

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

Establece Norma de Emisión de Ruidos Generados por Fuentes que Indica

**FICHA DE INFORMACIÓN DE MEDICIÓN DE RUIDO**

**IDENTIFICACIÓN DE LA FUENTE EMISORA DE RUIDO**

Nombre o razón social	Morales y Cardenas Asociados Ltda.		
RUT	76.200.422-4		
Dirección	Dr. Manuel Barros Borgoño 430		
Comuna	Providencia		
Nombre de Zona de emplazamiento (según IPT vigente)	UpR y Er, Uso preferentemente Residencial y Equipamiento restringido		
Datum	WGS84	Huso	19S
Coordenada Norte	6299602.03 m	Coordenada Este	349647.41 m

**CARACTERIZACIÓN DE LA FUENTE EMISORA DE RUIDO**

Actividad Productiva	<input type="checkbox"/> Industrial	<input type="checkbox"/> Agrícola	<input type="checkbox"/> Extracción	<input type="checkbox"/> Otro
Actividad Comercial	<input type="checkbox"/> Restaurant	<input type="checkbox"/> Taller Mecánico	<input type="checkbox"/> Local Comercial	<input type="checkbox"/> Otro
Actividad Esparcimiento	<input type="checkbox"/> Discoteca	<input type="checkbox"/> Recinto Deportivo	<input type="checkbox"/> Cultura	<input type="checkbox"/> Otro
Actividad de Servicio	<input type="checkbox"/> Religioso	<input checked="" type="checkbox"/> Salud	<input type="checkbox"/> Comunitario	<input type="checkbox"/> Otro
Infraestructura Transporte	<input type="checkbox"/> Terminal	<input type="checkbox"/> Taller de Transporte	<input type="checkbox"/> Estación Intermedia	<input type="checkbox"/> Otro
Infraestructura Sanitaria	<input type="checkbox"/> Planta de Tratamiento	<input type="checkbox"/> Relleno Sanitario	<input type="checkbox"/> Instalación de	<input type="checkbox"/> Otro
Infraestructura Energética	<input type="checkbox"/> Generadora	<input type="checkbox"/> Distribución Eléctrica	<input type="checkbox"/> Comunicaciones	<input type="checkbox"/> Otro
Faena Constructiva	<input type="checkbox"/> Construcción	<input type="checkbox"/> Demolición	<input type="checkbox"/> Reparación	<input type="checkbox"/> Otro
Otro (Especificar)				

**INSTRUMENTAL DE MEDICIÓN**

Identificación sonómetro					
Marca	Larson Davis	Modelo	LxT1	N° serie	5526
Fecha de emisión Certificado de Calibración			17.01.2018		
Número de Certificado de Calibración			2018000669		
Identificación calibrador					
Marca	Larson Davis	Modelo	CAL200	N° serie	15291
Fecha de emisión Certificado de Calibración			21.12.2017		
Número de Certificado de Calibración			2017013480		
Ponderación en frecuencia	Filtro A		Ponderación temporal	Slow	
Verificación de Calibración en Terreno	<input checked="" type="checkbox"/> Si		<input type="checkbox"/> No		
<i>Se deberá adjuntar Certificado de Calibración Periódica Vigente para ambos instrumentos.</i>					

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**FICHA DE INFORMACIÓN DE MEDICIÓN DE RUIDO**


**IDENTIFICACIÓN DEL RECEPTOR**

Receptor N°1	Astrid Zamarín Castillo		
Rut	16.122.584-3		
Calle	Dr. Manuel Barros Borgoño		
Número	450		
Comuna	Providencia		
Fono	954169626		
E-Mail	azamarin@gmail.com		
Datum	WGS84	Huso	19 S
Coordenada Norte	6299692.92 m	Coordenada Este	349640.44 m
Nombre de Zona de emplazamiento	UpR y Er, Uso preferentemente Residencial y Equipamiento restringido		
N° de Certificado de Informaciones Previas*			
Zonificación DS N° 38/11 MMA	<input type="checkbox"/> I	<input type="checkbox"/> II	<input checked="" type="checkbox"/> III
			<input type="checkbox"/> IV
			<input type="checkbox"/> Rural

\* Adjuntar Certificado de Informaciones Previas (Si corresponde, según consideraciones de Art. 8°, D.S. N° 38/11 MMA)

**CONDICIONES DE MEDICIÓN**

Fecha medición	10.05.19		
Hora inicio medición	23:50 hrs		
Hora término medición	00:10 hrs		
Periodo de medición	<input type="checkbox"/> 7:00 a 21:00 h	<input checked="" type="checkbox"/> 21:00 a 7:00 h	
Lugar de medición	<input type="checkbox"/> Medición Interna	<input checked="" type="checkbox"/> Medición Externa	
Descripción del lugar de medición	Patio		
Condiciones de ventana (en caso de medición interna)	<input type="checkbox"/> Ventana Abierta	<input type="checkbox"/> Ventana Cerrada	
Identificación ruido de fondo	Tránsito leve, equipos de aire acondicionado en edificios lejanos		
Temperatura [°C]	14	Humedad [%]	37
		Velocidad de viento [m/s]	1,66

Nombre y firma Inspector Ambiental (IA)	Daniel Arenas González, Ingeniero de Ejecución en Sonido	
Entidad Técnica de Fiscalización Ambiental	Municipalidad de Providencia	

**Nota:**

- Se deberá imprimir y completar esta página para cada receptor evaluado.
- Se podrán incluir fotografías del punto donde se ubique el sonómetro para la realización de la medición.
- Los datos de Temperatura, Humedad Relativa y Velocidad de viento, corresponderá para mediciones realizadas en el exterior.

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

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**FICHA DE MEDICIÓN DE NIVELES DE RUIDO**

**REGISTRO DE MEDICIÓN DE RUIDO DE FUENTE EMISORA**

<b>Identificación Receptor N°</b>	1
<input type="checkbox"/> Medición Interna (tres puntos)	<input checked="" type="checkbox"/> Medición externa (un punto)

	NPSeq		NPSmin		NPSmáx
Punto 1	48,1	→	47,5	→	49,4
	48,5	→	48	→	49,6
	47,9	→	47,1	→	48,8

	NPSeq		NPSmin		NPSmáx
Punto 2	[ ]	→	[ ]	→	[ ]
	[ ]	→	[ ]	→	[ ]
	[ ]	→	[ ]	→	[ ]

	NPSeq		NPSmin		NPSmáx
Punto 3	[ ]	→	[ ]	→	[ ]
	[ ]	→	[ ]	→	[ ]
	[ ]	→	[ ]	→	[ ]

**REGISTRO DE RUIDO DE FONDO**

Ruido de fondo afecta la medición	<input type="checkbox"/> Si	<input checked="" type="checkbox"/> No
Fecha:		Hora:

	5'	10'	15'	20'	25'
NPSeq	[ ]	[ ]	[ ]	[ ]	[ ]

**Observaciones:**

**FICHA DE GEORREFERENCIACIÓN DE MEDICIÓN DE RUIDO**

Croquis

Imagen Satelital



Origen de la imagen Satelital

Google Earth

Escala de la imagen Satelital

**LEYENDA DE CROQUIS O IMAGEN UTILIZADA**

Datum		WGS84		Huso		19 S	
Fuentes				Receptores			
Símbolo	Nombre	Coordenadas		Símbolo	Nombre	Coordenadas	
F	Extractor de aire	N	6299602.03 m	R	Reclamante (Punto de medición)	N	6299692.92 m
		E	349647.41 m			E	349640.44 m

*Se podrán adjuntar fotografías, considerando como máximo una (1) por fuente y dos (2) por lugar de medición.*



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**FICHA DE EVALUACIÓN DE NIVELES DE RUIDO****TABLA DE EVALUACIÓN**

Receptor N°	NPC [dBA]	Ruido de Fondo [dBA]	Zona DS N°38	Periodo (Diurno/Nocturno)	Límite [dBA]	Estado (Supera/No Supera)
1	48		III	Nocturno	50	No Supera
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-
			Seleccione	Seleccione	-	-

**OBSERVACIONES**

No se realiza medición de ruido de fondo, debido a que la fuente cumple la norma sin necesidad de medirlo. Se informa de resultado a reclamantes, los cuales se encuentran conformes con la insonorización del extractor.

**ANEXOS**

N°	Descripción

**RESPONSABLE DEL REPORTE (Llenar sólo ETFA)**

Fecha del reporte	
Nombre Representante Legal	
Firma Representante Legal	

# Calibration Certificate

Certificate Number 2018000669

Customer:  
Sistemas De Instrumentacion  
Cochea Y Toro NO 65  
Santiago-Centro  
Santiago, Chile

<b>Model Number</b>	LXT1	<b>Procedure Number</b>	D0001 8384
<b>Serial Number</b>	6005526	<b>Technician</b>	Ron Harris
<b>Test Results</b>	Pass	<b>Calibration Date</b>	17 Jan 2018
<b>Initial Condition</b>	As Manufactured	<b>Temperature</b>	23.33 °C
<b>Description</b>	SoundTrack LXT Class 1	<b>Humidity</b>	50.7 %RH ± 2.0 %RH
	Class 1 Sound Level Meter	<b>Static Pressure</b>	87.08 kPa ± 0.13 kPa
	Firmware Revision: 2.302		

**Evaluation Method**  
Tested with:  
Larson Davis PRLM LXT1, SN 048806  
PCB 377B02, SN 177005  
Larson Davis CAL200, SN 9079  
Larson Davis CAL291, SN 0203

**Compliance Standards**  
Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001 8378:

IEC 60865:1:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61280:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.

Test points marked with a **±** in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 98% confidence level.

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Correction data from Larson Davis LXT Manual for SoundTrack LXT & SoundExpert LXT, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

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Provo, UT 84601, United States  
716-684-0001



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Certificate Number 2018000669

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz. Reference Sound Pressure Level: 114 dB re 20 µPa

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3

Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 successfully completed by Physikalisch-Technische Bundesanstalt (PTB) on 2007-10-09 reference number: PTB-172-4034218.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 for the environmental conditions under which the tests were performed. As evidence has been made available from an independent testing organization responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013 / ANSI/ASA S1.4-2014/Part 2 to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1, the sound level meter submitted for testing conforms to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Description	Standard Used	Cal Date	Cal Due	Cal Standard
SRS DS360 Ultra Low Distortion Generator		2017-06-23	2018-06-23	006311
Hart Scientific 2626-S Humidity/Temperature Sensor		2017-06-11	2018-06-11	0006943
Larson Davis CAL200 Acoustic Calibrator		2017-07-25	2018-07-25	007027
Larson Davis Model 631		2017-03-01	2018-03-01	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone		2017-03-08	2018-03-08	007183
Larson Davis CAL291 Residual Intensity Calibrator		2017-09-19	2018-09-19	007287

## Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4:2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

## Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4:2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5, ANSI S1.4:2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.22	-0.20	-1.20	0.80	0.23	Pass
1000	0.18	0.00	-0.70	0.70	0.23	Pass
8000	-2.61	-3.00	-5.50	-1.50	0.32	Pass

—End of measurement results—

## Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4:2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted	40.63

—End of measurement results—

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# Calibration Certificate

Certificate Number 2017013480

**Customer:**  
Sistemas Dc Instrumentacion  
Concha Y Toro NO 65  
Santiago-Centro  
Santiago, Chile

**Model Number** CAL200  
**Serial Number** 15281  
**Test Results** Pass  
**Initial Condition** As Manufactured  
**Description** Larson Davis CAL200 Acoustic Calibrator

**Procedure Number** D0001.8386  
**Technician** Scott Montgomery  
**Calibration Date** 21 Dec 2017  
**Calibration Due** 21 Dec 2019  
**Temperature** 22 °C ± 0.3 °C  
**Humidity** 32 %RH ± 3 %RH  
**Static Pressure** 101.3 kPa ± 1 kPa

**Evaluation Method** The data is acquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

**Compliance Standards** Compliant to Manufacturer Specifications per D0001.8190 and the following standards:  
IEC 60942:2003 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. Test points marked with a # in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2008.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Description	Standards Used		Cal Standard
	Cal Date	Cal Due	
Agilent 34401A DMM	09/06/2017	09/06/2018	001021
Larson Davis Model 2900 Real Time Analyzer	04/10/2017	04/10/2018	001051
Microphone Calibration System	08/08/2017	08/08/2018	005446
1/2" Pre-amplifier	10/05/2017	10/05/2018	006506
Larson Davis 1/2" Pre-amplifier 7-pin LEMO	08/08/2017	08/08/2018	006507
1/2 inch Microphone - RI - 200V	04/24/2017	04/24/2018	006510
Pressure Transducer	06/01/2017	06/01/2018	007310

-- End of Report --

Signatory: *Rex Herzig*

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Certificate Number 2017013480

Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
114	101.3	114.00	113.80	114.20	0.13	Pass
94	101.3	94.01	93.80	94.20	0.14	Pass

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
94	101.3	1,000.10	990.00	1,010.00	0.20	Pass
114	101.3	1,000.09	990.00	1,010.00	0.20	Pass

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
94	101.3	0.42	0.00	2.00	0.25	Pass
114	101.3	0.38	0.00	2.00	0.25	Pass

Level Change Over Pressure

Tested at 114 dB, 23 °C, 28 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
101.3	101.1	0.00	-0.30	0.30	0.04 †	Pass
92.0	92.0	-0.00	-0.30	0.30	0.04 †	Pass
108.0	108.0	-0.02	-0.30	0.30	0.04 †	Pass
83.0	83.2	-0.01	-0.30	0.30	0.04 †	Pass
74.0	74.1	-0.06	-0.30	0.30	0.04 †	Pass
65.0	65.1	-0.14	-0.30	0.30	0.04 †	Pass

Frequency Change Over Pressure

Tested at 114 dB, 23 °C, 28 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.0	0.00	-10.00	10.00	0.20 †	Pass
101.3	101.1	0.00	-10.00	10.00	0.20 †	Pass
92.0	92.0	0.00	-10.00	10.00	0.20 †	Pass
83.0	83.2	-0.01	-10.00	10.00	0.20 †	Pass
74.0	74.1	-0.01	-10.00	10.00	0.20 †	Pass
65.0	65.1	-0.02	-10.00	10.00	0.20 †	Pass

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at 114 dB, 23 °C, 28 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.0	0.39	0.00	2.00	0.25 †	Pass
101.3	101.1	0.38	0.00	2.00	0.25 †	Pass
92.0	92.0	0.37	0.00	2.00	0.25 †	Pass
83.0	83.2	0.36	0.00	2.00	0.25 †	Pass
74.0	74.1	0.36	0.00	2.00	0.25 †	Pass
65.0	65.1	0.38	0.00	2.00	0.25 †	Pass

Signature: Scott Mackenzie



DP001, 8/10 Rev. A

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DP001, 8/10 Rev. A

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11/8/2018 13:13:48PM

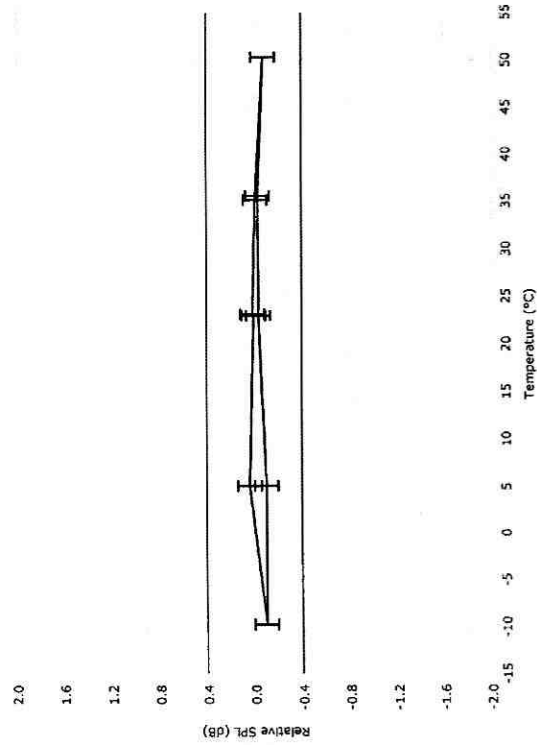
Page 3 of 3



**Model CAL200 Relative SPL vs. Temperature**  
Larson Davis Model CAL200 Serial Number: 15291

Model CAL200 Relative SPL vs. Temperature at 50% RH.  
A 2559 Mic (SN: 2995) with a PRM902 Preamp (SN: 5726), station 19 was used to check the levels.

Test Date: 05 Dec 2017 17:42:11



0.1dB expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL200.SEQ

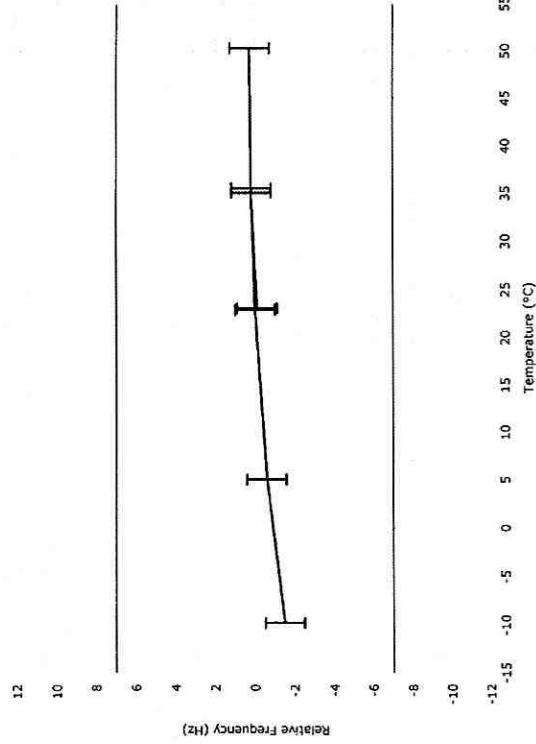
Test Location: Larson Davis, a division of PCB Piezotronics, Inc.  
1681 West 820 North, Provo, Utah 84601  
Tel: 716 684-0001 www.LarsonDavis.com



**Model CAL200 Relative Frequency vs. Temperature**  
Larson Davis Model CAL200 Serial Number: 15291

Model CAL200 Relative Frequency vs. Temperature at 50% RH.  
A 2559 Mic (SN: 2995) with a PRM902 Preamp (SN: 5726), station 19 was used to check the levels.

Test Date: 05 Dec 2017 17:42:11



1.0 Hz expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL200.SEQ

Test Location: Larson Davis, a division of PCB Piezotronics, Inc.  
1681 West 820 North, Provo, Utah 84601  
Tel: 716 684-0001 www.LarsonDavis.com