

Appendix A15.2: Detailed Baseline Noise Survey Results and Notes



1.1 Introduction

- 1.1.1 This appendix provides additional details of the baseline noise surveys which were undertaken as part of the noise assessment of the proposed route options.
- 1.1.2 Noise monitoring was undertaken between 30 January 2025 and 13 February 2025 and consisted of noise level measurements at the following locations:
 - Measurement location 1 Rowan Cottage, Birnam;
 - Measurement location 2 Hollybank, Perth Road, Birnam;
 - Measurement location 3 St. Catherine's Cottage, Birnam;
 - Measurement location 4 Oakbank, Birnam;
 - Measurement location 5 The Old Bakehouse, 12 Birnam Terrace, Birnam;
 - Measurement location 6 6 King Duncan's Place, Birnam;
 - Measurement location 7 Braeknowe, Birnam;
 - Measurement location 8 Caileagan, Little Dunkeld; and
 - Measurement location 9 Craigview, Inver.
- 1.1.3 The noise monitoring locations are presented in Figure 15.2.
- 1.1.4 The following pieces of equipment were used when undertaking noise measurements. Calibration certificates for this equipment are provided at the end of this appendix:
 - Rion NC-75 calibrator serial number (s/n 35292145);
 - Rion NL-52 Class 1 sound level meter (s/n 00620807);
 - Rion NL-52 Class 1 sound level meter (s/n 00620871);
 - Rion NL-52 Class 1 sound level meter (s/n 00620964);
 - Rion NL-52 Class 1 sound level meter (s/n 00710288);
 - Rion NL-52 Class 1 sound level meter (s/n 00410085); and
 - Lufft WS600-UMB weather station (s/n 189.0724.0701.251).
- 1.1.5 For each measurement location, two tables have been provided to detail the measured daily noise levels for the following time periods:
 - the 18-hour daytime period (between 06:00 and 00:00), which is the time period that is used to describe road traffic noise in CRTN;
 - the 16-hour daytime period (between 07:00 and 23:00), which corresponds to the time period used in World Health Organisation (WHO) guidance when describing the daytime period; and
 - the eight-hour night-time period (between 23:00 and 07:00), which corresponds to the time period used in WHO guidance when describing the night-time noise period.



- 1.1.6 The measured daily noise levels, both with and without periods of precipitation and high wind speeds, are presented for each monitoring location. To address potential elevations in the measured noise levels due to non-conducive weather, the weather conditions were monitored using a weather station and the noise levels recorded during periods of high wind speeds and/or precipitation were removed from the data set. It should be noted that the weather data was logged in one-minute periods, while the noise data was logged in 15-minute periods.
- 1.1.7 To minimise the effects of wind-generated noise, for each one-minute interval during which peak wind speeds of 5ms⁻¹ or greater were logged, the noise measurements for the 15-minute period containing the one-minute interval were discarded. Moreover, to mitigate potential increases in traffic noise levels due to standing water or snow on nearby roads, for each one-minute interval during which precipitation was logged, the noise measurements for the subsequent 60 minutes, were discarded.
- 1.1.8 Daily noise levels are presented only for periods where noise levels were measured for the full duration of the period, i.e. the full 18 hours (06:00 to 00:00), 16 hours (07:00 to 23:00) or eight hours (23:00 to 07:00). The exception to this is where data for the full 18-hour period (06:00 to 00:00) was not available. In these instances, where possible, the shortened measurement procedure (defined in CRTN) has been used to calculate the LA10,18hr. It should be noted that the measurement locations do not necessarily meet the CRTN shortened measurement procedure requirements in terms of microphone position relative to roads and therefore the LA10,18hr levels calculated using this method should be considered as estimates. The shortened measurement procedure has been used where there was available data for three consecutive hours, between 10:00 and 17:00, with each of the consecutive hours having at least one 15-minute period not needing to be excluded due to precipitation or high wind speeds, as described above.

1.2 Summary of Noise Measurements

Measurement location 1 – Rowan Cottage, Birnam, Dunkeld, PH8 0DW

1.2.1 The measurement location is shown in Photograph A15.2-1. A Rion NL-52 Class 1 sound level meter (s/n 00710288) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 14m from the north-eastern façade of the building, at the boundary of the property line.





Photograph A15.2-1: Noise monitoring equipment at Rowan Cottage

- 1.2.2 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.3 At this location the noise climate primarily consisted of road traffic noise from the A9 (northeast of the measurement position), a constant hum from residential sewage treatment equipment in the adjacent property's garden, and occasional birdsong.
- 1.2.4 Throughout the monitoring period, one-minute average wind speeds did not exceed 1.3ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.06mm. No precipitation was recorded on 6 and 13 February.
- 1.2.5 Table A15.21 and Table A15.2-2 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.6 It should be noted that in Table A15.2-1 and Table A15.2-2 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-1: Daily summarised noise levels at Rowan Cottage, including periods of precipitation and high wind speeds

Date	Day	18-hour day 06:00 and 0	rtime period (0:00)	between	16-hour day 07:00 and 2	ytime period (:3:00)	between	8-hour night 23:00 and 0	t-time period 7:00)	d (between	
		L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	-	-	-	-	-	50.4	54.0	40.5	
07/02/2025	Friday	56.9	59.5	48.9	57.3	60.0	50.0	49.3	52.3	38.8	
08/02/2025	Saturday	56.5	59.0	47.2	56.9	59.5	48.3	47.8	50.7	37.9	
09/02/2025	Sunday	56.5	59.0	47.5	56.9	59.6	48.6	50.7	53.5	39.1	
10/02/2025	Monday	56.6	59.4	48.1	56.9	59.7	48.8	51.1	53.7	40.6	
11/02/2025	Tuesday	57.7	59.6	47.8	58.1	60.0	48.5	50.7	53.8	39.0	
12/02/2025	Wednesday	56.6	59.3	47.5	56.9	59.5	48.2	50.7	54.2	40.2	
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-	



Table A15.2-2: Daily summarised noise levels at Rowan Cottage, with periods of precipitation and high wind speeds removed

Date	Day	18-hour dayt and 00:00)	ime period (be	tween 06:00	16-hour dayt and 23:00)	ime period (be	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
	-	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	-	-	-	-	-	50.4	54.0	40.5	
07/02/2025	Friday	57.6	60.3	51.0	57.8	60.5	51.5	49.2	51.8	38.8	
08/02/2025	Saturday	56.1	58.7	46.1	56.5	59.1	48.3	47.8	50.7	37.9	
09/02/2025	Sunday	56.5	59.0	47.5	56.9	59.6	48.6	50.7	53.5	39.1	
10/02/2025	Monday	57.4	60.4	50.5	57.7	60.6	51.3	-	-	-	
11/02/2025	Tuesday	58.6	60.1	48.5	58.6	60.1	48.5	50.7	53.8	39.0	
12/02/2025	Wednesday	56.6	59.3	47.5	56.9	59.5	48.2	50.7	54.2	40.2	
13/02/2025	Thursday	_	-	-	-	-	-	-	-	-	



Measurement location 2 - Hollybank, Perth Road, Birnam, Dunkeld, PH8 0DN

1.2.7 The measurement location is shown in Photograph A15.2-2. A Rion NL-52 Class 1 sound level meter (s/n 00620807) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 20m from the south-eastern façade of the building, in the back garden.



Photograph A15.2-2: Noise Monitoring Equipment at Hollybank

- 1.2.8 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no significant shift in the observed calibration level.
- 1.2.9 At this location the noise climate primarily consisted of road traffic noise from the A9 and Perth Road (south and north of the measurement position, respectively) and consistent birdsong.
- 1.2.10 Throughout the monitoring period, one-minute average wind speeds did not exceed 1.3ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.06mm. No precipitation was recorded on 6 and 13 February.



- 1.2.11 Table A15.2-3 and Table A15.2-4 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.12 It should be noted that in Table A15.2-3 and Table A15.2-4 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-3: Daily summarised noise levels at Hollybank, including periods of precipitation and high wind speeds

Data	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour days and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	57.6*	-	-	-	-	47.0	50.4	30.9	
07/02/2025	Friday	53.7	55.4	44.2	54.0	55.9	45.5	46.7	49.3	28.1	
08/02/2025	Saturday	53.0	54.9	42.3	53.4	55.3	43.6	46.3	48.9	27.6	
09/02/2025	Sunday	53.1	54.7	42.5	53.5	55.4	44.1	48.3	50.4	29.7	
10/02/2025	Monday	53.1	55.3	43.0	53.5	55.8	44.2	47.7	50.1	32.3	
11/02/2025	Tuesday	55.7	55.2	43.5	56.1	55.7	44.5	46.4	49.3	31.8	
12/02/2025	Wednesday	52.8	54.6	41.9	53.2	55.0	43.0	46.3	49.7	29.0	
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-4: Daily summarised noise levels at Hollybank, with periods of precipitation and high wind speeds removed

Date	Day	18-hour daytime period (between 06:00 and 00:00)				daytime period 07:00 and 23:0	•	8-hour night-time period (between 23:00 and 07:00)			
	,	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	57.6*	-	-	-	-	47.0	50.4	30.9	
07/02/2025	Friday	54.5	56.7	47.1	54.7	56.9	47.6	47.3	49.7	28.7	
08/02/2025	Saturday	52.2	54.3	40.6	52.4	54.6	43.6	46.3	48.9	27.6	
09/02/2025	Sunday	53.1	54.7	42.5	53.5	55.4	44.1	48.3	50.4	29.7	
10/02/2025	Monday	54.1	56.7	46.7	54.4	57.1	47.7	-	-	-	
11/02/2025	Tuesday	56.8	55.4	44.0	56.8	55.4	44.5	46.4	49.3	31.8	
12/02/2025	Wednesday	52.8	54.6	41.9	53.2	55.0	43.0	46.3	49.7	29.0	
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 3 – St. Catherine's Cottage, Gladstone Terrace, Birnam, Dunkeld, PH8 0DP

1.2.13 The measurement location is shown in Photograph A15.2-3. A Rion NL-52 Class 1 sound level meter (s/n 00620964) was positioned at a height of approximately 1.5m in façade conditions. The equipment was approximately 1m from the south-western façade of the building.



Photograph A15.2-3: Noise monitoring equipment at St. Catherine's Cottage

- 1.2.14 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.15 At this location the noise climate primarily consisted of road traffic noise from the A9 (south of the measurement location). Additionally, birdsong and human activity were occasionally audible.
- 1.2.16 Throughout the monitoring period, one-minute average wind speeds did not exceed 1.3ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.06mm. No precipitation was recorded on 6 and 13 February.
- 1.2.17 Table A15.2-5 and Table A15.2-6 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.



1.2.18 It should be noted that in Table A15.2-5 and Table A15.2-6 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-5: Daily summarised noise levels at St. Catherine's Cottage, including periods of precipitation and high wind speeds

Data	Day	• •			16-hour days and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	65.4*	-	-	-	-	55.6	58.0	37.1	
07/02/2025	Friday	61.3	64.5	46.2	61.6	65.0	47.3	53.6	54.3	33.6	
08/02/2025	Saturday	60.3	63.5	44.0	60.6	64.1	44.8	52.2	51.9	39.3	
09/02/2025	Sunday	60.5	63.6	45.1	61.0	64.4	45.9	55.4	56.6	38.8	
10/02/2025	Monday	61.2	64.3	45.9	61.5	64.8	46.8	56.3	57.1	40.8	
11/02/2025	Tuesday	61.7	64.7	47.2	62.0	65.1	47.8	55.7	57.8	39.9	
12/02/2025	Wednesday	60.8	64.2	45.4	61.1	64.5	46.1	55.5	58.0	38.8	
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-6: Daily summarised noise levels at St. Catherine's Cottage, with periods of precipitation and high wind speeds removed

Data	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour day and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
06/02/2025	Thursday	-	65.4*	-	-	-	-	55.6	58.0	37.1	
07/02/2025	Friday	62.0	65.4	48.6	62.2	65.6	49.3	53.3	53.4	34.7	
08/02/2025	Saturday	59.5	63.1	42.5	59.8	63.6	44.8	52.2	51.9	39.3	
09/02/2025	Sunday	60.5	63.6	45.1	61.0	64.4	45.9	55.4	56.6	38.8	
10/02/2025	Monday	61.9	65.6	47.7	62.2	65.7	49.0	-	-	-	
11/02/2025	Tuesday	62.1	65.1	47.5	62.1	65.1	47.8	55.7	57.8	39.9	
12/02/2025	Wednesday	60.8	64.2	45.4	61.1	64.5	46.1	55.5	58.0	38.8	
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 4 - Oakbank, Birnam, Dunkeld, PH8 0BW

1.2.19 The measurement location is shown in Photograph A15.2-4. A Rion NL-52 Class 1 sound level meter (s/n 00710288) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 6m from the north-eastern façade of the building.



Photograph A15.2-4: Noise monitoring equipment at Oakbank

- 1.2.20 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no significant shift in the observed calibration level.
- 1.2.21 At this location the noise climate primarily consisted of road traffic noise from the A9 (northeast of the measurement position) and birdsong.
- 1.2.22 Throughout the monitoring period, one-minute average wind speeds did not exceed 2.4ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.13mm. No precipitation was recorded on 30 January, 1 February and 6 February.



- 1.2.23 Table A15.2-7 and Table A15.2-8 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.24 It should be noted that in Table A15.2-7 and Table A15.2-8 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-7: Daily summarised noise levels at Oakbank, including periods of precipitation and high wind speeds

Data	Day				16-hour dayt and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	-	-	-	-	-	49.2	53.0	38.9	
31/01/2025	Friday	54.6	56.2	46.1	55.0	56.6	47.6	46.1	50.5	28.4	
01/02/2025	Saturday	53.3	55.7	45.0	53.7	56.0	46.2	48.0	51.8	36.8	
02/02/2025	Sunday	54.1	56.1	46.2	54.5	56.6	47.7	49.4	52.9	39.3	
03/02/2025	Monday	54.3	56.7	47.7	54.6	57.1	48.3	50.3	54.0	41.0	
04/02/2025	Tuesday	54.6	56.7	47.4	54.8	57.0	48.0	50.1	53.9	39.2	
05/02/2025	Wednesday	54.7	56.9	47.4	54.9	57.1	48.0	48.9	52.7	36.2	
06/02/2025	Thursday	-	58.0*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-8: Daily summarised noise levels at Oakbank, with periods of precipitation and high wind speeds removed

Data	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour day and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	-	-	-	-	-	49.5	53.3	38.6	
31/01/2025	Friday	54.6	56.2	46.1	55.0	56.6	47.6	46.1	50.5	28.4	
01/02/2025	Saturday	53.3	55.7	45.0	53.7	56.0	46.2	49.7	53.3	41.6	
02/02/2025	Sunday	54.5	56.6	47.9	54.7	56.8	48.5	49.4	52.9	39.3	
03/02/2025	Monday	54.9	57.2	49.3	55.0	57.4	49.5	-	-	-	
04/02/2025	Tuesday	53.5	55.8	43.9	53.7	56.0	44.5	50.4	54.2	39.1	
05/02/2025	Wednesday	54.7	56.9	47.4	54.9	57.1	48.0	48.9	52.7	36.2	
06/02/2025	Thursday	-	58.0*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 5 – The Old Bakehouse, 12 Birnam Terrace, Birnam, Dunkeld, PH8 ODR

1.2.26 The measurement location is shown in Photograph A15.2-5. A Rion NL-52 Class 1 sound level meter (s/n 00620807) was positioned at a height of approximately 1.5m in façade conditions. The equipment was approximately 1m from the south-eastern façade of the building.



Photograph A15.2-5: Noise monitoring equipment at The Old Bakehouse, 12 Birnam Terrace

- 1.2.27 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.28 At this location the noise climate primarily consisted of road traffic noise from the A9 (southwest of the measurement position) and birdsong. Additionally, human activity was occasionally audible.



- 1.2.29 Throughout the monitoring period, one-minute average wind speeds did not exceed 2.4ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.13mm. No precipitation was recorded on 30 January, 1 February and 6 February.
- 1.2.30 Table A15.2-9 and Table A15.2-10 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.31 It should be noted that in Table A15.2-7 and Table A15.2-8 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-9: Daily summarised noise levels at The Old Bakehouse, 12 Birnam Terrace, including periods of precipitation and high wind speeds

Date	Day	18-hour day and 00:00)	time period (be	etween 06:00	16-hour day and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	51.6*	-	-	-	-	43.3	46.9	32.4	
31/01/2025	Friday	50.4	51.5	41.8	50.8	52.1	43.2	40.8	44.4	26.8	
01/02/2025	Saturday	50.0	51.4	41.9	50.3	51.8	43.0	42.8	46.0	33.5	
02/02/2025	Sunday	50.3	52.0	42.4	50.7	52.4	43.6	44.8	47.5	34.9	
03/02/2025	Monday	53.6	54.1	44.7	54.0	54.6	45.2	47.0	49.7	39.6	
04/02/2025	Tuesday	52.4	53.3	43.3	52.6	53.5	43.7	45.8	48.4	34.3	
05/02/2025	Wednesday	52.5	52.6	42.9	52.8	53.0	43.6	44.4	46.6	33.0	
06/02/2025	Thursday	-	54.0*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-10: Daily summarised noise levels at The Old Bakehouse, 12 Birnam Terrace, with periods of precipitation and high wind speeds removed

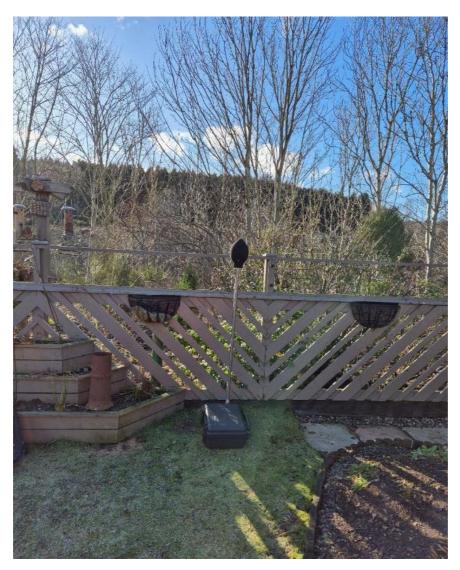
Data	Day	18-hour dayt and 00:00)	ime period (be	tween 06:00	16-hour dayt and 23:00)	ime period (be	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	51.6*	-	-	-	-	43.7	47.3	32.2	
31/01/2025	Friday	50.4	51.5	41.8	50.8	52.1	43.2	40.8	44.4	26.8	
01/02/2025	Saturday	50.0	51.4	41.9	50.3	51.8	43.0	42.8	46.3	35.4	
02/02/2025	Sunday	50.5	52.0	43.4	50.8	52.3	44.1	44.8	47.5	34.9	
03/02/2025	Monday	54.7	55.4	45.8	54.9	55.6	46.1	-	-	-	
04/02/2025	Tuesday	51.1	50.6	39.6	51.4	50.9	40.1	46.0	48.5	34.2	
05/02/2025	Wednesday	52.5	52.6	42.9	52.8	53.0	43.6	44.4	46.6	33.0	
06/02/2025	Thursday	-	54.0*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 6 – 6 King Duncan's Place, Birnam, Dunkeld, PH8 0QD

1.2.33 The measurement location is shown in Photograph A15.2-6. A Rion NL-52 Class 1 sound level meter (s/n 00751323) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 6m from the south-western façade of the building, in the back garden.



Photograph A15.2-6: Noise monitoring equipment at 6 King Duncan's Place

- 1.2.34 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.35 At this location the noise climate primarily consisted of road traffic noise from the A9 (southwest of the measurement position), birdsong and murmuring from a small garden stream.



- 1.2.36 Throughout the monitoring period, one-minute average wind speeds did not exceed 2.4ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.13mm. No precipitation was recorded on 30 January, 1 February and 6 February.
- 1.2.37 Table A15.2-11 and Table A15.2-12 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.38 It should be noted that in Table A15.2-11 and Table A15.2-12 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-11: Daily summarised noise levels at 6 King Duncan's Place, including periods of precipitation and high wind speeds

Data	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour day and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	61.4*	-	-	-	-	56.0	59.3	45.8	
31/01/2025	Friday	60.9	63.5	52.2	61.2	63.9	52.9	53.7	56.3	45.4	
01/02/2025	Saturday	59.8	62.4	51.0	60.1	62.8	51.5	53.8	55.9	45.9	
02/02/2025	Sunday	60.5	63.1	52.1	60.9	63.6	52.9	56.3	58.7	46.6	
03/02/2025	Monday	61.6	64.6	51.9	61.8	64.9	52.4	58.2	60.4	47.2	
04/02/2025	Tuesday	62.8	65.4	52.3	63.0	65.8	52.8	57.4	59.8	46.4	
05/02/2025	Wednesday	61.8	64.2	52.6	62.1	64.6	53.1	55.7	58.3	46.1	
06/02/2025	Thursday	-	64.2*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-12: Daily summarised noise levels at 6 King Duncan's Place, with periods of precipitation and high wind speeds removed

Data	Day	• • • •			16-hour day and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)			
Date	Day	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	
30/01/2025	Thursday	-	61.4*	-	-	-	-	56.7	60.2	46.0	
31/01/2025	Friday	60.9	63.5	52.2	61.2	63.9	52.9	53.7	56.3	45.4	
01/02/2025	Saturday	59.8	62.4	51.0	60.1	62.8	51.5	53.5	57.4	46.2	
02/02/2025	Sunday	60.8	63.4	52.8	61.0	63.7	53.3	56.3	58.7	46.6	
03/02/2025	Monday	62.1	65.3	53.2	62.2	65.3	53.5	-	-	-	
04/02/2025	Tuesday	60.3	63.3	49.8	60.5	63.6	50.1	57.5	59.9	46.4	
05/02/2025	Wednesday	61.8	64.2	52.6	62.1	64.6	53.1	55.7	58.3	46.1	
06/02/2025	Thursday	-	64.2*	-	-	-	-	-	-	-	

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 7 – Braeknowe, Birnam, Dunkeld, PH8 0DU

1.2.39 The measurement location is shown in Photograph A15.2-7. A Rion NL-52 Class 1 sound level meter (s/n 00410085) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 7m from the north-western façade of the building.



Photograph A15.2-7: Noise monitoring equipment at Braeknowe

- 1.2.40 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no significant shift in the observed calibration level.
- 1.2.41 At this location the noise climate primarily consisted of road traffic noise from the A9 and infrequent train movement on the railway line, north of the measurement position.
- 1.2.42 Throughout the monitoring period, one-minute average wind speeds did not exceed 2.4ms⁻¹ and gusts remained below 5ms⁻¹. The total amount of precipitation for any one-minute period did not exceed 0.13mm. No precipitation was recorded on 30 January, 1 February and 6 February.



- 1.2.43 Table A15.2-13 and Table A15.2-14 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.44 It should be noted that in Table A15.2-13 and Table A15.2-14 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-13: Daily summarised noise Levels at Braeknowe, including periods of precipitation and high wind speeds

Date	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour days and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)		
		L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
30/01/2025	Thursday	-	55.7*	-	-	-	-	53.6	52.9	32.8
31/01/2025	Friday	57.5	58.5	46.0	57.4	59.0	47.6	53.2	50.4	28.0
01/02/2025	Saturday	56.1	57.0	45.7	56.3	57.5	47.0	47.3	50.3	32.3
02/02/2025	Sunday	56.0	57.4	46.4	56.4	58.1	47.8	52.0	52.2	36.8
03/02/2025	Monday	57.0	58.5	47.8	57.0	58.9	48.4	54.0	54.2	42.1
04/02/2025	Tuesday	59.1	59.2	48.0	59.2	59.6	48.5	53.8	54.1	38.0
05/02/2025	Wednesday	57.6	58.6	47.7	57.5	59.0	48.5	54.6	52.5	34.8
06/02/2025	Thursday	-	-	-	_	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-14: Daily summarised noise levels at Braeknowe, with periods of precipitation and high wind speeds removed

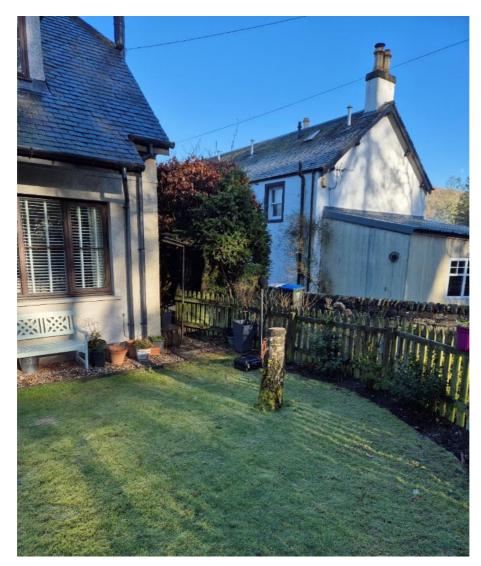
Date	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour days and 23:00)	time period (b	etween 07:00	8-hour night-time period (between 23:00 and 07:00)		
		L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
30/01/2025	Thursday	-	55.7*	-	-	-	-	55.0	53.7	33.2
31/01/2025	Friday	57.5	58.5	46.0	57.4	59.0	47.6	53.2	50.4	28.0
01/02/2025	Saturday	56.1	57.0	45.7	56.3	57.5	47.0	48.4	52.0	35.1
02/02/2025	Sunday	56.4	57.9	47.7	56.7	58.3	48.4	52.0	52.2	36.8
03/02/2025	Monday	57.5	59.4	49.0	57.3	59.5	49.3	-	-	-
04/02/2025	Tuesday	56.3	57.3	44.6	56.3	57.7	45.1	54.4	54.3	38.4
05/02/2025	Wednesday	57.6	58.6	47.7	57.5	59.0	48.5	54.6	52.5	34.8
06/02/2025	Thursday	-	-	-	-	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 8 - Caileagan, Little Dunkeld, Dunkeld, PH8 0AD

1.2.45 The measurement location is shown in Photograph A15.2-8. A Rion NL-52 Class 1 sound level meter (s/n 00410085) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was slightly more than 3m away from the southern façade of the building.



Photograph A15.2-8: Noise monitoring equipment at Caileagan

- 1.2.46 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.47 At this location the noise climate primarily consisted of road traffic noise from the A9 to (south-west of the measurement position) and from surrounding local roads. Additionally, birdsong and the sounds of children playing in the nearby school yard were occasionally audible.



- 1.2.48 Throughout the monitoring period, one-minute average wind speeds did not exceed 1.3ms⁻¹ and gusts exceeded 5ms⁻¹ only once. The total amount of precipitation for any one-minute period did not exceed 0.06mm. No precipitation was recorded on 6 and 13 February.
- 1.2.49 Table A15.2-15 and Table A15.2-16 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.50 It should be noted that in Table A15.2-15 and Table A15.2-16 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-15: Daily summarised noise levels at Caileagan, including periods of precipitation and high wind speeds

Date	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour daytime period (between 07:00 and 23:00)			8-hour night-time period (between 23:00 and 07:00)		
		L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
06/02/2025	Thursday	-	55.2*	-	-	-	-	49.4	51.3	32.0
07/02/2025	Friday	56.9	58.6	45.7	57.2	59.1	46.8	49.5	51.4	31.6
08/02/2025	Saturday	56.3	57.9	44.0	56.6	58.4	45.2	49.3	49.1	29.2
09/02/2025	Sunday	55.7	57.5	44.1	56.0	57.9	45.4	49.8	49.6	32.0
10/02/2025	Monday	56.5	58.3	45.0	56.7	58.7	46.0	51.2	52.2	34.3
11/02/2025	Tuesday	57.2	58.6	45.0	57.6	59.1	45.8	50.7	51.7	32.7
12/02/2025	Wednesday	55.8	57.8	44.0	56.1	58.1	44.9	47.6	50.2	31.0
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-16: Daily summarised noise levels at Caileagan, with periods of precipitation and high wind speeds removed

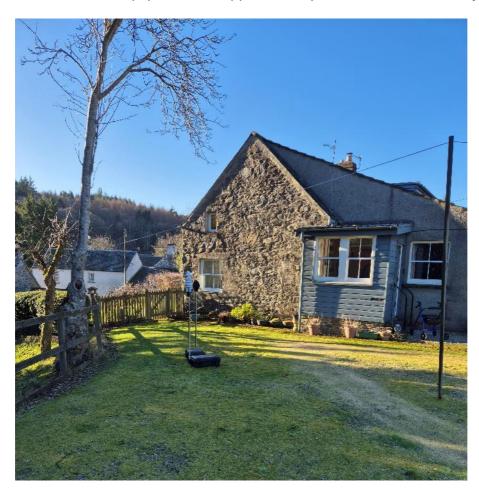
Date	Day	18-hour daytime period (between 06:00 and 00:00)			16-hour daytime period (between 07:00 and 23:00)			8-hour night-time period (between 23:00 and 07:00)		
		L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
06/02/2025	Thursday	-	55.2*	-	-	-	-	49.4	51.3	32.0
07/02/2025	Friday	57.8	60.0	48.2	58.0	60.1	48.6	50.1	51.5	31.7
08/02/2025	Saturday	55.8	57.4	42.6	56.1	57.7	45.2	49.3	49.1	29.2
09/02/2025	Sunday	55.7	57.5	44.1	56.0	57.9	45.4	49.8	49.6	32.0
10/02/2025	Monday	57.1	59.8	48.0	57.2	59.7	48.9	-	-	-
11/02/2025	Tuesday	57.4	58.8	45.5	57.4	58.8	45.8	50.7	51.7	32.7
12/02/2025	Wednesday	55.8	57.8	44.0	56.1	58.1	44.9	47.6	50.2	31.0
13/02/2025	Thursday	-	-	-	-	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



Measurement location 9 - Craigview, Inver, Dunkeld, PH8 0JR

1.2.51 The measurement location is shown in Photograph A15.2-9. A Rion NL-52 Class 1 sound level meter (s/n 00620964) was positioned at a height of approximately 1.5m in free-field conditions. The equipment was approximately 6m from the eastern façade of the building.



Photograph A15.2-9: Noise monitoring equipment at Craigview

- 1.2.52 The monitoring equipment was calibrated both before and after the measurement period using a Rion NC-75 acoustic calibrator (s/n 35292145), which has itself been calibrated against a reference set traceable to National and International Standards. There was no shift in the observed calibration level.
- 1.2.53 At this location the noise climate primarily consisted of road traffic noise from the A9 (north of the measurement location). Additionally, birdsong was audible when traffic was sparse.
- 1.2.54 Throughout the monitoring period, one-minute average wind speeds did not exceed 2.4ms⁻¹ and gusts exceeded 5ms⁻¹ only once. The total amount of precipitation for any one-minute period did not exceed 0.13mm. No precipitation was recorded on 30 January, 1 February and 6 February.



- 1.2.55 Table A15.2-17 and Table A15.2-18 provide the measured daily noise levels at this location, with and without noise levels measured during periods of precipitation and high wind speeds.
- 1.2.56 It should be noted that in Table A15.2-17 and Table A15.2-18 the reported $L_{Aeq,T}$ level is the logarithmically averaged noise level, whereas the $L_{A10,T}$ and $L_{A90,T}$ levels are the arithmetically averaged noise levels.



Table A15.2-17: Daily summarised noise levels at Craigview, including periods of precipitation and high wind speeds

Data	Day	• • • •			16-hour daytime period (between 07:00 and 23:00)			8-hour night-time period (between 23:00 and 07:00)		
Date	*	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
30/01/2025	Thursday	-	62.2*	45.4	61.6	64.8	46.3	55.7	59.5	35.4
31/01/2025	Friday	62.5	64.9	48.0	62.8	65.4	49.2	53.4	56.3	33.7
01/02/2025	Saturday	61.2	64.1	46.9	61.5	64.6	48.2	53.2	55.5	35.8
02/02/2025	Sunday	61.6	64.5	47.7	62.0	65.2	49.0	56.0	59.3	39.6
03/02/2025	Monday	61.5	64.8	48.5	61.8	65.2	49.1	57.3	60.0	41.4
04/02/2025	Tuesday	62.0	65.4	48.8	62.2	65.8	49.3	56.6	59.6	40.5
05/02/2025	Wednesday	62.3	65.5	48.3	62.6	66.0	49.1	56.1	59.1	37.7
06/02/2025	Thursday	-	-	-	-	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



Table A15.2-18: Daily summarised noise levels at Craigview, with periods of precipitation and high wind speeds removed

Data	Day	•			16-hour daytime period (between 07:00 and 23:00)			8-hour night-time period (between 23:00 and 07:00)		
Date	•	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)	L _{Aeq,T} (dB)	L _{A10,T} (dB)	L _{A90,T} (dB)
30/01/2025	Thursday	-	62.2*	-	-	-	-	56.4	60.5	36.2
31/01/2025	Friday	62.5	64.9	48.0	62.8	65.4	49.2	53.4	56.3	33.7
01/02/2025	Saturday	61.2	64.1	46.9	61.5	64.6	48.2	54.6	59.2	36.2
02/02/2025	Sunday	62.0	65.0	48.9	62.2	65.4	49.6	56.0	59.3	39.6
03/02/2025	Monday	62.1	65.6	50.1	62.2	65.7	50.3	-	-	-
04/02/2025	Tuesday	60.4	63.9	45.4	60.6	64.3	45.9	56.8	59.7	40.6
05/02/2025	Wednesday	62.3	65.5	48.3	62.6	66.0	49.1	56.1	59.1	37.7
06/02/2025	Thursday	-	-	-	-	-	-	-	-	-

^{*} Estimated level using CRTN shortened measurement procedure period



2. Calibration Certificates





CERTIFICATE OF CALIBRATION





0653

Date of Issue: 30 May 2024

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

Certificate Number: UCRT24/1792

Page 1 of 2 Pages
Approved Signatory

K. Mistry

Customer ANV Measurement Systems

Beaufort Court 17 Roebuck Way Milton Keynes MK5 8HL

Order No. ANV MS HIRE

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

Identification Manufacturer Instrument Serial No. / Version Type NL-52 00620807 Rion Sound Level Meter Rion Firmware 20 Rion Pre Amplifier NH-25 20867 Rion Microphone UC-59 03633 NC-75 34334830 Rion Calibrator

Calibrator adaptor type if applicable NC-75-022

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 29 May 2024 ANV Job No. UKAS24/05404

Date Calibrated 30 May 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 05 April 2023 UCRT23/1480 0653



CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1792					
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages	

Seed (ACM) Section (ACM)	CV Cades NO	A 00 00	1049 1649 1919	C 4595	167 167 T	AN THE SE	
Sound Level Meter Inst				he sound le	vels inc	licated.	
SLM instruction manual ti			-42 / NL-52				
SLM instruction manual re		1	1-03				
SLM instruction manual s	ource	Manu	ıfacturer				
Internet download date if	applicable		N/A				
Case corrections available	е		Yes				
Uncertainties of case corr	rections		Yes				
Source of case data		Manu	ıfacturer				
Wind screen corrections	available		Yes				
Uncertainties of wind screen	en corrections		Yes				
Source of wind screen da	ta	Manu	ıfacturer				
Mic pressure to free field			Yes				
Uncertainties of Mic to F.	corrections		Yes				
Source of Mic to F.F. corr			ıfacturer	WEST .			
Total expanded uncertain				.002 Ye	s		
Specified or equivalent Co		Sp	ecified				
Customer or Lab Calibrat			Calibrator				
Calibrator adaptor type if	applicable		75-022				
Calibrator cal. date		30 A	oril 2024				
Calibrator cert. number		UCRI	24/1668				
Calibrator cal cert issued	by	C	653				
Calibrator SPL @ STP		94.0	1 dB	Calibration	referen	ce sound pr	essure level
Calibrator frequency		1000.	1000.00 Hz Calibration check frequency				
Reference level range		25 - 1	30 dB	- Committee			
Accessories used or corre	acted for during calib	ration	Extension	Cable & Wind	1 Chield	WC 15	
Note - if a pre-amp extens							
Environmental conditions	during tests	Star	t	End	7		1.021
	Temperature	23.7	8	23.91	±	0.30 °C	7
	Humidity	50.0)	48.9	±	3.00 %R	Н
	Ambient Pressure	100.0	03	100.05	±	0.03 kPa	
Response to associated (Calibrator at the envi	ronmental c	onditions abo	ve.			
Initial indicated leve		dB		indicated lev	el	94.0	dB
The uncertainty of the ass					-	0.10	dB
Self Generated Noise	This test is currently						
Microphone installed (if re				N/A	dB	A Weighting	
Uncertainty of the microp				N/A	dB	Avveigning	
				30,000-0		╡	
Microphone replaced with		ce -		r Range indi			
Weighting	A LID LUD	40.7	C Lin Lin	20.7	Z	Luc	
	2.9 dB UR	16.7	dB UR	0.12	dB	UR	
Uncertainty of the electric	and the same of th		ti vili sirini	7000 701 110970	dB	_	
The reported expanded u							
a coverage probability of UKAS requirements.	approximately 95%.	The uncerta	ainty evaluation	on has been	carried o	out in accord	lance with
For the test of the frequer response was used.	ncy weightings as pe	r paragraph	12. of IEC 61	1672-3:2006	the actu	al micropho	ne free field
The acoustical frequency		weighting a	s per paragra	ph 11 of IEC	61672-	3:2006 were	carried out
using an electrostatic actu	Jaiot.	92					
		E	ND				
	iblocki	50/922071 FEEDO	\$1 (\$100 A.0 000	1 1921	1000	12997 NASS 14 1	R
Additional Comments None	The results on this	certificate or	nly relate to the	ne items calib	orated as	s identified a	bove.





CERTIFICATE OF CALIBRATION





0653

Date of Issue: 17 October 2024

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 Me

Approved Signatory Bogdan

Certificate Number: UCRT24/2372

Customer **ANV Measurement Systems**

Beaufort Court 17 Roebuck Way Milton Keynes

MK5 8HL

Order No. ANV MS HIRE

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

Identification Manufacturer Instrument Serial No. / Version Type NL-52 00620871 Rion Sound Level Meter Rion Firmware 2.0 Rion Pre Amplifier NH-25 20931 Rion Microphone UC-59 04569 NC-75 34334830 Rion Calibrator

NC-75-022 Calibrator adaptor type if applicable

Performance Class

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 UKAS24/10740 16 October 2024 ANV Job No.

Date Calibrated 17 October 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 Certificate No. Dated Laboratory 30 March 2022 UCRT22/1467 0653



CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/2372					
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages	

Sound Level Meter	Instruction manual ar	d data u	sed to ac	liust th	ne sound lev	els inc	dicated.	
SLM instruction manu			NL-42 / N					
SLM instruction manu			11-03					
SLM instruction manu	al source	Ma	anufacture	er				
Internet download date	e if applicable		N/A					
Case corrections avail			Yes					
Uncertainties of case	corrections		Yes					
Source of case data		Ma	anufacture	er				
Wind screen correction	ns available	150	Yes					
Uncertainties of wind	screen corrections		Yes					
Source of wind screen	n data	Ma	anufacture	er				
Mic pressure to free fi	eld corrections		Yes					
Uncertainties of Mic to	F.F. corrections		Yes					
Source of Mic to F.F.	corrections	Ma	anufacture	er	000			
Total expanded uncer	tainties within the requir	ements o	f IEC 616	72-1:20	002 Yes			
Specified or equivaler	t Calibrator		Specified		594			
Customer or Lab Calil		La	b Calibrat	or				
Calibrator adaptor type	e if applicable	N	IC-75-022	2				
Calibrator cal. date		17 Se	ptember	2024				
Calibrator cert. number	er	UC	RT24/22	34				
Calibrator cal cert issu	ied by		0653					
Calibrator SPL @ STF	· .	94	4.02	dB	Calibration	referen	nce sound pre	essure level
Calibrator frequency		100	00.00	Hz	Calibration			
Reference level range		115,070	- 130	dB	Galibration	OHOOK	noquency	
	corrected for during calil			ocion C	Cable & Wind	Chield	MC 1E	
	tension cable is listed th						저렇게 그래?	
		_		ween u	(III)	Tie pre-	anip.	
Environmental condition			tart		End			
	Temperature	+	3.00	-	23.10	±	0.30 °C	_
	Humidity		7.9		50.8	±	3.00 %RI	4
	Ambient Pressure	99	9.96	_	99.96	±	0.03 kPa	
Response to associate	ed Calibrator at the env	ironmenta	l condition	ns abov	ve.			
Initial indicated le	evel 94.0	dB	Ad	justed i	indicated leve	el	94.0	dB
The uncertainty of the	associated calibrator s	upplied wi	th the sou	ind leve	el meter ±		0.10	dB
Self Generated Noise	This test is current	v not perf	ormed by	this La	b.			
	if requested by custome			T	N/A	dB	A Weighting	
	rophone installed self g				N/A	dB	T	
	with electrical input dev			Under	Range indic	ated	₹	
Weighting	A	T	C	Onde	Trange male	Z	the contract of	
vvcigitalig	12.1 dB UR	15.7		UR	21.4	dB	UR	
Uncertainty of the elec	trical self generated no		GD.	UIX	0.12	dB	011	
- Company of the Comp			lord upoo	tointu	assistingliand bus	2 001/01	raga factor k	=2 providing
The reported expands	d upportainty is boood							
	d uncertainty is based							
a coverage probability	ed uncertainty is based of approximately 95%.							
a coverage probability UKAS requirements.	of approximately 95%.	The unce	ertainty ev	aluatio	n has been o	arried	out in accord	ance with
a coverage probability UKAS requirements.		The unce	ertainty ev	aluatio	n has been o	arried	out in accord	ance with
a coverage probability UKAS requirements. For the test of the frec response was used. The acoustical freque	of approximately 95%. Juency weightings as pency tests of a frequency	The unce	ertainty ev	aluatio	n has been c	arried on	out in accord	ance with
a coverage probability UKAS requirements. For the test of the free response was used.	of approximately 95%. Juency weightings as pency tests of a frequency actuator.	The unce er paragra weighting	ertainty ev ph 12. of g as per p	raluatio IEC 61 aragra	n has been of 672-3:2006 to oh 11 of IEC	arried one actu	out in accord all microphor 3:2006 were	ance with ne free field carried out
a coverage probability UKAS requirements. For the test of the free response was used. The acoustical freque using an electrostatic	of approximately 95%. Juency weightings as pency tests of a frequency actuator.	The unce er paragra weighting	ertainty ev	raluatio IEC 61 aragra	n has been c	arried one actu	out in accord all microphor 3:2006 were	ance with ne free field carried out
a coverage probability UKAS requirements. For the test of the frec response was used. The acoustical freque using an electrostatic Calibrated by: K	of approximately 95%. quency weightings as pency tests of a frequency actuator.	The unce er paragra weighting	ph 12. of g as per p END	raluatio	n has been c	arried one actu	out in accord ual microphor 3:2006 were	ance with the free field carried out R 1
a coverage probability UKAS requirements. For the test of the free response was used. The acoustical freque using an electrostatic	of approximately 95%. quency weightings as pency tests of a frequency actuator.	The unce er paragra weighting	ph 12. of g as per p END	raluatio	n has been c	arried one actu	out in accord ual microphor 3:2006 were	ance with the free field carried out R 1





CERTIFICATE OF CALIBRATION





0653

Date of Issue: 16 February 2024

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

Certificate Number: UCRT24/1267

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Approved Signatory			1	1	
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		//		1/1	
		1	VA	· Am	
	1				
K. Mistry					

Customer ANV Measurement Systems

Beaufort Court 17 Roebuck Way Milton Keynes MK5 8HL

Order No. ANV MS HIRE

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

Identification Manufacturer Instrument Serial No. / Version Type 00620964 Rion Sound Level Meter NL-52 Rion Firmware 2.0 Rion Pre Amplifier NH-25 21005 Rion Microphone UC-59 03884 NC-75 34334830 Rion Calibrator

Calibrator adaptor type if applicable NC-75-022

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 15 February 2024 ANV Job No. UKAS24/02141

Date Calibrated 16 February 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 29 March 2023 UCRT23/1443 0653



CERTIFICATE OF CALIBRATION	Certificate Number UCRT24/1267					
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages	

Sound Level Meter Ins		3 15 15 MANUAL TOTAL TOT			\$7 GE 1	N 10 4	
				he sound le	evels inc	dicated.	
SLM instruction manual			2 / NL-52				
SLM instruction manual		11-0	03				
SLM instruction manual	source	Manufa	cturer				
Internet download date it	The second second	N/A	4				
Case corrections availab	le	Yes	S				
Uncertainties of case co	rections	Yes	S				
Source of case data		Manufa	cturer				
Wind screen corrections	available	Yes	S				
Uncertainties of wind scr	een corrections	Yes	T-1				
Source of wind screen d		Manufa					
Mic pressure to free field		Yes	73)				
Uncertainties of Mic to F		Yes					
Source of Mic to F.F. cor		Manufa		999			
Total expanded uncertai				002 Ye	es		
Specified or equivalent C		Speci					
Customer or Lab Calibra		Lab Cali					
Calibrator adaptor type if	applicable	NC-75					
Calibrator cal. date		22 Janua					
Calibrator cert. number		UCRT24	1/1118				
Calibrator cal cert issued	by	065	3				
Calibrator SPL @ STP		94.00	dB	Calibration	referen	ce sound pre	essure level
Calibrator frequency		1000.00	Hz	Calibration	n check f	frequency	
Reference level range		25 - 130	dB				
Accessories used or corn Note - if a pre-amp exter				Cable & Win			
Environmental conditions		Start	1	End	7	uni ipi	
Livironiniental condition.	Temperature	22.90	_	23.01	±	0.30 °C	7
	Humidity	47.2		51.2	±	3.00 %RH	,
	Ambient Pressure	100.58		100.61	±	0.03 kPa	Ή
					I	0.05 KFA	
		ronmental cond	ditions abo	ve.			
						50200000000	
Initial indicated leve	94.1	dB		indicated lev	vel	94.0	dB
Initial indicated leve	94.1	dB			vel	94.0 0.10	dB dB
Initial indicated leve The uncertainty of the as	94.1	dB upplied with the	sound lev	el meter ±	vel		
Initial indicated leve The uncertainty of the as Self Generated Noise	94.1 sociated calibrator su This test is currentl	dB upplied with the y not performed	sound lev	el meter ±			
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r	94.1 sociated calibrator su This test is currentle equested by custome	dB upplied with the y not performeder) = Less Than	sound level by this La	el meter ± ab.		0.10	
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp	el 94.1 sociated calibrator so This test is currentlequested by custome	dB upplied with the y not performed er) = Less That enerated noise	sound level by this Land	el meter ± ab. N/A N/A	dB dB	0.10	
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp Microphone replaced wit	94.1 sociated calibrator su This test is currentlequested by customethone installed self gethered.	dB upplied with the y not performed er) = Less That enerated noise	sound level by this Land	el meter ± ab. N/A	dB dB	0.10	
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp Microphone replaced wit Weighting	94.1 sociated calibrator su This test is currentlequested by customethone installed self get h electrical input devi	dB upplied with the y not performed er) = Less That enerated noise ce - L	sound level by this Landau DR = Under	el meter ± ab. N/A N/A r Range indi	dB dB cated Z	0.10 A Weighting	
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp Microphone replaced wit Weighting	94.1 sociated calibrator su This test is currentlequested by custome thone installed self get helectrical input devi	dB upplied with the y not performed or) = Less That enerated noise ce - C C 15.2 c	sound level by this Land	el meter ± ab. N/A N/A	dB dB	0.10	
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp Microphone replaced wit Weighting Uncertainty of the electri	94.1 sociated calibrator su This test is currentlequested by custome other installed self get helectrical input devi- A 11.8 dB UR cal self generated no	dB upplied with the y not performed er) = Less Than enerated noise ce - L L L L L L L L L L L L L L L L L L	sound level described by this Landau state of the sound level described by	el meter ± ab. N/A N/A r Range indi 21.2 0.12	dB dB icated Z dB dB	0.10 A Weighting	dB
Initial indicated leve The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microp Microphone replaced wit Weighting Uncertainty of the electri The reported expanded	94.1 sociated calibrator su This test is currentlequested by custome other installed self get helectrical input deviors A 1.8 dB UR cal self generated no uncertainty is based of	dB upplied with the y not performed er) = Less Than enerated noise ce - L L L L L L L L L L L L L L L L L L	sound level de by this Land de by this Land de by this Land de by this Land de by the	el meter ± ab. N/A N/A r Range indi 21.2 0.12 multiplied by	dB dB cated Z dB dB	0.10 A Weighting UR ugge factor k	dB =2, providing
Initial indicated lever The uncertainty of the asset Self Generated Noise Microphone installed (if runcertainty of the microphone replaced with Weighting Uncertainty of the electric The reported expanded a coverage probability of	94.1 sociated calibrator su This test is currentlequested by custome other installed self get helectrical input deviors A 1.8 dB UR cal self generated no uncertainty is based of	dB upplied with the y not performed er) = Less Than enerated noise ce - L L L L L L L L L L L L L L L L L L	sound level de by this Land de by this Land de by this Land de by this Land de by the	el meter ± ab. N/A N/A r Range indi 21.2 0.12 multiplied by	dB dB cated Z dB dB	0.10 A Weighting UR ugge factor k	dB =2, providing
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The uncertainty of the as Self Generated Noise Microphone installed (if r Uncertainty of the microphone replaced with Weighting	94.1 Isociated calibrator sure the equested by custome chone installed self generated not approximately 95%. Incorporation of the equested by custome chone installed self generated not approximately 95%.	dB upplied with the y not performed or = Less That enerated noise ce -	sound level do by this Land do by this Land do by this Land do by this Land do by the Land do by	el meter ± ab. N/A N/A r Range indi 21.2 0.12 multiplied by on has been	dB dB cated Z dB dB dB taken a cover carried to	O.10 A Weighting UR age factor k out in accord.	dB =2, providing ance with
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45





CERTIFICATE OF CALIBRATION





0653

Date of Issue: 17 October 2024

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

Certificate Number: UCRT24/2374

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Approved Signatory			1	1
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K. Mistry				

Customer ANV Measurement Systems

Beaufort Court 17 Roebuck Way Milton Keynes MK5 8HL

Order No. ANV MS HIRE

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

Identification Manufacturer Instrument Serial No. / Version Type 00710288 Rion Sound Level Meter NL-52 Rion Firmware 20 Rion Pre Amplifier NH-25 10282 Rion Microphone UC-59 02726 NC-75 34334830 Rion Calibrator

Calibrator adaptor type if applicable NC-75-022

Performance Class

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 October 2024 ANV Job No. UKAS24/10740

Date Calibrated 17 October 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 26 January 2023 UCRT23/1134 0653



CERTIFICATE OF CALIBRATION	Certif		Num T24/23		
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages

	107 7007 10	4 4 2				W 10 4	
	nstruction manual an			the sound	evels inc	dicated.	
SLM instruction manua			42 / NL-52				
SLM instruction manua		1	1-03				
SLM instruction manua	al source	Man	ufacturer				
Internet download date			N/A				
Case corrections availa	able		Yes				
Uncertainties of case of	corrections		Yes				
Source of case data		Man	ufacturer				
Wind screen correction	ns available		Yes				
Uncertainties of wind s	creen corrections		Yes				
Source of wind screen	data	Man	ufacturer				
Mic pressure to free fie	eld corrections		Yes				
Uncertainties of Mic to			Yes				
Source of Mic to F.F. o			ufacturer	0000			
	ainties within the requir	ements of I	EC 61672-1:2	2002 Y	es		
Specified or equivalent			ecified				
Customer or Lab Calib			Calibrator				
Calibrator adaptor type	if applicable		-75-022				
Calibrator cal. date			ember 2024				
Calibrator cert. numbe		UCR'	T24/2234				
Calibrator cal cert issue	ed by	(0653				
Calibrator SPL @ STP		94.0	2 dB	Calibratio	on referen	ice sound pr	essure level
Calibrator frequency		1000.	00 Hz			frequency	
Reference level range		25 - 1	30 dB	Gambian	or or out	roquority	
	orrected for during calib			Cable & Wi	101111	1110 45	
	ension cable is listed th		ed between	the SLM an	d the pre-	amp.	
Environmental condition	ns during tests	Sta	rt	End			
	Temperature	23.4	0	23.70	±	0.30 °C	
	Humidity	49.4	4	48.1	±	3.00 %RI	4
	Ambient Pressure	100.0	01	100.03	±	0.03 kPa	
Response to associate	d Calibrator at the envi	ronmental c	onditions abo	ove.			
Initial indicated le	vel 94.2	dB	Adjusted	indicated le	evel	94.0	dB
The uncertainty of the	associated calibrator su	pplied with	the sound le	vel meter ±	0.10 dB		
Self Generated Noise	This test is currently						
	f requested by custome			N/A	dB	A Weighting	8 9
	ophone installed self ge			N/A	dB	T Weighting	
				11.00	-	=	
	vith electrical input devi	ce -		er Range ind			
Weighting	A LID LUD	40.4	C Lun	20.0	Z	LUD	
l la containte of the class	13.0 dB UR	16.4	dB UR	22.3	dB	UR	
	trical self generated noi	15.00		0.12	dB	J	
The reported expanded	d uncertainty is based of	n a standar	d uncertainty	multiplied b	y a cover	rage factor k	=2, providing
a coverage probability	of approximately 95%.	The uncerta	ainty evaluati	on has been	carried o	out in accord	ance with
UKAS requirements.							
For the test of the frequency response was used.	uency weightings as pe	r paragraph	12. of IEC 6	1672-3:200	the actu	al microphor	ne free field
The transfer of the state of th	cy tests of a frequency	weighting a	s per paragra	aph 11 of IE	C 61672-	3:2006 were	carried out
		E	END				
Calibrated by: K. Additional Comments None	Zablocki The results on this	certificate o	nly relate to t	he items ca	librated a	s identified a	bove.
10.10							





CERTIFICATE OF CALIBRATION





0653

Date of Issue: 17 January 2025

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 System

Certificate Number: UCRT25/1114

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Approved Signatory			1		1
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K. Mistry					

Customer ANV Measurement Systems

Beaufort Court 17 Roebuck Way Milton Keynes MK5 8HL

Order No. ANV MS HIRE

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

Identification Manufacturer Instrument Serial No. / Version Type 00410085 Rion Sound Level Meter NL-52 Rion Firmware 2.0 Rion Pre Amplifier NH-25 10078 Rion Microphone UC-59 02436 NC-75 34334830 Rion Calibrator

Calibrator adaptor type if applicable NC-75-022

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 14 January 2025 ANV Job No. UKAS25/01042

Date Calibrated 17 January 2025

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 08 February 2024 UCRT24/1218 0653



CERTIFICATE OF CALIBRATION	Certif		e Num T25/11		
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages

0	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					Part I
	Instruction manual an			he sound le	evels inc	licated.
SLM instruction man			42 / NL-52			
SLM instruction man			-03			
SLM instruction manu			facturer			
Internet download da			I/A			
Case corrections ava	The state of the s		'es			
Uncertainties of case	corrections	220	'es			
Source of case data			facturer			
Wind screen correction			es			
Uncertainties of wind			'es			
Source of wind scree			facturer			
Mic pressure to free t			es			
Uncertainties of Mic t			es			
Source of Mic to F.F.			facturer		000	
	rtainties within the requir			002 Ye	S	
Specified or equivale		1000	cified			
Customer or Lab Cal			alibrator			
Calibrator adaptor typ	e if applicable		75-022			
Calibrator cal. date			mber 2024			
Calibrator cert. numb	er	UCRT	24/2700			
Calibrator cal cert iss	ued by	06	553			
Calibrator SPL @ ST	P	94.04	dB	Calibration	referen	ce sound pressure level
Calibrator frequency		1000.0	0 Hz	Calibration	check f	frequency
Reference level range	9	25 - 13	0 dB			
	corrected for during calib	ration -	Extension	Cable & Win	d Shield	WS-15
	xtension cable is listed th					
Environmental condit		100,000		(0.25 - 1/2	7	
Environmental condit	Temperature	Start 22.96		22.99	-	0.30 °C
	Humidity	37.0	10	43.1	±	3.00 %RH
		102.5	2	102.54		N. Company of the Com
	Ambient Pressure			-	±	0.03 kPa
	ted Calibrator at the envi					
Initial indicated		dB		indicated lev	/el	94.0 dB
The uncertainty of the	e associated calibrator su	applied with the	ne sound lev	el meter ±		0.10 dB
Self Generated Noise	This test is currently	y not perform	ed by this L	ab.		
	(if requested by custome			N/A	dB	A Weighting
Uncertainty of the mid	crophone installed self ge	enerated nois	e ±	N/A	dB	
Microphone replaced	with electrical input devi	ce -	UR = Unde	r Range indi	cated	1
Weighting	A		C	T Tange in a	Z	de
Troigning	12.8 dB UR	16.9	dB UR	23.4	dB	UR
Uncertainty of the ele	ctrical self generated noi			0.12	dB	
Water to the same of the same	STATE OF THE PARTY OF THE STATE	75-100	uncertainty	multiplied by	, a cover	rage factor k = 2, providing
	y of approximately 95%.					
UKAS requirements.	y or approximately 35 %.	The differta	inty evaluation	on nas been	carried	out in accordance with
	avanav voiabtiaan aa na		12 -4150 6	1670 2:2006	the estimate	al missasbana feas field
response was used.	quency weightings as pe	r paragrapn	IZ. OF IEC 6	1672-3:2006	the actu	al microphone free field
THE TANK STATE CONTRACTOR THOUGHT CONTRACTOR	ency tests of a frequency actuator.	weighting as	per paragra	ph 11 of IEC	61672-	3:2006 were carried out
		Е	ND			
Calibrated by: E Additional Comments None	B. Bogdan The results on this	certificate on	ly relate to the	ne items cali	brated as	s identified above.





CERTIFICATE OF CALIBRATION





Date of Issue: 19 February 2025

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

Certificate Number: UCRT25/1283

Page 1 of 2 Pages
Approved Signatory

K. Mistry

Customer ANV Measurement Systems

Beaufort Court 17 Roebuck Way Milton Keynes MK5 8HL

Order No. ANV MS HIRE

Test Procedure Procedure TP 14 Calibration of Sound Calibrators (60942:2017)

Description Acoustic Calibrator

Identification Manufacturer Instrument Model Serial No.

Rion Calibrator NC-75 35292145

Public evidence of Type Approval Yes Approved by PTB

The calibrator has been tested as specified in Annex B of IEC 60942:2017. As public evidence was available, from a testing organisation 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 60942:2017, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2017.

ANV Job No. UKAS25/02141

Date Received 18 February 2025

Date Calibrated 19 February 2025

Previous Certificate Dated 13 March 2024

Certificate No. UCRT24/1405

Laboratory 0653



CERTIFICATE OF CALIBRATION	Certificate Number UCRT25/1283					
UKAS Accredited Calibration Laboratory No. 0653	Page	2	of	2	Pages	

Measurements

The sound pressure level generated by the calibrator (averaged over a 20 to 25 second period) in its WS2 configuration was measured five times (rotating the calibrator on the microphone each time) by the Insert Voltage Method using a microphone as detailed below. The mean of the results obtained is shown below.

The frequency of the sound from the calibrator was measured five times over a 20 to 25 second period and the average frequency calculated.

The total distortion + noise of the sound from the calibrator was measured, using a rejection filter distortion factor meter, five times over a 20 to 25 second period and the average distortion + noise calculated.

Test Microphone Manufacturer Type
Brüel & Kjær 4134

Nominal	Mean Level	Frequency	Distortion + Noise
Setting dB / Hz	dB rel 20 µPa		
94 / 1000	94.10 ± 0.10	1000.00 ± 0.12Hz	(0.15 ± 0.03) %

Environmental conditions during tests	Start	End			
Temperature	22.62	22.31	±	0.30	°C
Humidity	36.2	37.6	±	3.0	%RH
Ambient Pressure	100.429	100.431	±	0.030	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.

Note: Calibrator adjusted prior to calibration? NO

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

None

Calibrated by: B. Bogdan R 2

END





EFFECTIVE

1 6 SEP 2024



OTT HydroMet Fellbach GmbH Gutenbergstraße 20 70736 Fellbach Deutschlaß +49 711 51822 0 met-info@otthydromet.com www.otthydromet.com

FAT Certificate & Protocol – Smart Weather Sensor

This is to certify, that this Lufft branded product has been tested according to the QM of the OTT HydroMet Fellbach GmbH manual in accordance with DIN EN ISO 9001. Ordering specifications are complied with. Execution of instruments / systems as well as testing of accuracy was carried out following OTT HydroMet quality assurance procedures. Quality inspection was successfully passed. This Lufft product has been calibrated according to specifications using references traceable to international standard units administrated by the national metrology institutes like PTB, NIST, NPL or other recognized national standard laboratories.

Measurements

	Reference value	Observed value	Error	Status
Relative humidity	15.0 % RH	15.0 % RH	0.0 % RH	✓
Relative humidity	75.0 % RH	75.0 % RH	0.0 % RH	✓
Temperature	0.01 °C	0.01 °C	0.00 °C	1
Air pressure	985.7 hPa	985.7 hPa	0.0 hPa	✓

Precipitation

RMS

	Reference value	Observed value	Status
Drop size small	0.115 mm	0.116 mm	✓
Drop size medium	0.670 mm	0.671 mm	-
Drop size large	2.730 mm	2.793 mm	✓

Wind direction and speed

2.0 m/s

Angular de	viation	(0° 360	o in steps of	22.5°)		
	2.0 m/s	5.0 m/s	10.0 m/s	20.0 m/s	50.0 m/s	Status
RMSE	0.6°	0.3°	0.5°	0.6°	0.7°	1
Wind spee	d					
	2.0 m/s	5.0 m/s	10.0 m/s	20.0 m/s	50.0 m/s	Status

10.0 m/s

This test certificate may not be reproduced other than in full except with the permission of the issuing company. Test certificates without signature are not valid.

19.9 m/s

Fellbach, 10.07.2024 SEP 2024

AL DATE

5.0 m/s

Qualitätssicherung

i. A. Hartmut Schneider

49.8 m/s