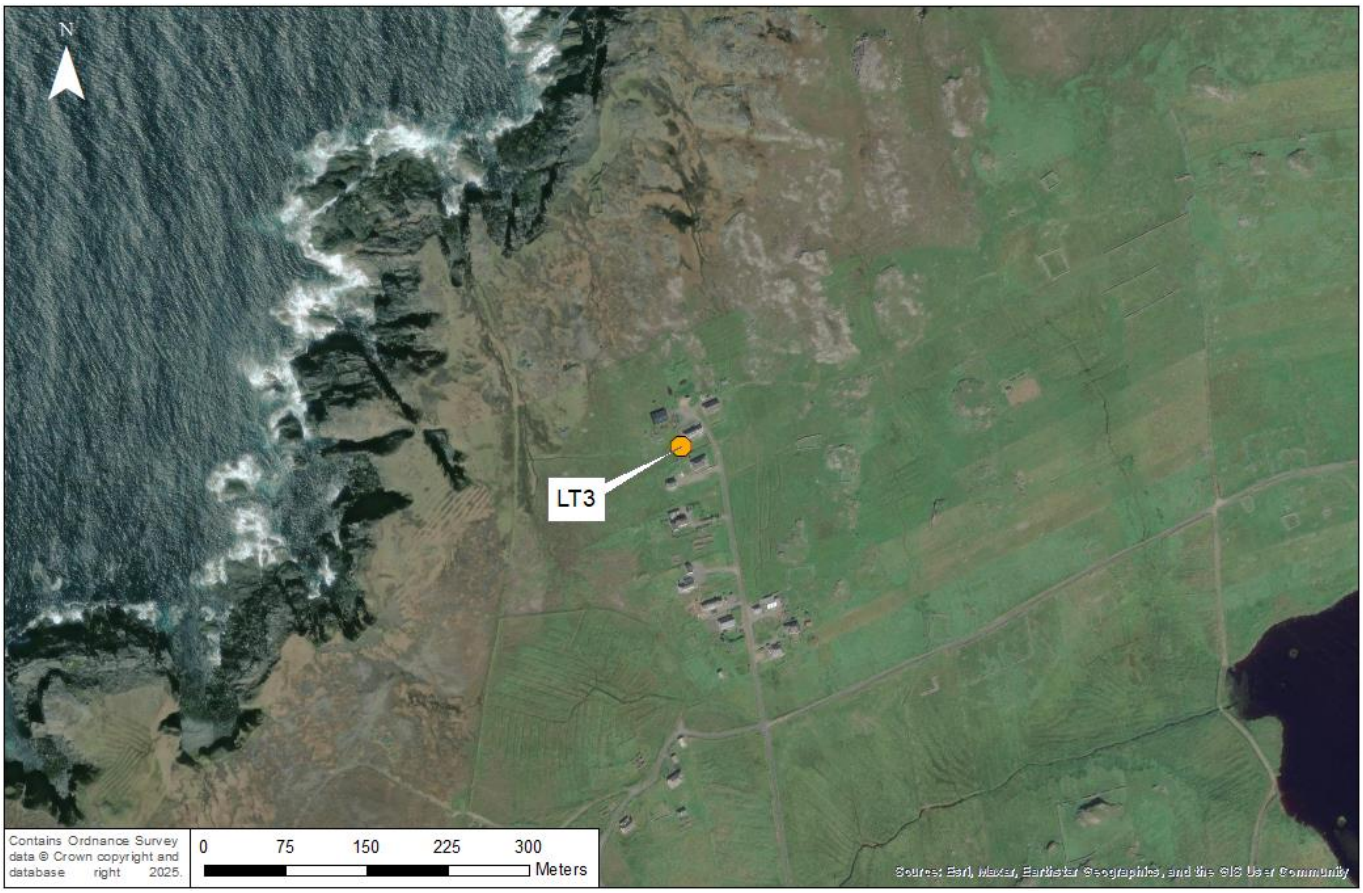


Plate 2-7 Measurement location photo: LT3 (looking west)

2.6 NOISE MEASUREMENT: LT4

Table 2-8 Site information: LT4

Location ID	LT4
Receptor location	Labost
British National Grid	Easting 127978 / Northing 949398
Distance to Array Area	6.4 km
Microphone installation	Microphone mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed on perimeter fence of garden, more than 15 m from property façade. Line of sight to sea. Shoreline not visible due to topography.
Ambient sound observations	Dominated by sea noise and wind-induced noise. Likely to be some construction noise such as power tools/hammering from building (residential improvement works) although work seems to be taking place mostly indoors. Very occasional local road traffic movements.

Table 2-9 Monitoring information: LT4

SLM	Rion NL52 (serial number: 00320637) - Internal equipment ref.: 'Rion B'
Preamplifier	Rion NH25 (serial number: 10645)
Microphone	Rion UC59 (serial number: 05708)
Sound calibrator	Rion NC74 (serial number: 34851881)
Measurement start	17/12/2024 10:30:00
Measurement end	28/01/2025 02:30:00
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	94.1 dB
Calibration drift	+0.1 dB (not significant)
Timeclock	GMT
Timeclock drift	None

Plate 2-8 Measurement location plan: LT4

Plate 2-9 Measurement location photo: LT4 (looking northeast)

2.7 NOISE MEASUREMENT: LT5

Table 2-10 Site information: LT5

Location ID	LT5
Receptor location	Brue/*Brù*
British National Grid	Easting 133293 / Northing 950361
Distance to Array Area	8.6 km
Microphone installation	Microphone mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed on perimeter fence in garden of property, 4.3 m from property façade, with line of sight towards the sea, partially screened by the building.
Ambient sound observations	Noise climate dominated by wind-induced noise. Turbulence though the phone/electricity line causes whistling on occasion. Turbulence around the building. Noise from waves crashing against the shore. Rustling foliage, local vehicle and agricultural vehicle movements also contribute on occasion.

Table 2-11 Monitoring information: LT5

SLM	Rion NL52 (serial number: 00219916) - Internal equipment ref.: 'Scot 1'
Preamplifier	Rion NH25 (serial number: 00432)
Microphone	Rion UC59 (serial number: 18845)
Sound calibrator	Rion NC74 (serial number: 34251554)
Measurement start	16/12/2024 15:40:00
Measurement end	27/01/2025 07:40:00
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	94.0 dB
Calibration drift	0.0 dB (no drift)
Timeclock	GMT
Timeclock drift	None

Plate 2-10 Measurement location plan: LT5

Plate 2-11 Measurement location photo: LT5 (looking south-east)

2.8 NOISE MEASUREMENT: LT6

Table 2-12 Site information: LT6

Location ID	LT6
Receptor location	Ballantrushal/*Baile an Truiseil*
Easting / Northing	137650 / 953908
Distance to Array Area	8.3 km
Microphone installation	Microphone tripod mounted at 1.2 m above ground. Windscreen and secondary windscreen installed.
Location description	Microphone installed in back garden of property on hard ground. Distance between microphone and boundary wall was 5.8 m, distance between microphone and property facade was 9.4 m. Line of sight to the sea broken by building immediately to the northwest (garage). The measurement location was 1.15 km north of closest turbine that makes up part of the existing 3 x 900 kW turbine Ballantrushal/ Baile an Truiseil Wind Energy Project (BaT Wind Farm).
Ambient sound observations	Noise climate dominated by wind-induced noise such as foliage rustling in the wind and noise from the sea. Potentially some noise during the day from the garage. External boiler also audible when in operation. Very infrequent local traffic on road. Noise from the 3 BaT Wind Farm turbine was not audible above sea noise (during either windy periods or calmer periods).

Table 2-13 Monitoring information: LT6

SLM	Rion NL52 (serial number: 00632043) - Internal equipment ref.: 'Rion C'
Preamplifier	Rion NH25 (serial number: 32071)
Microphone	Rion UC59 (serial number: 05210)
Sound calibrator	Rion NC74 (serial number: 1020510)
Measurement start	16/12/2024 14:50:00
Measurement end	27/01/2025 06:50:00
Measurement duration	41d 16:00 (memory card capacity reached)
Calibration at start	94.0 dB
Calibration at end	93.8 dB
Calibration drift	-0.2 dB (not significant)
Timeclock	GMT
Timeclock drift	None

Plate 2-12 Measurement location plan: LT6

2.8.1.1 No photo of measurement location LT6 is available due to camera failure.

3 GLOSSARY OF TERMS AND ABBREVIATIONS

3.1.1.1 A list of key terms and acronyms used in this Appendix are provided in **Table 3-1** and **Table 3-2**.

Table 3-1 Acronyms and abbreviations

Term	Definition
BS	British Standard
EIAR	Environmental Impact Assessment Report
FLiDAR	Floating Light Detection and Ranging
GMT	Greenwich Mean Time
IOA GPG	The Institute of Acoustics' guidance document: *A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*
km	Kilometre
kW	Kilo Watt
LT	Long Term
m	Metres
mm	Millimetre
m/s	Metres Per Second
MHWS	Mean High Water Springs
OCAS	Offshore Cable Area of Search
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
SLM	Sound Level Meter
UTC	Coordinated Universal Time
WS	Windshield
WTG	Wind Turbine Generator

Table 3-2 Glossary

Term	Meaning
$L_{A90,T}$	A statistical noise index defined as the level that is exceeded for 90% of the time over the measurement time period T. The 'A' denotes that the level is determined with 'A-weighting' applied.

4 REFERENCES

British Standard Institution. (2013). *BS EN 61672-1:2013 Electroacoustics - Sound level meters - Part 1: Specifications.* BSI Standards Publication.

Institute of Acoustics (IOA). (2013). *A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*. St Albans, UK: Institute of Acoustics. Available at: https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf [Accessed 13 February 2026].

ANNEX A: EQUIPMENT CALIBRATION CERTIFICATES

ANV MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

ilac-MRA UKAS CALIBRATION 0653

Date of Issue: 24 August 2023

Certificate Number: UCRT23/2113

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF United Kingdom
Order No.	20166455
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01021288
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	21330
Rion	Microphone	UC-59	08198
Rion	Calibrator	NC-74	35173440
	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 24 August 2023 ANV Job No. UKAS23/08595

Date Calibrated 24 August 2023

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*
	20 August 2021	UCRT21/2018	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT23/2113

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	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	24 August 2023		
Calibrator cert. number	UCRT23/2112		
Calibrator cal cert issued by	0653		
Calibrator SPL @ STP	93.99	dB	Calibration reference sound pressure level
Calibrator frequency	1002.79	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	23.89	24.05	± 0.30	°C
Humidity	38.9	39.1	± 3.00	%RH
Ambient Pressure	100.06	100.06	± 0.03	kPa

Response to associated Calibrator at the environmental conditions above.

Initial indicated level	93.8	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		
	13.5	dB	UR	20.4	dB	UR	26.5	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 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: K. Zablocki R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 13 August 2024 **Certificate Number: UCRT24/2090**

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Limited WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P103985UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	35173440

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.	UKAS24/08585	
Date Received	12 August 2024	
Date Calibrated	13 August 2024	
Previous Certificate	*Dated*	24 August 2023
	Certificate No.	UCRT23/2112
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/2090
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.10 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1002.81	±	0.12 Hz
The total distortion was	1.22	±	0.09 % Distortion

During the measurements environmental conditions were

Temperature	24	to	25	°C
Relative Humidity	56	to	63	%
Barometric Pressure	99.8	to	99.9	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.

0

Calibrated by: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 12 June 2023

Certificate Number: UCRT23/1768

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Limited WSP House 70 Chancery Lane London WC2A 1AF
Order No.	20163316
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00219913
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	00429
Rion	Microphone	UC-59	18838
Rion	Calibrator	NC-74	34251554
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013

Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2013 Yes

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013

Date Received 09 June 2023 ANV Job No. UKAS23/06391

Date Calibrated 12 June 2023

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. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate

Dated	*Certificate No.*	*Laboratory*
22 June 2021	UCRT21/1780	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT23/1768

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

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES		
Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	12 June 2023		
Calibrator cert. number	UCRT23/1761		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.02	dB	Calibration reference sound pressure level
Calibrator frequency	1000.95	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15

Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

Environmental conditions during tests	Start	End	
Temperature	22.78	22.43	± 0.30 °C
Humidity	39.6	40.9	± 3.00 %RH
Ambient Pressure	100.37	100.55	± 0.03 kPa

Indication at the Calibration Check Frequency				
Initial indicated level	94.3	dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±				0.10 dB

Self Generated Noise

Microphone installed - Less Than 16.8 dB A Weighting

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

Weighting	A			C			Z		
	11.9	dB	UR	15.4	dB	UR	21.1	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

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.

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

None

END

Calibrated by: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 08 July 2024

Certificate Number: UCRT24/1946

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P102968UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34251554

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.	UKAS24/07487	
Date Received	05 July 2024	
Date Calibrated	08 July 2024	
Previous Certificate	*Dated*	12 June 2023
	Certificate No.	UCRT23/1761
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1946
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.00 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1000.96	±	0.12 Hz
The total distortion was	1.07	±	0.08 % Distortion

During the measurements environmental conditions were

Temperature	23	to	23	°C
Relative Humidity	45	to	52	%
Barometric Pressure	100.5	to	100.6	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: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 19 June 2024

Certificate Number: UCRT24/1876

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
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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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P101974UK001
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01143531
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	43548
Rion	Microphone	UC-59	07391
Rion	Calibrator	NC-74	34251556
	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 18 June 2024 ANV Job No. UKAS24/06444

Date Calibrated 19 June 2024

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*
22 April 2022	UCRT22/1561	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT24/1876

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	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	19 June 2024		
Calibrator cert. number	UCRT24/1869		
Calibrator cal cert issued by	0653		
Calibrator SPL @ STP	94.03	dB	Calibration reference sound pressure level
Calibrator frequency	1001.12	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	22.65	22.67	± 0.30	°C
Humidity	46.5	45.5	± 3.00	%RH
Ambient Pressure	101.21	101.16	± 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		
	12.1	dB	UR	16.4	dB	UR	22.9	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 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: C. Hirlav R 3

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 19 June 2024

Certificate Number: UCRT24/1869

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
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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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P101974UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34251556

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.	UKAS24/06444	
Date Received	18 June 2024	
Date Calibrated	19 June 2024	
Previous Certificate	*Dated*	26 April 2023
	Certificate No.	UCRT23/1556
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1869
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.03 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1001.12	±	0.12 Hz
The total distortion was	1.11	±	0.08 % Distortion

During the measurements environmental conditions were

Temperature	22	to	23	°C
Relative Humidity	43	to	51	%
Barometric Pressure	101.1	to	101.2	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: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 11 January 2024 **Certificate Number: UCRT24/1058**

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	20174412
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00320637
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	10645
Rion	Microphone	UC-59	05708
Rion	Calibrator	NC-74	34851881
	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 10 January 2024 ANV Job No. UKAS24/01026

Date Calibrated 11 January 2024

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*
19 January 2022	UCRT22/1090	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT24/1058

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	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	24 August 2023		
Calibrator cert. number	UCRT23/2109		
Calibrator cal cert issued by	0653		
Calibrator SPL @ STP	94.02	dB	Calibration reference sound pressure level
Calibrator frequency	1002.61	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	23.68	22.44	± 0.30	°C
Humidity	31.4	30.0	± 3.00	%RH
Ambient Pressure	102.71	102.72	± 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		
	11.2	dB	UR	16.0	dB	UR	22.8	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 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: B. Bogdan R 2

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 22 July 2024

Certificate Number: UCRT24/1999

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

Approved Signatory [Redacted]

B. Bogdan

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P103304UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34851881

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.	UKAS24/07528	
Date Received	19 July 2024	
Date Calibrated	22 July 2024	
Previous Certificate	*Dated*	24 August 2023
	Certificate No.	UCRT23/2109
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1999
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.09 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1002.56	±	0.12 Hz
The total distortion was	1.31	±	0.09 % Distortion

During the measurements environmental conditions were

Temperature	22	to	23	°C
Relative Humidity	59	to	67	%
Barometric Pressure	100.2	to	100.3	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: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 13 June 2023 **Certificate Number: UCRT23/1769**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
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Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Limited WSP House 70 Chancery Lane London WC2A 1AF
Order No.	20163316
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00219916
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	00432
Rion	Microphone	UC-59	18845
Rion	Calibrator	NC-74	34251554
	Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 10. SLM 61672-3:2013

Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2013 Yes

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013

Date Received 09 June 2023 ANV Job No. UKAS23/06391

Date Calibrated 13 June 2023

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. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate

Dated	*Certificate No.*	*Laboratory*
22 June 2021	UCRT21/1781	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT23/1769

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

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1			
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion	
Date provided or internet download date	19 March 2021			

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES		
Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	12 June 2023		
Calibrator cert. number	UCRT23/1761		
Calibrator cal cert issued by Lab	0653		
Calibrator SPL @ STP	94.02	dB	Calibration reference sound pressure level
Calibrator frequency	1000.95	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Extension Cable & Wind Shield WS-15

Note - The Extension Cable was used between the SLM and the pre-amp for this calibration.

Environmental conditions during tests	Start	End	
Temperature	23.99	23.87	± 0.30 °C
Humidity	40.4	37.5	± 3.00 %RH
Ambient Pressure	100.46	100.45	± 0.03 kPa

Indication at the Calibration Check Frequency					
Initial indicated level	94.0	dB	Adjusted indicated level	94.0	dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±				0.10	dB

Self Generated Noise

Microphone installed - Less Than 18.4 dB A Weighting

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

Weighting	A			C			Z		
	11.2	dB	UR	14.7	dB	UR	20.3	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

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.

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

None

END

Calibrated by: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 08 July 2024

Certificate Number: UCRT24/1946

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P102968UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	34251554

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.	UKAS24/07487	
Date Received	05 July 2024	
Date Calibrated	08 July 2024	
Previous Certificate	*Dated*	12 June 2023
	Certificate No.	UCRT23/1761
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1946
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.00 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1000.96	±	0.12 Hz
The total distortion was	1.07	±	0.08 % Distortion

During the measurements environmental conditions were

Temperature	23	to	23	°C
Relative Humidity	45	to	52	%
Barometric Pressure	100.5	to	100.6	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: K. Zablocki R 1

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 17 August 2023 **Certificate Number: UCRT23/2081**

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

Approved Signatory [Redacted]

K. Mistry

Customer
WSP UK Ltd
WSP House
70 Chancery Lane
London
WC2A 1AF

Order No. 20166455
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00632043
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	32071
Rion	Microphone	UC-59	05210
Rion	Calibrator	NC-74	01020510
	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 August 2023 ANV Job No. UKAS23/08571
Date Calibrated 17 August 2023

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*
20 August 2021	UCRT21/2019	0653

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0653

Certificate Number
UCRT23/2081

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	Customers Calibrator		
Calibrator adaptor type if applicable	NC-74-002		
Calibrator cal. date	17 August 2023		
Calibrator cert. number	UCRT23/2080		
Calibrator cal cert issued by	0653		
Calibrator SPL @ STP	93.99	dB	Calibration reference sound pressure level
Calibrator frequency	1001.13	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	24.11	24.70	±	0.30	°C
Humidity	45.9	47.0	±	3.00	%RH
Ambient Pressure	100.99	100.99	±	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		
	10.9	dB	UR	15.2	dB	UR	20.5	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 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: K. Zablocki R 1

Additional Comments The results on this certificate only relate to the items calibrated as identified above.
None

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 08 August 2024

Certificate Number: UCRT24/2074

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

Approved Signatory [Redacted]

K. Mistry

Customer	WSP UK Ltd WSP House 70 Chancery Lane London WC2A 1AF
Order No.	P103985UK001
Test Procedure	Procedure TP 1 Calibration of Sound Calibrators
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-74	01020510

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.	UKAS24/08581	
Date Received	07 August 2024	
Date Calibrated	08 August 2024	
Previous Certificate	*Dated*	17 August 2023
	Certificate No.	UCRT23/2080
	Laboratory	0653

CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/2074
UKAS Accredited Calibration Laboratory No. 0653	Page 2 of 2 Pages

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	*Manufacturer*	*Type*
	Brüel & Kjær	4134

Results

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

94.04 ± 0.10 dB rel 20 µPa

Functional Tests and Observations

The frequency of the sound produced was	1001.11	±	0.12 Hz
The total distortion was	1.16	±	0.08 % Distortion

During the measurements environmental conditions were

Temperature	23	to	24	°C
Relative Humidity	54	to	63	%
Barometric Pressure	100.3	to	100.4	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: K. Zablocki R 1

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