REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Norma de Emisión de Ruidos Generados por Fuentes que Indica

FICHA DE EVALUACIÓN DE NIVELES DE RUIDO

IDENTIFICACIÓN DE LA FUENTE EMISORA DE RUIDO

Nombre Fuente Emisora	SOCIEDAD GASTRONÓMICA CHINA XUAN LTDA.		
Nombre o Razón Social	SOCIEDAD GASTRONÓMICA CHINA XUAN LTDA.		
RUT	76509801-7		
Dirección	RUTA Q 45 CAMINO A ANTUCO KM. 3 0	Comuna	Los Ángeles
Tipo de Fuente	Actividad Comercial	Subtipo Fuente	Restaurant

RESUMEN DE EVALUACIÓN

Punto de medición	NPC [dBA]	Zona D.S. 38/11 MMA	Período (Diurno/Nocturno)	Límite [dBA]	Estado (Supera/No supera)
1 - 1	59	Zona Rural	Nocturno	50	Supera en 9 dBA
1 - 2	57	Zona Rural	Nocturno	50	Supera en 7 dBA

OBSERVACIONES DEL PROCESO DE MEDICIÓN

Sin observaciones

IDENTIFICACIÓN DEL INFORME TÉCNICO

Fecha de emisión	18/03/2024
Nombre encargado medición	Hugo Ramirez
Institución o empresa	SMA

REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Norma de Emisión de Ruidos Generados por Fuentes que Indica

FICHA DE GEORREFERENCIACIÓN DE MEDICIÓN DE RUIDO

LEYENDA DE CROQUIS O IMAGEN UTILIZADA

DATUM	WGS84	**Huso**	18S	
Fuente	**Símbolo**	**Nombre**	**Coordenadas**	
	FE	SOCIEDAD GASTRONÓMICA CHINA XUAN LTDA.	N	5850678
			E	739206

RECEPTORES

Símbolo	Nombre	Coordenadas	
R1	1	N	5850759
		E	739178
RFA	Ruido de Fondo A	N	5853271
		E	741290
RFB	Ruido de Fondo B	N	5850828
		E	739225

REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Norma de Emisión de Ruidos Generados por Fuentes que Indica

FICHA DE INFORMACIÓN DE MEDICIÓN DE RUIDO

IDENTIFICACIÓN DE RECEPTORES

Nombre o Razón Social	1		
Dirección	Ruta Q-45 S/N	Comuna	Los Ángeles
Zona IPT	Rural	Homologación	Zona Rural
Descripción del Receptor	Vivienda consolidada de hormigón.		

REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Norma de Emisión de Ruidos Generados por Fuentes que Indica

FICHA DE MEDICIÓN DE NIVELES DE RUIDO

Nombre o Razón Social Receptor	1	Número Medición	1
Fecha de medición	20/01/2024	Perido de medición	Nocturno
Hora inicio de medición	23:00	Hora término de medición	23:55
Condición de medición	Externa	Condición ventana	No Aplica
Descripción lugar de medición	Terraza vivienda con pared colindante a la Fuente Emisora		
Identificación del ruido de fondo	Fronda de árboles, crujido de insectos y paso esporádico de vehículos con tubo de escape abierto los cuales son filtrados.		

INSTRUMENTAL DE MEDICIÓN

CARACTERÍSTICA	SONÓMETRO	CALIBRADOR ACÚSTICO
Marca	CIRRUS	CIRRUS
Modelo	162B	CR154
N° de serie	G304081	99724
Fecha certificado de calibración	21/12/2022	21/12/2022
Código certificado de calibración	185057	185034

FICHA DE EVALUACIÓN DE NIVELES DE RUIDO

Descriptor	MEDICIÓN 1			MEDICIÓN 2			MEDICIÓN 3		
N° de medición	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
NPSeq	59.2	59.6	58.1	-	-	-	-	-	-
NPSmáx	61.5	62.9	60.6	-	-	-	-	-	-
NPSmin	49.5	54.5	55.1	-	-	-	-	-	-

REGISTRO RUIDO DE FONDO

Afecta medición	Si	**Fecha**	20/01/2024	**Hora**	20:30

	5'	10'	15'	20'	25'	30'
NPSeq	43	43	-	-	-	-

Medición realizada en punto receptor
No

COORDENADAS DE MEDICIÓN DE RUIDO DE FONDO

DATUM	WGS84	**HUSO**	18S
Coordenada Norte	5853271	**Coordenada Este**	741290

RESULTADO DE MEDICIÓN

RUIDO DE FONDO
43

NPC
59

OBSERVACIONES
El ruido de fondo se efectuó en sector donde no fuera posible percibir a la fuente emisora

REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Norma de Emisión de Ruidos Generados por Fuentes que Indica

FICHA DE MEDICIÓN DE NIVELES DE RUIDO

Nombre o Razón Social Receptor	1	Número Medición	2
Fecha de medición	01/03/2024	Perido de medición	Nocturno
Hora inicio de medición	21:31	Hora término de medición	22:27
Condición de medición	Externa	Condición ventana	No Aplica
Descripción lugar de medición	Terraza vivienda cuyo muro colinda con Fuente Emisora		
Identificación del ruido de fondo	Fronda de árboles, ladridos, trinar de aves y tránsito vehicular.		

INSTRUMENTAL DE MEDICIÓN

CARACTERÍSTICA	SONÓMETRO	CALIBRADOR ACÚSTICO
Marca	CIRRUS	CIRRUS
Modelo	162B	CR154
N° de serie	G304081	99724
Fecha certificado de calibración	21/12/2022	21/12/2022
Código certificado de calibración	185057	185034

FICHA DE EVALUACIÓN DE NIVELES DE RUIDO

Descriptor	MEDICIÓN 1			MEDICIÓN 2			MEDICIÓN 3		
N° de medición	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
NPSeq	56.7	57.2	57.6	-	-	-	-	-	-
NPSmáx	59.8	59.6	59.1	-	-	-	-	-	-
NPSmin	54.2	54.1	53.8	-	-	-	-	-	-

REGISTRO RUIDO DE FONDO

Afecta medición	Si	**Fecha**	01/03/2024	**Hora**	18:35

	5'	10'	15'	20'	25'	30'
NPSeq	44.7	44	-	-	-	-

Medición realizada en punto receptor
No

COORDENADAS DE MEDICIÓN DE RUIDO DE FONDO

DATUM	WGS84	**HUSO**	18S
Coordenada Norte	5850828	**Coordenada Este**	739225

RESULTADO DE MEDICIÓN

RUIDO DE FONDO
44

NPC
57

OBSERVACIONES
Fuente emisora al momento de la medición de ruido de fondo no estaba en funcionamiento

CERTIFICATE OF CALIBRATION

ISSUED BY **Cirrus Research plc**

DATE OF ISSUE **21 December 2022** CERTIFICATE NUMBER **185034**

10148

Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Approved signatory
C.Scott
Electronically signed:

Sound Calibrator : IEC 60942:2003

Customer information

Name: Sociedad Acustical S.A.

Address: Villaseca 21
Oficina 1104
Nunoa
Santiago

Postcode:

Country: Chile

Instrument information

Manufacturer: Cirrus Research plc

Notes:

Model: CR:514

Serial number: 99724

Class: 2

Pattern approval: Yes

Source of pattern approval: PTB-1.61-4028829

Test summary

Date of receipt: 21 December 2022

Date of calibration: 21 December 2022

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 60942:2003, the sound calibrator tested is considered to conform to all the Class 2 requirements of IEC 60942:2003.

Notes

CERTIFICATE OF CALIBRATION

Environmental conditions

The following conditions were recorded at the time of the test:

Pressure: 99.20 kPa
Temperature: 23.3 °C
Humidity: 36.8 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Calibrator	Bruel and Kjaer	4231	2564324
Microphone	G.R.A.S	40AP	173198
Distortion Meter	Keithley	2015	0761605
Multimeter	TTi	1908	509541

Calibration procedure

The sound calibrator under test has been calibrated to the published data as described in the operating manual and in the half-inch configuration.

The procedures and techniques used are as described in IEC 60942:2003 Annex B – Periodic Tests. Firstly, five determinations of the sound pressure level were made using the Reference calibrator. Then, five determinations of the sound pressure level, frequency and total distortion were made using the calibrator under test.

Measurements

Reference calibrator SPL: 94.01 dB

Configuration		Output Level (dB)	Frequency (Hz)	Total distortion (%)
94 dB	Measured	94.00	1000.3	0.5
	Deviation	+0.00	+0.3	
Tolerance		±0.75	±20.0	≤ 4.0
Uncertainty		±0.09	±0.1	±0.21

CERTIFICATE OF CALIBRATION

ISSUED BY **Cirrus Research plc**

DATE OF ISSUE **21 December 2022** CERTIFICATE NUMBER **185057**

10148

Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Approved signatory
C.Scott
Electronically signed:

Sound level meter : IEC 61672-3:2013

Customer information

Name: Sociedad Acustical S.A. Address: Villaseca 21
Oficina 1104
Nunoa
Santiago

Postcode:

Country: Chile

Instrument information

Manufacturer:	Cirrus Research plc	Notes:
Model:	CR:162B	
Serial number:	G304081	
Class:	2	
Firmware version:	V5.8.3251	

Test summary

Date of receipt: 21 December 2022 Date of calibration: 21 December 2022

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013.

The sound level meter submitted for testing successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to determine that the model of sound level meter fully conformed to the class 2 specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Notes

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Environmental conditions

The following conditions were recorded at the time of the test:

Before	Pressure:	99.13 kPa	Temperature:	23.6 °C	Humidity:	40.0 %
After	Pressure:	99.12 kPa	Temperature:	23.4 °C	Humidity:	40.8 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Signal Generator	KEYSIGHT	33511B	MY58001681
Attenuator	Cirrus Research	ZE:952	78701
Multi-frequency Calibrator	B&K	4226	3309971

Additional instrument information

Instruction manual: Part B Manual

Reference level range: Single range

Pattern approval: No

Source of pattern approval: -

Preamplifier

Manufacturer: Cirrus Research plc

Model: MV:200F

Serial number: 12666F

Microphone

Manufacturer: Cirrus Research plc

Model: MK:216

Serial number: 414391D

Test results summary

Test	Result
Self-generated noise	Complies
Long-term stability	Complies
Acoustic frequency weightings	Complies
Electrical frequency weightings	Complies
Weightings at 1 kHz	Complies
Linearity	Complies
Toneburst response	Complies
C-weighted peak	Complies
Overload	Complies
High-level stability	Complies

Acoustic Calibrator

Manufacturer: Cirrus Research plc

Model: CR:514

Serial number: 99724

Calibration

Calibration check frequency: 1000 Hz

Calibrator's certificate ref: 185034

Level before adjustment: 93.80 dB(A)

Level after adjustment: 93.70 dB(A)

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

Laboratory uncertainties

Requirement	Value (dB)
Frequency weightings at 1 kHz	0.1
Acoustic freq. weighting 1 kHz	0.21
Acoustic freq. weighting 125 Hz	0.21
Acoustic freq. weighting 8 kHz	0.23
Electrical freq. weighting 1 kHz	0.15
Electrical freq. weighting 125 Hz	0.15
Electrical freq. weighting 16 kHz	0.17
Electrical freq. weighting 2 kHz	0.15
Electrical freq. weighting 250 Hz	0.15
Electrical freq. weighting 4 kHz	0.15
Electrical freq. weighting 500 Hz	0.15
Electrical freq. weighting 63 Hz	0.15
Electrical freq. weighting 8 kHz	0.15
High level stability	0.1
Level linearity	0.15
Long-term stability	0.1
Overload indication	0.1
Peak C sound level	0.12
Time weightings at 1 kHz	0.1
Toneburst response	0.1

Section 11: Self-generated noise

This test is for indication only and a failure does not, on its own, mean the sound level meter does not comply to the requirements of IEC 61672-1.

Selected range: Single range

		Acoustic	Electrical		
		LAeq	LAeq	LCeq	LZeq
Level	Measured	15.10	Under-range	14.20	26.60
	Highest anticipated	19.00	Under-range	24.00	40.00

All values in the table are given in decibels.

Section 14: Frequency and time weightings at 1 kHz

Result: Passed

Selected range: Single range

Frequency weightings at 1 kHz

LAF	LCF	LZF	LCF - LAF	LZF - LAF	Acceptance limit	Uncertainty
94.00	94.00	94.00	0.00	0.00	±0.2	±0.12

All values in the table are given in decibels.

Time weightings at 1 kHz

LAF	LAS	LAeq	LAS - LAF	LAeq - LAF	Acceptance limit	Uncertainty
94.00	94.00	94.00	0.00	0.00	±0.1	±0.12

All values in the table are given in decibels.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

tion 12: Acoustical signal tests of a frequency weighting

Result: Passed

cted range: Single range

ce of multi-frequency calibrator correction: Multi-Cal Internal Corrections

ce of instrument case correction: Part B Manual V20160609

ce of windshield correction: Part B Manual V20160609

quency	LCeq 1	LCeq 2	LCeq 3	Average LCeq	Corr. A*	Corr. B*	Corr. C*	Corr. D*	Corrected LCeq	Rel. freq-weighting	Design goal	Deviation	Total uncertainty	Acceptance limit
25 Hz	93.80	93.80	93.80	93.80	0.00	0.00	0.00	0.00	93.80	-0.16	-0.2	0.0	0.46	±1.5
000 Hz	93.80	93.80	93.80	93.80	-0.03	0.00	-0.03	0.22	93.96				0.46	
000 Hz	89.10	89.10	89.10	89.10	0.03	0.00	-0.08	0.04	89.09	-4.87	-3.0	-1.9	0.62	±5.0

All values in the table are given in decibels unless otherwise stated.

end

orrection for the difference between the multi-frequency calibrator input signal level at a test frequency and at 1 kHz

ulti-frequency calibrator correction

orrection for the effect of the instrument case

orrection for the effect of the windscreen

nformation on the uncertainty of measurement of the adjustment data given in the instruction manual or obtained from the manufacturer or supplier of the sound level meter published in the instruction manual or made available by the manufacturer or supplier. The uncertainty of measurement of the adjustment data was assumed to be erically the maximum-permitted uncertainty given in IEC 62585 for the purpose of the periodic test.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

ction 13: Electrical signal tests of frequency weightings : A-Weighting

Result: Passed

ected range: Single range
rce of microphone free-field correction: Actuator Test (Cert: 185032)
rce of instrument case correction: Part B Manual V20160609
rce of windshield correction: Part B Manual V20160609

Frequency	Equivalent input level	LAeq	Deviation from 1 kHz	Correction A*	Correction B*	Correction C*	Corrected deviation	Total uncertainty	Acceptance limit
63 Hz	120.20	94.40	0.40	0.25	0.00	0.00	0.7	0.35	±2.0
125 Hz	110.10	94.20	0.20	0.16	0.00	0.00	0.4	0.35	±1.5
250 Hz	102.60	94.20	0.20	0.10	0.02	0.03	0.4	0.35	±1.5
500 Hz	97.20	94.10	0.10	0.07	0.01	0.07	0.3	0.35	±1.5
1000 Hz	94.00	94.00	0.00	0.00	-0.03	0.22	0.2	0.35	±1.0
2000 Hz	92.80	93.90	-0.10	-0.18	-0.01	0.59	0.3	0.35	±2.0
4000 Hz	93.00	93.70	-0.30	-0.62	-0.03	0.13	-0.8	0.35	±3.0
8000 Hz	95.10	93.50	-0.50	-0.90	-0.08	0.04	-1.4	0.49	±5.0

All values are given in decibels unless otherwise stated.

gend
Microphone free-field correction
Correction for the effect of the instrument case
Correction for the effect of the windscreen

information on the uncertainty of measurement, required by IEC 61672-3:2013, for the correction data given in the Instruction Manual or obtained from the manufacturer or plier of the sound level meter, or the manufacturer of the microphone, was provided in the Instruction Manual or made available by the manufacturer or supplier of the sound l meter. The uncertainty of measurement of the correction data was therefore assumed to be the maximum-permitted uncertainty given in IEC 62585 for the corresponding -field correction data and for a coverage probability of 95 %.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

tion 13: Electrical signal tests of frequency weightings : C-Weighting

Result: Passed

cted range: Single range
rce of microphone free-field correction: Actuator Test (Cert: 185032)
rce of instrument case correction: Part B Manual V20160609
rce of windshield correction: Part B Manual V20160609

Frequency	Equivalent input level	LCeq	Deviation from 1 kHz	Correction A*	Correction B*	Correction C*	Corrected deviation	Total uncertainty	Acceptance limit
63 Hz	94.80	94.00	0.00	0.25	0.00	0.00	0.3	0.35	±2.0
125 Hz	94.20	94.00	0.00	0.16	0.00	0.00	0.2	0.35	±1.5
250 Hz	94.00	94.00	0.00	0.10	0.02	0.03	0.2	0.35	±1.5
500 Hz	94.00	94.00	0.00	0.07	0.01	0.07	0.2	0.35	±1.5
1000 Hz	94.00	94.00	0.00	0.00	-0.03	0.22	0.2	0.35	±1.0
2000 Hz	94.20	93.90	-0.10	-0.18	-0.01	0.59	0.3	0.35	±2.0
4000 Hz	94.80	93.80	-0.20	-0.62	-0.03	0.13	-0.7	0.35	±3.0
8000 Hz	97.00	93.60	-0.40	-0.90	-0.08	0.04	-1.3	0.49	±5.0

gend
Microphone free-field correction
Correction for the effect of the instrument case
Correction for the effect of the windscreen

All values are given in decibels unless otherwise stated.

nformation on the uncertainty of measurement, required by IEC 61672-3:2013, for the correction data given in the Instruction Manual or obtained from the manufacturer or plier of the sound level meter, or the manufacturer of the microphone, was provided in the Instruction Manual or made available by the manufacturer or supplier of the sound meter. The uncertainty of measurement of the correction data was therefore assumed to be the maximum-permitted uncertainty given in IEC 62585 for the corresponding -field correction data and for a coverage probability of 95 %.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

ction 13: Electrical signal tests of frequency weightings : Z-Weighting

Result: Passed

ected range: Single range
urce of microphone free-field correction: Actuator Test (Cert: 185032)
urce of instrument case correction: Part B Manual V20160609
urce of windshield correction: Part B Manual V20160609

Frequency	Equivalent input level	LZeq	Deviation from 1 kHz	Correction A*	Correction B*	Correction C*	Corrected deviation	Total uncertainty	Acceptance limit
63 Hz	94.00	94.20	0.20	0.25	0.00	0.00	0.5	0.35	±2.0
125 Hz	94.00	94.10	0.10	0.16	0.00	0.00	0.3	0.35	±1.5
250 Hz	94.00	94.10	0.10	0.10	0.02	0.03	0.3	0.35	±1.5
500 Hz	94.00	94.00	0.00	0.07	0.01	0.07	0.2	0.35	±1.5
1000 Hz	94.00	94.00	0.00	0.00	-0.03	0.22	0.2	0.35	±1.0
2000 Hz	94.00	94.00	0.00	-0.18	-0.01	0.59	0.4	0.35	±2.0
4000 Hz	94.00	94.00	0.00	-0.62	-0.03	0.13	-0.5	0.35	±3.0
8000 Hz	94.00	93.90	-0.10	-0.90	-0.08	0.04	-1.0	0.49	±5.0

egend
Microphone free-field correction
Correction for the effect of the instrument case
Correction for the effect of the windscreen

All values are given in decibels unless otherwise stated.

information on the uncertainty of measurement, required by IEC 61672-3:2013, for the correction data given in the Instruction Manual or obtained from the manufacturer or plier of the sound level meter, or the manufacturer of the microphone, was provided in the Instruction Manual or made available by the manufacturer or supplier of the sound el meter. The uncertainty of measurement of the correction data was therefore assumed to be the maximum-permitted uncertainty given in IEC 62585 for the corresponding e-field correction data and for a coverage probability of 95 %.

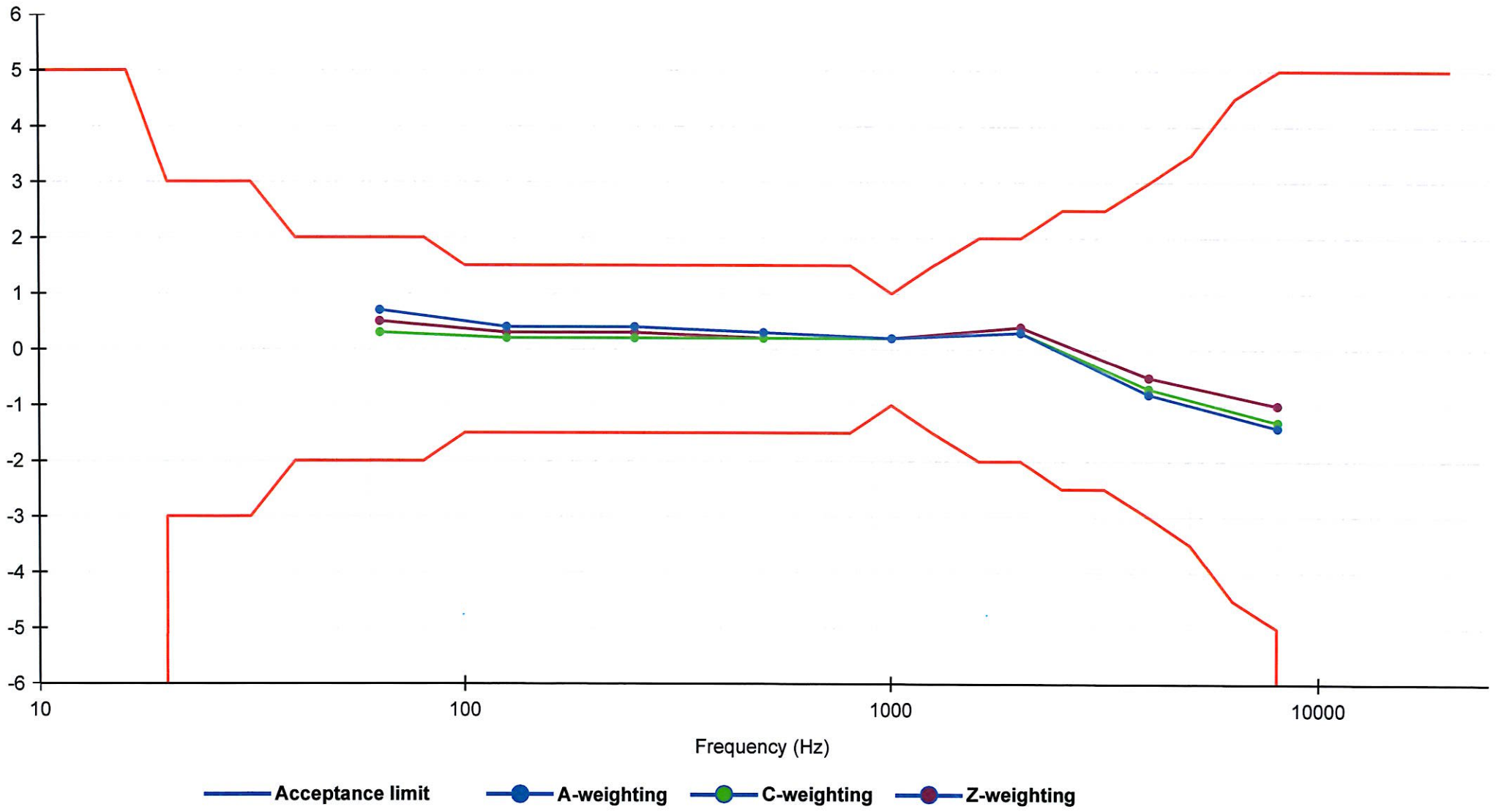
CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

tion 13: Electrical signal tests of frequency weightings : Continued

Result: Passed



CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Result: Passed

Section 16: Level linearity on the reference level range

Selected range: Single range **Acceptance limit** ±1.1 dB **Uncertainty:** 0.15 dB

Frequency: 8000 Hz **Linear operating range at 8000 kHz:** 24 - 137 dB

Reference level: 94.00 dB **Ref. sig. gen. voltage:** 0.219 Vpp **Ref.attenuator gain:** 0 dB

Input level	LAeq	Deviation
138.00	138.00	0.0
137.00	137.00	0.0
136.00	136.00	0.0
135.00	135.00	0.0
134.00	134.00	0.0
133.00	133.00	0.0
132.00	132.00	0.0
129.00	129.00	0.0
124.00	124.00	0.0
119.00	119.00	0.0
114.00	114.00	0.0
109.00	109.00	0.0
104.00	104.00	0.0
99.00	99.00	0.0
94.00	94.00	0.0
89.00	89.00	0.0
84.00	84.10	0.1
79.00	79.10	0.1
74.00	74.10	0.1
69.00	69.10	0.1
64.00	64.10	0.1
59.00	59.10	0.1
54.00	54.00	0.0
49.00	49.00	0.0
44.00	44.00	0.0
39.00	39.00	0.0
34.00	34.00	0.0
29.00	29.00	0.0
28.00	28.00	0.0
27.00	27.00	0.0
26.00	26.00	0.0
25.00	25.00	0.0

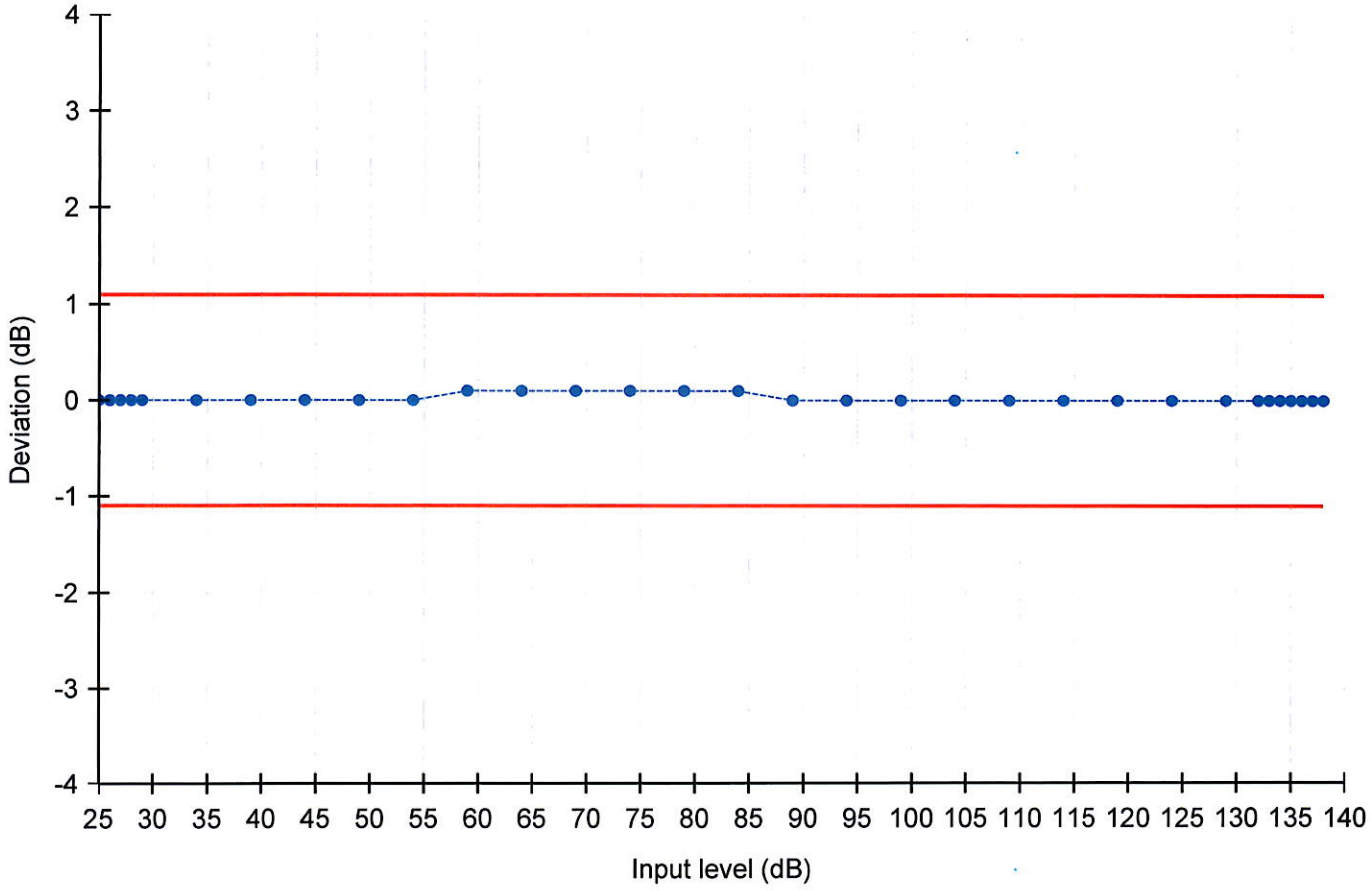
All values in the table are given in decibels.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 10148

Certificate Number: **185057**

Section 16: Level linearity on the reference level range



CERTIFICATE OF CALIBRATION

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Result: Passed

ction 18: Toneburst response

ected range: Single range
quency: 4000 Hz

Input level: 137.00 dB
Uncertainty: 0.12 dB

t: Steady level type: LAF Burst level type: LAFMax

Burst duration	Steady level	Burst level	Measured difference	Target difference	Deviation	Acceptance limit	Overload
200 ms	137.00	136.00	-1.00	-1.0	0.0	±1.0	No
2 ms	137.00	118.90	-18.10	-18.0	-0.1	+1.0; -2.5	No
0.25 ms	137.00	109.90	-27.10	-27.0	-0.1	+1.5; -5.0	No

All values in the table are given in decibels unless otherwise stated.

w: Steady level type: LAS Burst level type: LASMax

Burst duration	Steady level	Burst level	Measured difference	Target difference	Deviation	Acceptance limit	Overload
200 ms	137.00	129.60	-7.40	-7.4	0.0	±1.0	No
2 ms	137.00	110.00	-27.00	-27.0	0.0	+1.0; -5.0	No

All values in the table are given in decibels unless otherwise stated.

.: Steady level type: LAeq Burst level type: LAE

Burst duration	Steady level	Burst level	Measured difference	Target difference	Deviation	Acceptance limit	Overload
200 ms	137.00	130.00	-7.00	-7.0	0.0	±1.0	No
2 ms	137.00	110.00	-27.00	-27.0	0.0	+1.0; -2.5	No
0.25 ms	137.00	100.90	-36.10	-36.0	-0.1	+1.5; -5.0	No

All values in the table are given in decibels unless otherwise stated.

CERTIFICATE OF CALIBRATION

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tion 19: C-weighted peak sound level

Result: Passed

cted range: Single range **Uncertainty:** 0.12 dB

Frequency	Test signal	Reference LCeq	LCPeak	Measured difference	Target difference	Deviation	Acceptance limit	Overload
8000 Hz	Full sinewave	130.00	133.50	3.50	3.4	0.1	±3.0	No
500 Hz	Positive half-sinewave	134.00	136.30	2.30	2.4	-0.1	±2.0	No
500 Hz	Negative half-sinewave	134.00	136.30	2.30	2.4	-0.1	±2.0	No

All values in the table are given in decibels.

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Section 15: Long-term stability

Result: Passed

Frequency: 1000 Hz

Selected range: Single range

Reference level: 94.00 dB

Reference input level sig. gen. voltage: 0.181 Vpp

Reference input level attenuator gain: 0 dB

	Before	After	Difference	Acceptance limit	Uncertainty
LAeq	94.00	94.00	0.0	0.3	0.10

All values in the table are given in decibels.

Section 21: High-level stability

Result: Passed

Frequency: 1000 Hz

Selected range: Single range

Reference level: 138.00 dB

	Before	After	Difference	Acceptance limit	Uncertainty
LAeq	138.00	138.00	0.0	0.3	0.10

All values in the table are given in decibels.

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Section 20: Overload indication

Result: Passed

Frequency: 4000 Hz

Uncertainty: ±0.13 dB

Selected range: Single range

Start input level: 139.0 dB

Start input level sig. gen. voltage: 9.474 Vpp

Start input level attenuator gain: 10 dB

Relative input level

Positive half-sinewave	Negative half-sinewave	Difference	Acceptance limit
140.7	140.6	-0.1	1.5

All values in the table are given in decibels unless otherwise stated.

Latching: It was verified that the overload indicator latches as specified in IEC 61672-1.

CERTIFICATE OF CALIBRATION

ISSUED BY **Cirrus Research plc**

DATE OF ISSUE **21 December 2022** CERTIFICATE NUMBER **185032**

Cirrus Research plc
Acoustic House
Bridlington Road
Hunmanby
North Yorkshire
YO14 0PH
United Kingdom

Test engineer:
C.Scott
Electronically signed:

Microphone

Microphone capsule

Manufacturer: Cirrus Research plc

Model: MK:216

Serial Number: 414391D

Calibration procedure

Date of calibration: 21 December 2022

Open circuit: 55.5 mV/Pa

Sensitivity at 1 kHz: -25.1 dB rel 1 V/Pa

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using an electrostatic actuator in accordance with BS EN 61094-6:2005 with the free-field response derived via standard correction data traceable to a National Measurement Institute.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

Environmental conditions

Pressure: 99.19 kPa

Temperature: 23.5 °C

Humidity: 37.6 %

CERTIFICATE OF CALIBRATION

Certificate Number: **185032**

Free-Field Frequency Response : Tabular

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator Response (dB)
63	**0.25**	**-0.39**
80	0.23	-0.24
100	0.13	-0.14
125	**0.16**	**-0.06**
160	0.13	0.01
200	0.11	0.06
250	**0.10**	**0.09**
315	0.09	0.11
400	0.09	0.12
500	**0.07**	**0.11**
630	0.05	0.10
800	0.03	0.08
1 000	**0.00**	**0.02**
1 250	-0.03	-0.06
1 600	-0.10	-0.19
2 000	**-0.18**	**-0.38**
2 500	-0.32	-0.66
3 150	-0.41	-1.06
4 000	**-0.62**	**-1.65**
5 000	-0.78	-2.35
6 300	-0.97	-3.22
8 000	**-0.90**	**-4.27**
10 000	-0.56	-5.53
12 500	-0.06	-6.94
16 000	**-0.21**	**-8.72**
20 000	-2.32	-12.40

Free-Field Frequency Response : Graphical