

Appendix 8.4

Calibration Certificates



APPENDIX 8.4 CALIBRATION CERTIFICATES



A8.4.1 Measurement Position 1 (Serial no. 12070)

Acoustic			
		S report EP-10410.xls	
ISSUED FOR :	Sol Acoustics Limite Unit 11 Brunel Court Gladbrook Park CW9 7LP Rudheath UK		
Name and location of th Acoustic1 - Overdale Mar Carmathenshire UK SA19	nordeilo, Llandeilo	:	
TESTED INSTRUMENT Designation :	Integrator Sound Le	vel Meter	
Manufacturer :	01dB		
Туре :	CUBE	Serial number :	12070
		Identification number	er:
This report include	- 10	Date of issue :	23/01/2022
This report include The measurements are p meters – Part 3: Periodic	erformed according to	the IEC 61672-3, Elec	ctroacoustics, - Sound level
Steve THOMAS Head of calibration laboratory a	t Acoustic 1 H	François MAGAN lead of calibration laboratory a Maxime DONET (o	at ACOEM-01dB
THIS REPORT is compliant with THE FD X This document may not be reproduced other		N	
01dB-Metravib SAS - Head Office: 200 chem A simplified joint stock company with a capital of		00019 - Lyon Trade Register: 409 869 708	



Identification :				
	Sound level meter	Microphone	Accessories	
Manufacturer	01dB	GRAS	PRE22 # 1915040	
Туре	CUBE	40CD	Short windscreen + RA0208 noise cone	
Serial number	12070	288057	RAL135 - 10M	
Firmware versior	Application: 2.49			
Calibrator	Metrology: 2.12	librator of the Laborator	у	
Program: The Sound level met • Self-generated n	er has been tested on the follow	ving characteristics:		
 Frequency and ti Long-term stabili Level linearity Toneburst response 				
• C-weighted peak • Overload indicati • High-level stabilit	sound level on			
C-weighted peak Overload indicati High-level stabilit Method: The instrument is tes calibrated in amplitue effect from the case sound level meter us The reference freque	sound level on y sted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions:	sound level on by sy ted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests	sound level on by sted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single 1/23/2022	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests	sound level on by sy ted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions:	sound level on by sted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single 1/23/2022	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name	sound level on by ted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single 1/23/2022 Steve Thomas	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction	sound level on by ted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single 1/23/2022 Steve Thomas MET.15.INS.001_D_Fr	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction Static pressure	sound level on by sted in an air conditioned room. de and in frequency. Some mar of the sound level meter and hi er manual. ency of the sound level meter is level meter possesses a single 1/23/2022 Steve Thomas MET.15.INS.001_D_Fr >95,5 ; <105 kPa	ufacturer's corrections hav s accessories (IEC 61672- 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the



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Instruments used for tests:

Designation	Manufacturer	Туре	Serial number	Identification number
Multimeter	HP	34401A	3146A27296	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Progammable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types (k=2). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.). are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
93.7	0.3	93.8	+/- 1,0

Self-generated noise

0° RA208 + short windscre	en	
Microphone replaced by the electrical input-signal	Nominal value	Displayed value
device	(dB)	(dB)
Leq dBA	< 14	9.5
Leq dBB	< 15	9.1
Leq dBC	< 20	10.4
Leq dBZ	< 21	15.3

Microphone installed	Nominal value	Displayed value
	(dB)	(dB)
Leq dBA	< 20	15.3

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Acoustical signal tests of a frequency weightings

90° RA208 + short windscreen	Measurement error C (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.7	0.5	-2,5 ; +1,5
0° RA208 + short windscreen	C (dB)	Uncertainty (dB)	M.P.E. (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	0.2	0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

	Meas	urement err	or		Maximum
90° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	Permissible Error (dB)
63 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	0.0	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.6	0.4	+/- 1,0
8000 Hz	-0.7	-1.2	-1.2	0.6	-2,5 ; +1,5
16000 Hz	-6.6	-11.9	-12.0	0.6	-16,0 ; +2,5
0° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	M.P.E. (dB)
63 Hz	0.0	0.0	0.0	0.4	+/- 1,0
125 Hz	-0.1	-0.1	0.0	0.4	+/- 1,0
250 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
500 Hz	0.0	0.0	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	0.0	0.0	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.7	0.4	+/- 1,0
8000 Hz	0.3	-0.3	-0.2	0.6	-2,5 ; +1,5
16000 Hz	-4.5	-9.8	-9.9	0.6	-16,0 ; +2,5

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Frequency and time weightings at 1 kHz

90° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	93.8	Reference	0.1	
Lp dBA / 1000 Hz Slow	93.8	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	93.8	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.1	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	94.1	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2

Long-term stability

90° RA208 + short windscreen

Displayed value	Measured devi	ation Uncertainty	Maximum
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)
94.0 94.0	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)
93.9 93.9	0.0	0.1	+/- 0,1

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Level linearity

90° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.1	0.1	0.3	+/- 0,8
109.0	108.9	-0.1	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.8	-0.2	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.8	-0.2	0.3	+/- 0,8
129.0	128.8	-0.2	0.3	+/- 0,8
130.0	129.8	-0.2	0.3	+/- 0,8
131.0	130.8	-0.2	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.0	0.0	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.0	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.0	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.0	0.0	0.3	+/- 0,8
34.0	33.9	-0.2	0.3	+/- 0,8
29.0	29.1	0.1	0.3	+/- 0,8
26.0	26.6	0.6	0.3	+/- 0,8
25.0	25.4	0.4	0.3	+/- 0,8
24.0	23.8	-0.2	0.3	+/- 0,8
23.0	22.8	-0.2	0.3	+/- 0,8
22.0	22.5	0.5	0.3	+/- 0,8

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Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	103.9	-0.1	0.3	+/- 0,8
109.0	108.9	-0.1	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.8	-0.2	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.8	-0.2	0.3	+/- 0,8
129.0	128.8	-0.2	0.3	+/- 0,8
130.0	129.8	-0.2	0.3	+/- 0,8
131.0	130.8	-0.2	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.1	0.0	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.1	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.0	0.0	0.3	+/- 0,8
34.0	34.0	0.0	0.3	+/- 0,8
29.0	29.3	0.3	0.3	+/- 0,8
26.0	26.3	0.3	0.3	+/- 0,8
25.0	25.0	0.0	0.3	+/- 0,8
24.0	23.9	-0.1	0.3	+/- 0,8
23.0	23.2	0.2	0.3	+/- 0,8
22.0	22.5	0.5	0.3	+/- 0,8

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Tests report: TR-REP-10410.xls

Toneburst response

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	115.9	-0.1	0.1	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.7	-0.3	0.1	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.1	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.1	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.7	-0.3	0.1	-3,0 ; +1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133	0	0.0	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	116	0	0.0	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.9	-0.1	0.0	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.0	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.0	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.0	-3,0;+1,0

C-weighted peak sound level

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
8000 Hz Complete cycle	133.5	1.1	0.1	+/- 2,0
500 Hz Positive one-half-cycle	134.3	-0.1	0.1	+/- 1,0
500 Hz Negative one-half-cycle	134.3	-0.1	0.1	+/- 1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Erreur Maximale
	(dB)	(dB)	(dB)	Tolérée (dB)
8000 Hz Complete cycle	131.2	1.8	0.1	+/- 2,0
500 Hz Positive one-half-cycle	133.8	-0.6	0.1	+/- 1,0
500 Hz Negative one-half-cycle	133.8	-0.6	0.1	+/- 1,0

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Overload indication

90° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycl	(dB)	(dB)	Permissible Error (dB)
110.1 110.3	-0.2	0.1	+/- 1,5

0° RA208 + short windscreen

Displayed v	alue	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Ne	egative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
108.9	109.1	-0.2	0.1	+/- 1,5

High-level stability

90° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication Fir	al indication	(dB)	(dB)	Permissible Error (dB)
135.6	135.6	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displa	yed value	Measured deviation	Uncertainty	Maximum
(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.8	135.8	0.0	0.1	+/- 0,1

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Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
9	Sound calibrator	Not applicable
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

 CUBE user manual
 DOC1144 February 2018 version M

 Type-approval certificate
 France: Deutschland:
 LNE-29639 revision 1 dated 04/04/2017

The sound level meter submitted for testing 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 organization 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.

End of tests report

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A8.4.2 Measurement Position 2 (serial no. 12068)

Acoustic			() OIGB
		S report EP-10394.xls	
ISSUED FOR :	Sol Acoustics Limite Unit 11 Brunel Court Gladbrook Park CW9 7LP Rudheath UK		
Name and location of the Acoustic1 - Overdale Ma Carmathenshire UK SA1	nordeilo, Llandeilo	:	
TESTED INSTRUMENT Designation :	Integrator Sound Le	vel Meter	
Manufacturer :	01dB		
Туре :	CUBE	Serial number :	12068
		Identification number	er :
This report include	es 10 pages	Date of issue :	13/01/2022
The measurements are p meters – Part 3: Periodic		the IEC 61672-3, Elec	ctroacoustics, - Sound level
Steve THOMAS Head of calibration laboratory	at Acoustic 1 H	François MAGAN lead of calibration laboratory a	
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TR-REP-10394.xls				
Identification :				
	Sound level meter	Microphone	Accessories	
Manufacturer	01dB	GRAS	PRE22 # 1936010	
Туре	CUBE	40CD	Short windscreen + RA0208 noise cone	
Serial number	12068	292577	RAL135 - 10M	
Firmware versio	n Application: 2.49			
Calibrator	Metrology: 2.12	librator of the Laborato	ry	
Program:	ter has been tested on the follov	the second state		
 Level linearity Toneburst response 				
C-weighted peak Overload indicat High-level stabili	k sound level lion			
 C-weighted peal Overload indicat High-level stabili 	k sound level lion			
C-weighted peak Overload indicat High-level stabili Method: The instrument is ter calibrated in amplitue effect from the case sound level meter us The reference freque	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Verload indicat High-level stabili Method: The instrument is ter calibrated in amplitue effect from the case sound level meter us The reference freque is 94 dB. The sound	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Wethod: The instrument is ter calibrated in amplitue effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions:	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Verload indicat High-level stabili Method: The instrument is ter calibrated in amplitur effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Overload indicat High-level stabili Method: The instrument is ter calibrated in amplitur effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single : 1/13/2022	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Verload indicat High-level stabili Method: The instrument is ter calibrated in amplitur effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single : 1/13/2022 Steve Thomas	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Verload indicat High-level stabili Method: The instrument is ter calibrated in amplitur effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single : 1/13/2022 Steve Thomas MET.15.INS.001_D_Fr	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the
C-weighted peak Overload indicat Verload indicat High-level stabili Method: The instrument is ter calibrated in amplitur effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction Static pressure	k sound level tion ity sted in an air conditioned room. de and in frequency. Some man of the sound level meter and his ser manual. ency of the sound level meter is level meter possesses a single : 1/13/2022 Steve Thomas MET.15.INS.001_D_Fr >95,5 ; <105 kPa	ufacturer's corrections has accessories (IEC 61672 1000 Hz. The reference	ve been applied to account -3). These corrections are	t the acoustical available in the



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Tests report: TR-REP-10394.xls

Instruments used for tests:

Designation	Manufacturer	Туре	Serial number	Identification number
Multimeter	HP	34401A	3146A27296	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Progammable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types (k=2). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.). are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
94.0	0.0	93.8	+/- 1,0

Self-generated noise

0° RA208 + short windscre						
Microphone replaced by the electrical input-signal	Nominal value	Displayed value				
device	(dB)	(dB)				
Leq dBA	< 14	9.7				
Leq dBB	< 15	9.5				
Leq dBC	< 20	10.8				
Leq dBZ	< 21	15.8				

Microphone installed	Nominal value	Displayed value	
	(dB)	(dB)	
Leq dBA	< 20	16.4	

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Tests report: TR-REP-10394.xls

Acoustical signal tests of a frequency weightings

90° RA208 + short windscreen	Measurement error C (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-1.3	0.5	-2,5 ; +1,5
0° RA208 + short windscreen	C (dB)	Uncertainty (dB)	M.P.E. (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.4	0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

	Meas	urement err	or		Maximum
90° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	Permissible Error (dB)
63 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.6	0.4	+/- 1,0
8000 Hz	-0.7	-1.2	-1.2	0.6	-2,5 ; +1,5
16000 Hz	-6.6	-12.0	-12.0	0.6	-16,0 ; +2,5
0° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	M.P.E. (dB)
63 Hz	-0.1	0.0	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	0.0	0.4	+/- 1,0
250 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
500 Hz	0.0	0.0	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	0.0	0.0	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.7	0.4	+/- 1,0
8000 Hz	0.3	-0.2	-0.2	0.6	-2,5 ; +1,5
16000 Hz	-4.5	-9.8	-9.9	0.6	-16,0 ; +2,5

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Tests report: TR-REP-10394.xls

Frequency and time weightings at 1 kHz

90° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	93.8	Reference	0.1	
Lp dBA / 1000 Hz Slow	93.8	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	93.8	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.1	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	94.1	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2

Long-term stability

90° RA208 + short windscreen

Displayed value	Measured devi	ation Uncertainty	Maximum
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)
94.0 94.0	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication	Final indication	(dB)	(dB)	Permissible Error (dB)
93.9	93.9	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10394.xls

Level linearity

90° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0			0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.1	0.1	0.3	+/- 0,8
109.0	109.0	0.0	0.3	+/- 0,8
114.0	114.0	0.0	0.3	+/- 0,8
119.0	118.9	-0.1	0.3	+/- 0,8
124.0	123.9	-0.1	0.3	+/- 0,8
128.0	127.9	-0.1	0.3	+/- 0,8
129.0	128.9	-0.1	0.3	+/- 0,8
130.0	129.9	-0.1	0.3	+/- 0,8
131.0	130.9	-0.1	0.3	+/- 0,8
132.0	131.9	-0.1	0.3	+/- 0,8
133.0	132.9	-0.1	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.1	0.0	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.1	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.0	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.1	0.1	0.3	+/- 0,8
34.0	33.9	-0.1	0.3	+/- 0,8
29.0	28.9	-0.1	0.3	+/- 0,8
26.0	26.1	0.1	0.3	+/- 0,8
25.0	25.4	0.4	0.3	+/- 0,8
24.0	24.7	0.7	0.3	+/- 0,8
23.0	23.7	0.7	0.3	+/- 0,8
22.0	22.5	0.5	0.3	+/- 0,8

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BARRY BIOMASS RENEWABLE ENERGY PLANT, WOODHAM ROAD NOISE AND VIBRATION CHAPTER APPENCIES **APPENDIX 8.4**

Tests report: TR-REP-10394.xls

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible	
(dB)	(dB)	(dB)	(dB)	Error (dB)	
94.0	94.0	0.0	0.3	+/- 0,8	
99.0	99.1	0.1	0.3	+/- 0,8	
104.0	104.1	0.1	0.3	+/- 0,8	
109.0	109.0	0.0	0.3	+/- 0,8	
114.0	114.0	0.0	0.3	+/- 0,8	
119.0	118.9	-0.1	0.3	+/- 0,8	
124.0	123.9	-0.1	0.3	+/- 0,8	
128.0	127.9	-0.1	0.3	+/- 0,8	
129.0	129.0	-0.1	0.3	+/- 0,8	
130.0	129.9	-0.1	0.3	+/- 0,8	
131.0	130.9	-0.1	0.3	+/- 0,8	
132.0	131.9	-0.1	0.3	+/- 0,8	
133.0	132.9	-0.1	0.3	+/- 0,8	
94.0	94.0	0.0	0.3	+/- 0,8	
89.0	89.1	0.1	0.3	+/- 0,8	
84.0	84.1	0.1	0.3	+/- 0,8	
79.0	79.1	0.1	0.3	+/- 0,8	
74.0	74.0	0.0	0.3	+/- 0,8	
69.0	69.1	0.1	0.3	+/- 0,8	
64.0	64.1	0.1	0.3	+/- 0,8	
59.0	59.1	0.1	0.3	+/- 0,8	
54.0	54.0	0.0	0.3	+/- 0,8	
49.0	49.1	0.1	0.3	+/- 0,8	
44.0	44.1	0.1	0.3	+/- 0,8	
39.0	39.1	0.1	0.3	+/- 0,8	
34.0	34.0	0.0	0.3	+/- 0,8	
29.0	29.1	0.1	0.3	+/- 0,8	
26.0	26.3	0.3	0.3	+/- 0,8	
25.0	25.4	0.4	0.3	+/- 0,8	
24.0	24.2	0.2	0.3	+/- 0,8	
23.0 22.0	23.2 22.1	0.2 0.0	0.3 0.3	+/- 0,8 +/- 0,8	

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Tests report: TR-REP-10394.xls

Toneburst response

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	115.9	-0.1	0.1	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.7	-0.3	0.1	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.1	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.1	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.1	-3,0 ; +1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107.1	0.1	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.0	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	116	0	0.0	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.9	-0.1	0.0	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127.1	0.1	0.0	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.0	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.0	-3,0 ; +1,0

C-weighted peak sound level

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
8000 Hz Complete cycle	133.6	1.2	0.1	+/- 2,0
500 Hz Positive one-half-cycle	134.3	-0.1	0.1	+/- 1,0
500 Hz Negative one-half-cycle	134.4	0.0	0.1	+/- 1,0

0° RA208 + short windscreen

Description	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	Erreur Maximale Tolérée (dB)
8000 Hz Complete cycle	131.3	1.8	0.1	+/- 2,0
500 Hz Positive one-half-cycle	133.8	-0.6	0.1	+/- 1,0
500 Hz Negative one-half-cycle	133.8	-0.6	0.1	+/- 1,0

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Tests report: TR-REP-10394.xls

Overload indication

90° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
110.7 110.9	-0.3	0.1	+/- 1,5

0° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
109.5 109.7	-0.2	0.1	+/- 1,5

High-level stability

90° RA208 + short windscreen

Displa	yed value	Measured deviation	Uncertainty	Maximum
(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.7	135.7	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displa	Displayed value		Uncertainty	Maximum
(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.9	135.9	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10394.xls

Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
9	Sound calibrator	Not applicable
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

 CUBE user manual
 DOC1144 February 2018 version M

 Type-approval certificate
 France:
 LNE-29639 revision 1 dated 04/04/2017

 Deutschland:
 DE-16-M-PTB-0008 dated 28/09/2016

The sound level meter submitted for testing 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 organization 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.

End of tests report

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A8.4.3 Boundary Measurement Position 1 (serial no. 11571)

Acoustic			DIGB
		s report EP-10369.xls	
ISSUED FOR :	Sol Acoustics Limit Unit 11 Brunel Court Gladbrook Park CW9 7LP Rudheat UK		
Name and location of the Acoustic1 - Overdale Mar Carmathenshire UK SA1	nordeilo, Llandeilo	5:	
TESTED INSTRUMENT Designation :	Integrator Sound Lo	evel Meter	
Manufacturer :	01dB		
Type :	CUBE	Serial number :	11571
		Identification numb	er :
This report include	es 10 pages	Date of issue :	06/08/2021
The measurements are p meters – Part 3: Periodic		o the IEC 61672-3, Ele	ctroacoustics, - Sound level
Steve THOMAS Head of calibration laboratory a	at Acoustic 1	François MAGAN Head of calibration laboratory	
THIS REPORT is compliant with THE FD X This document may not be reproduced othe			
01dB-Metravib SAS - Head Office: 200 chen A simplified joint stock company with a capital		00019 - Lyon Trade Register: 409 869 708	



TR-REP-10369.xls				
Identification :				
	Sound level meter	Microphone	Accessories	
Manufacturer	01dB	GRAS	PRE22 # 1805255	
Туре	CUBE	40CD	Short windscreen + RA0208 noise cone	
Serial number	11571	331595	RAL135 - 10M	
Firmware versior	Metrology: 2.12			
Calibrator	(Calibrator of the Laboratory	/	
 Self-generated no Acoustical signal 	er has been tested on the foll bise tests of a frequency weightin ests of frequency weightings	-		
 Frequency and tin Long-term stabilit Level linearity 	me weightings at 1 kHz ty			
Covering and the series of the series o	sound level on			
Toneburst respor C-weighted peak Overload indicativ High-level stabilit Method: The instrument is tes	sound level on y ted in an air conditioned roon	n. The characteristics are tes anufacturer's corrections hav		
Toneburst respor C-weighted peak Overload indication High-level stabilit Method: The instrument is tess calibrated in amplitude effect from the case of	sound level on y ted in an air conditioned roon le and in frequency. Some m of the sound level meter and	n. The characteristics are tes anufacturer's corrections hav his accessories (IEC 61672-3	e been applied to account	t the acoustical
Toneburst respor C-weighted peak Overload indication High-level stabilit Method: The instrument is test calibrated in amplitude effect from the case of sound level meter us The reference freque	sound level on y ted in an air conditioned roon le and in frequency. Some m of the sound level meter and er manual.	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indicativ High-level stabilit Method: The instrument is tes calibrated in amplitud effect from the case of sound level meter us The reference freque is 94 dB. The sound level	sound level on y ted in an air conditioned roon le and in frequency. Some m of the sound level meter and er manual. ncy of the sound level meter level meter possesses a sing	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indication High-level stabilit Method: The instrument is test calibrated in amplitude effect from the case of sound level meter us The reference freque is 94 dB. The sound level Tests conditions:	sound level on y ted in an air conditioned roon le and in frequency. Some m of the sound level meter and er manual. ncy of the sound level meter level meter possesses a sing	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indication High-level stability Method: The instrument is test calibrated in amplitude effect from the case of sound level meter us The reference freque is 94 dB. The sound lateration of the Tests conditions: Date of tests	sound level on y ted in an air conditioned room le and in frequency. Some m of the sound level meter and er manual. ency of the sound level meter level meter possesses a sing	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indicatio High-level stabilit Method: The instrument is tess calibrated in amplitud effect from the case of sound level meter us The reference freque is 94 dB. The sound I Tests conditions: Date of tests Operator Name	sound level on y ted in an air conditioned room le and in frequency. Some m of the sound level meter and er manual. ency of the sound level meter level meter possesses a sing 8/6/2021	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indicatie High-level stabilit Method: The instrument is tes calibrated in amplitud effect from the case of sound level meter us The reference freque is 94 dB. The sound I Tests conditions: Date of tests Operator Name Tests instruction	sound level on y ted in an air conditioned room le and in frequency. Some m of the sound level meter and er manual. ency of the sound level meter level meter possesses a sing 8/6/2021 Steve Thomas	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indicatie High-level stabilit Method: The instrument is tes calibrated in amplitud effect from the case of sound level meter us The reference freque is 94 dB. The sound I Tests conditions: Date of tests Operator Name Tests instruction Static pressure	sound level on y ted in an air conditioned roon le and in frequency. Some m of the sound level meter and er manual. ency of the sound level meter level meter possesses a sing 8/6/2021 Steve Thomas MET.15.INS.001_D_Fr	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the
Toneburst respor C-weighted peak Overload indication High-level stabilit Method: The instrument is test calibrated in amplitude effect from the case of sound level meter us The reference freque	sound level on y ted in an air conditioned room le and in frequency. Some m of the sound level meter and er manual. ency of the sound level meter level meter possesses a sing 8/6/2021 Steve Thomas MET.15.INS.001_D_Fr >95,5 ; <105 kPa	anufacturer's corrections hav his accessories (IEC 61672-3 is 1000 Hz. The reference so	e been applied to account 3). These corrections are a	t the acoustical available in the



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Tests report: TR-REP-10369.xls

Instruments used for tests:

Designation	Manufacturer	Туре	Serial number	Identification number
Multimeter	HP	34401A	3146A27296	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Progammable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types (k=2). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.). are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
93.7	0.4	93.8	+/- 1,0

Self-generated noise

Microphone replaced by the electrical input-signal	Nominal value	Displayed value
device	(dB)	(dB)
Leq dBA	< 14	9.4
Leq dBB	< 15	9.0
Leq dBC	< 20	10.6
Leq dBZ	< 21	15.9

Microphone installed	Nominal value	Displayed value	
	(dB)	(dB)	
Leq dBA	< 20	15.5	

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Tests report: TR-REP-10369.xls

Acoustical signal tests of a frequency weightings

90° RA208 + short windscreen	Measurement error C (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-1.2	0.5	-2,5 ; +1,5
0° RA208 + short windscreen	C (dB)	Uncertainty (dB)	M.P.E. (dB)
125 Hz	0.1	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.3	0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

	Meas	urement err	or		Maximum
90° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	Permissible Error (dB)
63 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	0.0	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
4000 Hz	0.7	0.7	0.6	0.4	+/- 1,0
8000 Hz	-0.7	-1.2	-1.2	0.6	-2,5 ; +1,5
16000 Hz	-6.6	-11.9	-12.0	0.6	-16,0 ; +2,5
0° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	M.P.E. (dB)
63 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
125 Hz	-0.1	-0.2	0.0	0.4	+/- 1,0
250 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
500 Hz	0.0	0.0	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	0.0	0.0	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.7	0.4	+/- 1,0
8000 Hz	0.3	-0.3	-0.2	0.6	-2,5 ; +1,5
16000 Hz	-4.5	-9.8	-9.9	0.6	-16,0 ; +2,5

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Tests report: TR-REP-10369.xls

Frequency and time weightings at 1 kHz

90° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	93.8	Reference	0.1	
Lp dBA / 1000 Hz Slow	93.8	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	93.8	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.1	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	94.1	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2

Long-term stability

90° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)
94.0 94.0	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum	
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)	
93.9 93.9	0.0	0.1	+/- 0,1	

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Tests report: TR-REP-10369.xls

Level linearity

90° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	108.9	-0.1	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.8	-0.2	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.8	-0.2	0.3	+/- 0,8
129.0	128.8	-0.2	0.3	+/- 0,8
130.0	129.8	-0.2	0.3	+/- 0,8
131.0	130.8	-0.2	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.0	0.0	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.0	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.0	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.0	0.3	+/- 0,8
39.0	39.0	0.0	0.3	+/- 0,8
34.0	34.0	0.0	0.3	+/- 0,8
29.0	29.3	0.3	0.3	+/- 0,8
26.0	26.3	0.3	0.3	+/- 0,8
25.0	24.9	-0.1	0.3	+/- 0,8
24.0	24.1	0.1	0.3	+/- 0,8
23.0	23.4	0.4	0.3	+/- 0,8
22.0	22.4	0.4	0.3	+/- 0,8

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BARRY BIOMASS RENEWABLE ENERGY PLANT, WOODHAM ROAD NOISE AND VIBRATION CHAPTER APPENCIES APPENDIX 8.4

Tests report: TR-REP-10369.xls

0° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB) (dB)	
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	108.9	-0.1	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.9	-0.2	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.9	-0.2	0.3	+/- 0,8
129.0	128.9	-0.1	0.3	+/- 0,8
130.0	129.8	-0.2	0.3	+/- 0,8
131.0	130.8	-0.2	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.1	0.1	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.1	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.2	0.2	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.1	0.1	0.3	+/- 0,8
34.0	34.0	0.0	0.3	+/- 0,8
29.0	29.3	0.3	0.3	+/- 0,8
26.0	26.3	0.3	0.3	+/- 0,8
25.0	25.0	0.0	0.3	+/- 0,8
24.0	24.4	0.4	0.3	+/- 0,8
23.0	23.3	0.3	0.3	+/- 0,8
22.0	22.6	0.6	0.3	+/- 0,8

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Tests report: TR-REP-10369.xls

Toneburst response

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	115.8	-0.2	0.1	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.7	-0.3	0.1	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.1	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.1	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.1	-3,0 ; +1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.0	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	116	0	0.0	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.9	-0.1	0.0	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127.1	0.1	0.0	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.0	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.9	-0.1	0.0	-3,0 ; +1,0

C-weighted peak sound level

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
8000 Hz Complete cycle	133.6	1.2	0.1	+/- 2,0
500 Hz Positive one-half-cycle	134.3	-0.1	0.1	+/- 1,0
500 Hz Negative one-half-cycle	134.3	-0.1	0.1	+/- 1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Erreur Maximale
	(dB)	(dB)	(dB)	Tolérée (dB)
8000 Hz Complete cycle	131.0	1.6	0.1	+/- 2,0
500 Hz Positive one-half-cycle	133.8	-0.6	0.1	+/- 1,0
500 Hz Negative one-half-cycle	133.8	-0.6	0.1	+/- 1,0

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Tests report: TR-REP-10369.xls

Overload indication

90° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
110.0 110.2	-0.3	0.1	+/- 1,5

0° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
108.8 109.0	-0.2	0.1	+/- 1,5

High-level stability

90° RA208 + short windscreen

Г	Display	/ed value	Measured deviation	Uncertainty	Maximum
	(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
	135.6	135.6	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displa	yed value	Measured deviation	Uncertainty	Maximum
(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.9	135.8	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10369.xls

Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
9	Sound calibrator	Not applicable
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

 CUBE user manual
 DOC1144 February 2018 version M

 Type-approval certificate
 France: Deutschland:
 LNE-29639 revision 1 dated 04/04/2017

The sound level meter submitted for testing 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 organization 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.

End of tests report

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A8.4.4 Boundary Measurement Position 2 (serial no. 11348)

Acoustic			()) 0) 0) 0) 0) 0) 0) 0) 0) 0) 0) 0) 0) 0
		s report EP-10368.xls	
ISSUED FOR :	Sol Acoustics Limite Unit 11 Brunel Court Gladbrook Park CW9 7LP Rudheath UK		
Name and location of the Acoustic1 - Overdale Ma Carmathenshire UK SA1	nordeilo, Llandeilo	::	
TESTED INSTRUMENT Designation :	Integrator Sound Le	evel Meter	
Manufacturer :	01dB		
Type :	CUBE	Serial number :	11348
		Identification numb	er:
This report include	es 10 pages	Date of issue :	06/08/2021
The measurements are p meters – Part 3: Periodic		o the IEC 61672-3, Ele	ctroacoustics, - Sound level
Steve THOMAS Head of calibration laboratory a	at Acoustic 1 H	François MAGAN	
THIS REPORT is compliant with THE FD X This document may not be reproduced othe			
01dB-Metravib SAS - Head Office: 200 cher A simplified joint stock company with a capital		00019 - Lyon Trade Register: 409 869 708	



TR-REP-10368.xls				
Identification :				
	Sound level meter	Microphone	Accessories	
Manufacturer	01dB	GRAS	PRE22 # 1805363	
Туре	CUBE	40CD	Short windscreen + RA0208 noise cone	
Serial number	11348	260642	RAL135 - 10M	
Firmware version	Application: 2.46			
Calibrator	Metrology: 2.12	alibrator of the Laborator	у	
Program:				
 Toneburst respo 	nse			
 I oneburst respo C-weighted peak Overload indicati High-level stabiliti 	sound level			
• C-weighted peak • Overload indicati • High-level stabili	sound level			
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque	sound level ion ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound	sound level ion ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h er manual. ency of the sound level meter is level meter possesses a single	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabili Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions:	sound level ion ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h er manual. ency of the sound level meter is level meter possesses a single	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests	sound level ton ty de and in frequency. Some ma of the sound level meter and h ser manual. ency of the sound level meter is level meter possesses a single	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name	sound level ton ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h ser manual. ency of the sound level meter is level meter possesses a single 8/6/2021	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction	sound level ion ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h ser manual. ency of the sound level meter is level meter possesses a single 8/6/2021 Steve Thomas	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is test calibrated in amplitud effect from the case sound level meter us The reference freque is 94 dB. The sound Tests conditions: Date of tests Operator Name Tests instruction Static pressure	sound level ton ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h ser manual. ency of the sound level meter is level meter possesses a single 8/6/2021 Steve Thomas MET.15.INS.001_D_Fr	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the
C-weighted peak Overload indicati High-level stabilit Method: The instrument is tes calibrated in amplitud effect from the case sound level meter us The reference freque	sound level ion ty sted in an air conditioned room de and in frequency. Some ma of the sound level meter and h ser manual. ency of the sound level meter is level meter possesses a single 8/6/2021 Steve Thomas MET.15.INS.001_D_Fr >95,5 ; <105 kPa	nufacturer's corrections hav iis accessories (IEC 61672- s 1000 Hz. The reference so	ve been applied to account 3). These corrections are a	t the acoustical available in the



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Tests report: TR-REP-10368.xls

Instruments used for tests:

Designation	Manufacturer	Туре	Serial number	Identification number
Multimeter	HP	34401A	3146A27296	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Progammable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types (k=2). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.). are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
94.1	-0.1	93.8	+/- 1,0

Self-generated noise

0° RA208 + short windscre	en	
Microphone replaced by the electrical input-signal	Nominal value	Displayed value
device	(dB)	(dB)
Leq dBA	< 14	8.8
Leq dBB	< 15	8.2
Leq dBC	< 20	9.5
Leq dBZ	< 21	15.9

Microphone installed	Nominal value	Displayed value
	(dB)	(dB)
Leq dBA	< 20	15.5

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Tests report: TR-REP-10368.xls

Acoustical signal tests of a frequency weightings

90° RA208 + short windscreen	Measurement error C (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-1.2	0.5	-2,5 ; +1,5
0° RA208 + short windscreen	C (dB)	Uncertainty (dB)	M.P.E. (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.3	0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

	Measurement error				Maximum
90° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	Permissible Error (dB)
63 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	-0.2	-0.2	-0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	-0.1	-0.2	0.4	+/- 1,0
4000 Hz	0.5	0.6	0.1	0.4	+/- 1,0
8000 Hz	0.1	-1.2	-1.8	0.6	-2,5 ; +1,5
16000 Hz	-7.4	-12.0	-12.8	0.6	-16,0 ; +2,5
0° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	M.P.E. (dB)
63 Hz	0.0	-0.1	0.1	0.4	+/- 1,0
125 Hz	0.0	-0.2	0.2	0.4	+/- 1,0
250 Hz	0.1	-0.1	0.1	0.4	+/- 1,0
500 Hz	0.1	0.0	0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	0.0	-0.1	0.4	+/- 1,0
4000 Hz	0.4	0.6	0.2	0.4	+/- 1,0
8000 Hz	1.5	-0.3	-0.7	0.6	-2,5 ; +1,5
16000 Hz	-5.2	-15.8	-10.5	0.6	-16,0 ; +2,5

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Tests report: TR-REP-10368.xls

Frequency and time weightings at 1 kHz

90° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	93.8	Reference	0.1	
Lp dBA / 1000 Hz Slow	93.8	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	93.8	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.1	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	94.0	0.0	0.1	+/- 0,1
	94.0 94.1	0.0 0.0	0.1 0.1	+/- 0,1 +/- 0,2

Long-term stability

90° RA208 + short windscreen

Displayed value	Measured devi	ation Uncertainty	Maximum
(dB) Initial indication Final indication	(dB)	(dB)	Permissible Error (dB)
94.0 94.0	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication	Final indication	(dB)	(dB)	Permissible Error (dB)
93.9	93.9	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10368.xls

Level linearity

90° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	109.0	0.0	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.9	-0.1	0.3	+/- 0,8
124.0	123.9	-0.1	0.3	+/- 0,8
128.0	127.9	-0.1	0.3	+/- 0,8
129.0	128.9	-0.1	0.3	+/- 0,8
130.0	129.9	-0.1	0.3	+/- 0,8
131.0	130.9	-0.1	0.3	+/- 0,8
132.0	131.9	-0.2	0.3	+/- 0,8
133.0	132.9	-0.1	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.0	0.0	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.0	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.1	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.1	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.0	0.0	0.3	+/- 0,8
34.0	33.9	-0.1	0.3	+/- 0,8
29.0	29.2	0.2	0.3	+/- 0,8
26.0	26.5	0.5	0.3	+/- 0,8
25.0	25.4	0.4	0.3	+/- 0,8
24.0	23.9	-0.1	0.3	+/- 0,8
23.0	22.8	-0.2	0.3	+/- 0,8
22.0	22.3	0.3	0.3	+/- 0,8

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Tests report: TR-REP-10368.xls

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	109.0	0.0	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.9	-0.1	0.3	+/- 0,8
124.0	123.9	-0.1	0.3	+/- 0,8
128.0	127.9	-0.1	0.3	+/- 0,8
129.0	128.9	-0.1	0.3	+/- 0,8
130.0	129.9	-0.1	0.3	+/- 0,8
131.0	130.9	-0.1	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.4	-0.6	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.0	0.0	0.3	+/- 0,8
84.0	83.4	-0.6	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.0	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.1	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.0	0.0	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.1	0.1	0.3	+/- 0,8
34.0	33.9	-0.1	0.3	+/- 0,8
29.0	28.9	-0.1	0.3	+/- 0,8
26.0	26.2	0.2	0.3	+/- 0,8
25.0	25.4	0.4	0.3	+/- 0,8
24.0	24.2	0.2	0.3	+/- 0,8
23.0	23.0	0.0	0.3	+/- 0,8
22.0	21.9	-0.1	0.3	+/- 0,8

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Tests report: TR-REP-10368.xls

Toneburst response

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	116	0	0.1	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.6	-0.4	0.1	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.1	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.1	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.1	-3,0 ; +1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.0	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	115.9	-0.1	0.0	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.9	-0.1	0.0	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.0	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.0	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.9	-0.1	0.0	-3,0 ; +1,0

C-weighted peak sound level

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
8000 Hz Complete cycle	133.6	1.2	0.1	+/- 2,0
500 Hz Positive one-half-cycle	134.3	-0.1	0.1	+/- 1,0
500 Hz Negative one-half-cycle	134.4	0.0	0.1	+/- 1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Erreur Maximale
	(dB)	(dB)	(dB)	Tolérée (dB)
8000 Hz Complete cycle	131.0	1.6	0.1	+/- 2,0
500 Hz Positive one-half-cycle	133.8	-0.6	0.1	+/- 1,0
500 Hz Negative one-half-cycle	133.9	-0.5	0.1	+/- 1,0

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Tests report: TR-REP-10368.xls

Overload indication

90° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
109.1 109.3	-0.2	0.1	+/- 1,5

0° RA208 + short windscreen

Displayed value	Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
107.9 108.0	-0.1	0.1	+/- 1,5

High-level stability

90° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum	
	(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
	135.6	135.6	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication Final indication		(dB)	(dB)	Permissible Error (dB)
135.9	135.9	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10368.xls

Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
9	Sound calibrator	Not applicable
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

 CUBE user manual
 DOC1144 February 2018 version M

 Type-approval certificate
 France:
 LNE-29639 revision 1 dated 04/04/2017

 Deutschland:
 DE-16-M-PTB-0008 dated 28/09/2016

The sound level meter submitted for testing 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 organization 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.

End of tests report

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A8.4.5 Boundary Measurement Position 3 (serial no. 11495)

Acoustic					
		S report			
ISSUED FOR :	Sol Acoustics Limite Unit 11 Brunel Court Gladbrook Park CW9 7LP Rudheath UK				
Name and location of the Acoustic1 - Overdale Mar Carmathenshire UK SA1	nordeilo, Llandeilo	:			
TESTED INSTRUMENT Designation :	Integrator Sound Le	vel Meter			
Manufacturer :	01dB				
Type :	CUBE	Serial number :	11495		
		Identification number	er :		
This report include	es 10 pages	Date of issue :	08/08/2021		
The measurements are p meters – Part 3: Periodic		the IEC 61672-3, Elec	ctroacoustics, - Sound level		
Steve THOMAS Head of calibration laboratory a	at Acoustic 1 H	François MAGAN lead of calibration laboratory a			
THIS REPORT is compliant with THE FD X This document may not be reproduced othe					
01dB-Metravib SAS - Head Office: 200 chen A simplified joint stock company with a capital		0019 - Lyon Trade Register: 409 869 708			



TR-REP-10370.xls				Page 2 of 1
Identification :				
	Sound level meter	Microphone	Accessories	
Manufacturer	01dB	GRAS	PRE22 # 1805327	
Туре	CUBE	40CD	Short windscreen + RA0208 noise cone	
Serial number	11495	331753	RAL135 - 10M	
Firmware version	Application: 2.46 Metrology: 2.12			
Calibrator		librator of the Laborato	rv	
The Sound level meter h • Self-generated noise • Acoustical signal tes	ts of a frequency weightings s of frequency weightings	•		
 Self-generated noise Acoustical signal tes Electrical signal tests Frequency and time 	e ts of a frequency weightings s of frequency weightings weightings at 1 kHz	•		
The Sound level meter h • Self-generated noise • Acoustical signal test • Electrical signal tests • Frequency and time • Long-term stability • Level linearity • Toneburst response • C-weighted peak sou • Overload indication • High-level stability Method: The instrument is tested calibrated in amplitude a	e ts of a frequency weightings s of frequency weightings weightings at 1 kHz und level in an air conditioned room.	The characteristics are te	ve been applied to account	t the acoustical

Tests conditions:

Date of tests	8/8/2021
Operator Name	Steve Thomas
Tests instruction	MET.15.INS.001_D_Fr
Static pressure	>95,5 ; <105 kPa
Temperature	23 ± 3 °C
Relative humidity	>25 ; <70 %HR

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Tests report: TR-REP-10370.xls

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Instruments used for tests:

Designation	Manufacturer	Туре	Serial number	Identification number
Multimeter	HP	34401A	3146A27296	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Progammable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types (k=2). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.). are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
93.6	0.4	93.9	+/- 1,0

Self-generated noise

0°	RA208 +	short	windscreen	
_				-

Microphone replaced by the electrical input-signal	Nominal value	Displayed value
device	(dB)	(dB)
Leq dBA	< 14	10.8
Leq dBB	< 15	11.2
Leq dBC	< 20	14.1
Leq dBZ	< 21	19.5

Microphone installed	Nominal value	Displayed value	
	(dB)	(dB)	
Leq dBA	< 20	15.8	

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Acoustical signal tests of a frequency weightings

90° RA208 + short windscreen	Measurement error C (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.9	0.5	-2,5 ; +1,5
0° RA208 + short windscreen	C (dB)	Uncertainty (dB)	M.P.E. (dB)
125 Hz	0.0	0.3	+/- 1,0
1000 Hz	0.0	0.3	+/- 0,7
8000 Hz	-0.1	0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

	Meas	urement err	or		Maximum
90° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	Permissible Error (dB)
63 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
4000 Hz	0.7	0.7	0.6	0.4	+/- 1,0
8000 Hz	-0.7	-1.2	-1.2	0.6	-2,5 ; +1,5
16000 Hz	-6.6	-11.9	-12.0	0.6	-16,0 ; +2,5
0° RA208 + short windscreen	Z (dB)	A (dB)	C (dB)	Uncertainty (dB)	M.P.E. (dB)
63 Hz	-0.1	-0.1	-0.1	0.4	+/- 1,0
125 Hz	-0.1	-0.1	0.0	0.4	+/- 1,0
250 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
500 Hz	0.0	0.0	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	-0.1	0.0	0.0	0.4	+/- 1,0
4000 Hz	0.7	0.6	0.7	0.4	+/- 1,0
8000 Hz	0.2	-0.2	-0.2	0.6	-2,5 ; +1,5
16000 Hz	-4.5	-9.8	-9.8	0.6	-16,0 ; +2,5

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Tests report: TR-REP-10370.xls

Frequency and time weightings at 1 kHz

90° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	93.8	Reference	0.1	
Lp dBA / 1000 Hz Slow	93.8	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	93.8	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	93.8	0.0	0.1	+/- 0,2
0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.1	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.1	+/- 0,1
LEQ dBA / 1000 Hz	94.1	0.0	0.1	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.1	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.1	+/- 0.2

Long-term stability

90° RA208 + short windscreen

I	Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication Final indication		(dB)	(dB)	Permissible Error (dB)	
	94.0	94.0	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Γ	Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Initial indication Final indication		(dB)	(dB)	Permissible Error (dB)	
	93.9	93.9	0.0	0.1	+/- 0,1

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Tests report: TR-REP-10370.xls

Level linearity

90° RA208 + short windscreen

Nominal value	Displayed value	Measurement error	Uncertainty	Maximum Permissible
(dB)	(dB)	(dB)	(dB)	Error (dB)
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	109.0	0.0	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.8	-0.2	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.8	-0.2	0.3	+/- 0,8
129.0	128.8	-0.2	0.3	+/- 0,8
130.0	129.8	-0.2	0.3	+/- 0,8
131.0	130.8	-0.2	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.1	0.1	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.1	0.1	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.1	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.1	0.0	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.1	0.1	0.3	+/- 0,8
34.0	34.0	0.0	0.3	+/- 0,8
29.0	28.9	-0.1	0.3	+/- 0,8
26.0	26.2	0.2	0.3	+/- 0,8
25.0	25.6	0.5	0.3	+/- 0,8
24.0	24.8	0.8	0.3	+/- 0,8
23.0	23.2	0.2	0.3	+/- 0,8
22.0	22.6	0.6	0.3	+/- 0,8

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BARRY BIOMASS RENEWABLE ENERGY PLANT, WOODHAM ROAD NOISE AND VIBRATION CHAPTER APPENCIES APPENDIX 8.4

Tests report: TR-REP-10370.xls

Nominal value	Displayed value	Measurement error	Uncertainty	Maximun Permissib
(dB)	(dB)	(dB)	(dB)	Error (de
94.0	94.0	0.0	0.3	+/- 0,8
99.0	99.1	0.1	0.3	+/- 0,8
104.0	104.0	0.0	0.3	+/- 0,8
109.0	108.9	-0.1	0.3	+/- 0,8
114.0	113.9	-0.1	0.3	+/- 0,8
119.0	118.9	-0.1	0.3	+/- 0,8
124.0	123.8	-0.2	0.3	+/- 0,8
128.0	127.9	-0.1	0.3	+/- 0,8
129.0	128.9	-0.1	0.3	+/- 0,8
130.0	129.9	-0.1	0.3	+/- 0,8
131.0	130.9	-0.1	0.3	+/- 0,8
132.0	131.8	-0.2	0.3	+/- 0,8
133.0	132.8	-0.2	0.3	+/- 0,8
94.0	94.0	0.0	0.3	+/- 0,8
89.0	89.1	0.1	0.3	+/- 0,8
84.0	84.1	0.1	0.3	+/- 0,8
79.0	79.1	0.1	0.3	+/- 0,8
74.0	74.0	0.0	0.3	+/- 0,8
69.0	69.0	0.0	0.3	+/- 0,8
64.0	64.1	0.1	0.3	+/- 0,8
59.0	59.1	0.1	0.3	+/- 0,8
54.0	54.0	0.0	0.3	+/- 0,8
49.0	49.0	0.0	0.3	+/- 0,8
44.0	44.1	0.1	0.3	+/- 0,8
39.0	39.2	0.1	0.3	+/- 0,8
34.0	34.0	0.0	0.3	+/- 0,8
29.0	29.0	0.0	0.3	+/- 0,8
26.0	26.1	0.1	0.3	+/- 0,8
25.0	25.4	0.4	0.3	+/- 0,8
24.0	24.5	0.5	0.3	+/- 0,8
23.0	23.6	0.6	0.3	+/- 0,8
22.0	22.4	0.4	0.3	+/- 0,8

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Tests report: TR-REP-10370.xls

Toneburst response

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms	133.1	0.1	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A fast 2 ms	116	0	0.1	-1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.7	-0.3	0.1	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.1	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.1	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.8	-0.2	0.1	-3,0 ; +1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
Lpmax 134 dB 4000 Hz A Slow 200 ms	126.6	0	0.1	+/- 0,5
Lpmax 134 dB 4000 Hz A Slow 2 ms	107	0	0.1	-3,0 ; +1,0
Lpmax 134 dB 4000 Hz A fast 200 ms Lpmax 134 dB 4000 Hz A fast 2 ms	133.1 115.9	0.1 -0.1	0.0 0.0	+/- 0,5 -1,5 ; +1,0
Lpmax 134 dB 4000 Hz A fast 0.25 ms	106.8	-0.2	0.0	-3,0 ; +1,0
Leq 134 dB 4000 Hz A 1000 200 ms	127	0	0.0	+/- 0,5
Leq 134 dB 4000 Hz A 1000 2 ms	107	0	0.0	-1,5 ; +1,0
Leq 134 dB 4000 Hz A 1000 0.25 ms	97.9	-0.1	0.0	-3,0 ; +1,0

C-weighted peak sound level

90° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Maximum Permissible
	(dB)	(dB)	(dB)	Error (dB)
8000 Hz Complete cycle	133.6	1.2	0.1	+/- 2,0
500 Hz Positive one-half-cycle	134.3	-0.1	0.1	+/- 1,0
500 Hz Negative one-half-cycle	134.4	0.0	0.1	+/- 1,0

0° RA208 + short windscreen

Description	Displayed value	Measurement error	Uncertainty	Erreur Maximale
	(dB)	(dB)	(dB)	Tolérée (dB)
8000 Hz Complete cycle	131.3	1.8	0.1	+/- 2,0
500 Hz Positive one-half-cycle	133.8	-0.6	0.1	+/- 1,0
500 Hz Negative one-half-cycle	133.9	-0.5	0.1	+/- 1,0

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Tests report: TR-REP-10370.xls

Overload indication

90° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dB) Positive one-half-cycle Negative one-half-cycle		(dB)	(dB)	Permissible Error (dB)
109.6	109.8	-0.3	0.1	+/- 1,5

0° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(dl Positive one-half-cycle	B) Negative one-half-cycle	(dB)	(dB)	Permissible Error (dB)
108.3	108.6	-0.2	0.1	+/- 1,5

High-level stability

90° RA208 + short windscreen

Displayed value		Measured deviation	Uncertainty	Maximum
(Initial indication	dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.6	135.6	0.0	0.1	+/- 0,1

0° RA208 + short windscreen

Displa	ayed value	Measured deviation	Uncertainty	Maximum
(Initial indication	(dB) Final indication	(dB)	(dB)	Permissible Error (dB)
135.8	135.8	0.0	0.1	+/- 0,1

🕤 OIJB



A8.4.6 Acoustic Calibrator (serial no. 34675320)

Page 1 of 2	MANCHESTE		
APPROVED SIGNATORIES Claire Lomax [x] Andy Moorhouse [] Gary Phillips [] Danny McCaul []			
acoustic calibration laborate The University of Salford, Salford, Greater Manchester, M5 4WT, UK http://www.acoustics.salford.ac.uk t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax1@sa			
Certificate Number: 05342/1	Date of Issue: 1 July 2021		
CALIBRATION O	F A SOUND CALIBRATOR		
FOR:	Sol Acoustics Ltd Unit 11, Brunel Court Gadbrook Park Rudheath, Northwich CW09 7LP		
FOR THE ATTENTION OF:	Brian Horner		
DESCRIPTION:	Calibrator with housing for one-inch microphones and adaptor type BAC21 for half-		
	inch microphones.		
MANUFACTURER:			
MANUFACTURER: TYPE:	inch microphones.		
	inch microphones. 01dB		
TYPE:	inch microphones. 01dB CAL 21 34675320 (2017)		
TYPE: SERIAL NUMBER:	inch microphones. 01dB CAL 21 34675320 (2017)		
TYPE: SERIAL NUMBER: DATE RECEIVED:	inch microphones. 01dB CAL 21 34675320 (2017) 17 June 2021		

Results in this certificate relate only to instruments tested.

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

BARRY BIOMASS RENEWABLE ENERGY PLANT, WOODHAM ROAD NOISE AND VIBRATION CHAPTER APPENCIES APPENDIX 8.4



sol acoustics

Certificate of Calibration Issued by University of Salford (Acoustic Calibration Laboratory) UKAS ACCREDITED CALIBRATION LABORATORY NO. 0801 Page 2 of 2 Certificate Number: 05342/1 Date of Issue: 1 July 2021 **MEASUREMENTS** The sound pressure level generated by the calibrator was measured using a calibrated, B&K 4192 WS2P condenser microphone. The calibration was carried out with the calibrator in the half-inch configuration. Five determinations of the sound pressure level, frequency and total distortion were made. The measured sound pressure level has been corrected for the effects of the load volume of the B&K 4192 reference microphone so that the stated output level is correct for use with a 01dB MCE 212 microphone. Consult the manufacturer's instruction manual for any corrections, due to slight differences in microphone load volumes, to the stated level which may be required when using this sound calibrator with other microphone models. The manufacturer states that automatic compensation is applied for the effects of changes in atmospheric pressure. RESULTS Coupler configuration: Half-inch Calibration output level correct for microphone type: 01dB MCE 212 Output level (dB re 20μ Pa): 94.03 dB \pm 0.09 dB Frequency (Hz): $1001.87 \text{ Hz} \pm 0.12 \text{ Hz}$ Total Distortion (%): $1.24\% \pm 0.22\%$ Average environmental conditions at the time of measurement were: Pressure: 101.310 kPa ± 0.015 kPa Temperature: 21.7 °C ± 0.4 °C Relative humidity: $44.8\% \pm 2.1\%$ The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. All measurement results are retained at the acoustic calibration laboratory for at least four years. -----END OF CERTIFICATE-----

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