

**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                               | Constructora Ingetasco Ltda                                          |                 |             |
| RUT                                                 | 76.606.320-9                                                         |                 |             |
| Dirección                                           | Suecia 281 - 287 / Lota 2284                                         |                 |             |
| 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                                    | 6300633.83 m                                                         | Coordenada Este | 350574.31 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 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 Distribución | <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 checked="" 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                                                     |                                        |        | SON20170088                 |          |       |  |  |
| Identificación calibrador                                                                |                                        |        |                             |          |       |  |  |
| Marca                                                                                    | Larson Davis                           | Modelo | CAL200                      | N° serie | 15291 |  |  |
| Fecha de emisión Certificado de Calibración                                              |                                        |        | 21.12.2017                  |          |       |  |  |
| Número de Certificado de Calibración                                                     |                                        |        | 2018000669 - 2018000666     |          |       |  |  |
| Ponderación en frecuencia                                                                | Filtro A                               |        | Ponderación temporal        | Slow     |       |  |  |
| Verificación de Calibración en Terreno                                                   | <input checked="" type="checkbox"/> Si |        | <input type="checkbox"/> No |          |       |  |  |
| Se deberá adjuntar Certificado de Calibración Periódica Vigente para ambos instrumentos. |                                        |        |                             |          |       |  |  |



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

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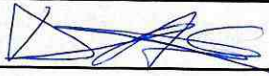
**FICHA DE INFORMACIÓN DE MEDICIÓN DE RUIDO****IDENTIFICACIÓN DEL RECEPTOR**

|                                             |                                                 |                             |                                         |                                                            |
|---------------------------------------------|-------------------------------------------------|-----------------------------|-----------------------------------------|------------------------------------------------------------|
| Receptor N°1                                | Paulina Carmona Toro                            |                             |                                         |                                                            |
| Rut                                         | 9.907.491-4                                     |                             |                                         |                                                            |
| Calle                                       | Suecia                                          |                             |                                         |                                                            |
| Número                                      | 211                                             |                             |                                         |                                                            |
| Comuna                                      | Providencia                                     |                             |                                         |                                                            |
| Fono                                        | 950158377 - 229152906                           |                             |                                         |                                                            |
| E-Mail                                      | paulina.carmona@sura.cl                         |                             |                                         |                                                            |
| Datum                                       | WGS84                                           | Huso                        | 19 S                                    |                                                            |
| Coordenada Norte                            | 6300649.24 m                                    | Coordenada Este             | 350574.31 m                             |                                                            |
| Nombre de Zona de emplazamiento             | UpEC Uso preferentemente Equipamiento Comercial |                             |                                         |                                                            |
| 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                                       | 26.10.18                                           |                                                      |    |                                |
| Hora inicio medición                                 | 09.45 hrs                                          |                                                      |    |                                |
| Hora término medición                                | 10:10 hrs                                          |                                                      |    |                                |
| Periodo de medición                                  | <input checked="" type="checkbox"/> 7:00 a 21:00 h | <input 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                    | Entrada/Salida de vehículos, garita de guardia     |                                                      |    |                                |
| Condiciones de ventana (en caso de medición interna) | <input type="checkbox"/> Ventana Abierta           | <input type="checkbox"/> Ventana Cerrada             |    |                                |
| Identificación ruido de fondo                        | Tránsito moderado                                  |                                                      |    |                                |
| Temperatura [°C]                                     | 24                                                 | Humedad [%]                                          | 29 | Velocidad de viento [m/s] 4,44 |

|                                            |                                                            |                                                                                       |
|--------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Nombre y firma Inspector Ambiental (IA)    | Daniel Arenas González<br>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.



**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 |              |
| E       | Emisor - Fuente de ruido | N           | 6300633.83 m | R          | Receptor - Punto de medición | N           | 6300649.24 m |
|         |                          | E           | 350574.31 m  |            |                              | E           | 350574.31 m  |

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



# 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

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

|         | NPSeq | NPSmin | NPSmáx |
|---------|-------|--------|--------|
| Punto 1 | 68,6  | 55,2   | 75,5   |
|         | 69,1  | 58,5   | 75,3   |
|         | 68,4  | 57,4   | 75,3   |

|         | 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:                            | 26.10.18                    | Hora: 09:35 hrs                        |

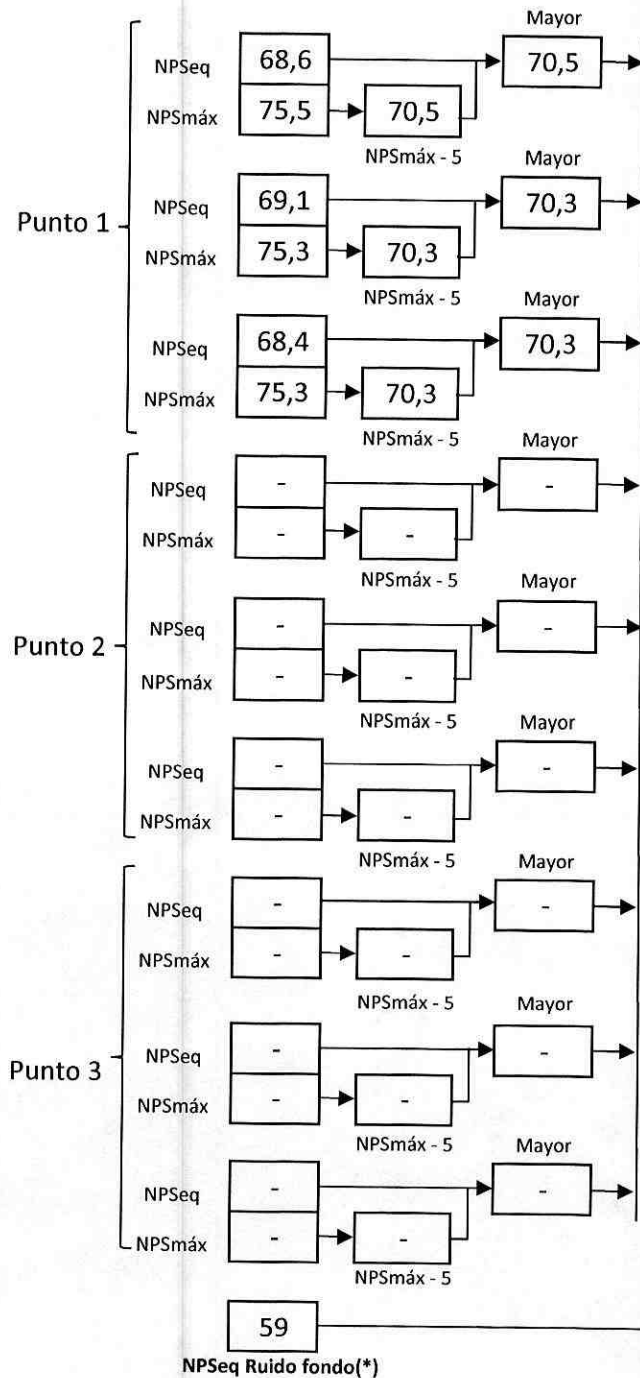
|       | 5' | 10' | 15' | 20' | 25' |
|-------|----|-----|-----|-----|-----|
| NPSeq | 60 | 59  |     |     |     |

### Observaciones:

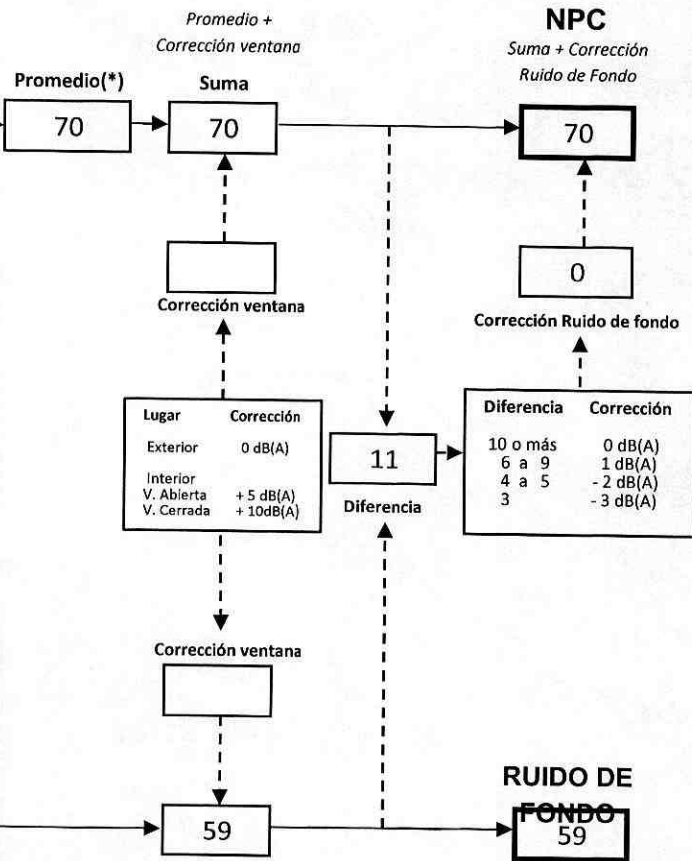
# REPORTE TÉCNICO DECRETO SUPREMO N°38/11 DEL MINISTERIO DEL MEDIO AMBIENTE

Establece Norma de Emisión de Ruidos Generados por Fuentes que Indica

## FICHA DE EVALUACIÓN DE NIVELES DE RUIDO



| Información del Receptor       |           |
|--------------------------------|-----------|
| Identificación del Receptor N° | 1         |
| Indicar Condiciones            |           |
| Medición                       | Exterior  |
| Ventana                        | No Aplica |
| Modelación ISO 9613            |           |
| No                             |           |



(\*) Aproximar a números enteros



**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 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           | 70        | 59                   | III          | Diurno                    | 65           | Supera                    |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |
|             |           |                      | Seleccione   | Seleccione                | -            | -                         |

**OBSERVACIONES**

|  |
|--|
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|  |

**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

Concha Y Toro NO 65

Santiago-Centro

Santiago, Chile

**Model Number** LxT1

**Serial Number** 0005526

**Test Results** Pass

**Initial Condition** As Manufactured

**Description** SoundTrack LxT Class 1  
Class 1 Sound Level Meter  
Firmware Revision: 2.302

**Procedure Number** D0001.8384

**Technician** Ron Harris

**Calibration Date** 17 Jan 2018

**Calibration Due** 17 Jan 2020

**Temperature** 23.33 °C ± 0.25 °C

**Humidity** 50.7 %RH ± 2.0 %RH

**Static Pressure** 87.08 kPa ± 0.13 kPa

**Evaluation Method**

**Tested with:**

Larson Davis PRMLxT1. S/N 046806

PCB 377B02. S/N 177005

Larson Davis CAL200. S/N 9079

Larson Davis CAL291. S/N 0203

*Data reported in dB re 20 µPa.*

**Compliance Standards**

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

IEC 60651:2001 Type 1

IEC 60804:2000 Type 1

IEC 61252:2002

IEC 61260:2001 Class 1

IEC 61672:2013 Class 1

ANSI S1.4-2014 Class 1

ANSI S1.4 (R2006) Type 1

ANSI S1.11 (R2009) Class 1

ANSI S1.25 (R2007)

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 95% 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

Larson Davis, a division of PCB Piezotronics, Inc  
1681 West 820 North  
Provo, UT 84601, United States  
716-684-0001

2018-1-17T16:43:36



**LARSON DAVIS**  
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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  $\mu$ Pa

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

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-1.72-4034218.

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 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 / 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.

**Standards Used**

| Description                                          | 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 | 006943       |
| Larson Davis CAL200 Acoustic Calibrator              | 2017-07-25 | 2018-07-25 | 007027       |
| Larson Davis Model 831                               | 2017-03-01 | 2018-03-01 | 007182       |
| PCB 377A13 1/2 inch Prepolarized Pressure Microphone | 2017-03-08 | 2018-03-08 | 007185       |
| 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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716-684-0001



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-- End of Report--

Signatory: Ron Harris

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

2018-1-17T16:43:36



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# Calibration Certificate

Certificate Number 2017013480

**Customer:**

Sistemas De Instrumentacion

Concha Y Toro NO 65

Santiago-Centro

Santiago, Chile

**Model Number** CAL200

**Serial Number** 15291

**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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## Standards Used

| Description                                | Cal Date   | Cal Due    | Cal Standard |
|--------------------------------------------|------------|------------|--------------|
| 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" Preamplifier                          | 10/05/2017 | 10/05/2018 | 006506       |
| Larson Davis 1/2" Preamplifier 7-pin LEMO  | 08/08/2017 | 08/08/2018 | 006507       |
| 1/2 inch Microphone - RJ - 200V            | 04/24/2017 | 04/24/2018 | 006510       |
| Pressure Transducer                        | 06/01/2017 | 06/01/2018 | 007310       |

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## Output Level

| Nominal Level<br>[dB] | Pressure<br>[kPa] | Test Result<br>[dB] | Lower limit<br>[dB] | Upper limit<br>[dB] | Expanded Uncertainty<br>[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   |

-- End of measurement results--

## Frequency

| Nominal Level<br>[dB] | Pressure<br>[kPa] | Test Result<br>[Hz] | Lower limit<br>[Hz] | Upper limit<br>[Hz] | Expanded Uncertainty<br>[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   |

-- End of measurement results--

## Total Harmonic Distortion + Noise (THD+N)

| Nominal Level<br>[dB] | Pressure<br>[kPa] | Test Result<br>[%] | Lower limit<br>[%] | Upper limit<br>[%] | Expanded Uncertainty<br>[%] | 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   |

-- End of measurement results--

## Level Change Over Pressure

Tested at: 114 dB, 23 °C, 28 %RH

| Nominal Pressure<br>[kPa] | Pressure<br>[kPa] | Test Result<br>[dB] | Lower limit<br>[dB] | Upper limit<br>[dB] | Expanded Uncertainty<br>[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   |

-- End of measurement results--

## Frequency Change Over Pressure

Tested at: 114 dB, 23 °C, 28 %RH

| Nominal Pressure<br>[kPa] | Pressure<br>[kPa] | Test Result<br>[Hz] | Lower limit<br>[Hz] | Upper limit<br>[Hz] | Expanded Uncertainty<br>[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   |

-- End of measurement results--





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

Tested at: 114 dB, 23 °C, 28 %RH

| Nominal Pressure<br>[kPa] | Pressure<br>[kPa] | Test Result<br>[%] | Lower limit<br>[%] | Upper limit<br>[%] | Expanded Uncertainty<br>[%] | 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              | 0.36               | 0.00               | 2.00               | 0.25 ‡                      | Pass   |

-- End of measurement results--

Signatory: Scott Montgomery

Larson Davis, a division of PCB Piezotronics, Inc  
 1681 West 820 North  
 Provo, UT 84601, United States  
 716-684-0001



**LARSON DAVIS**  
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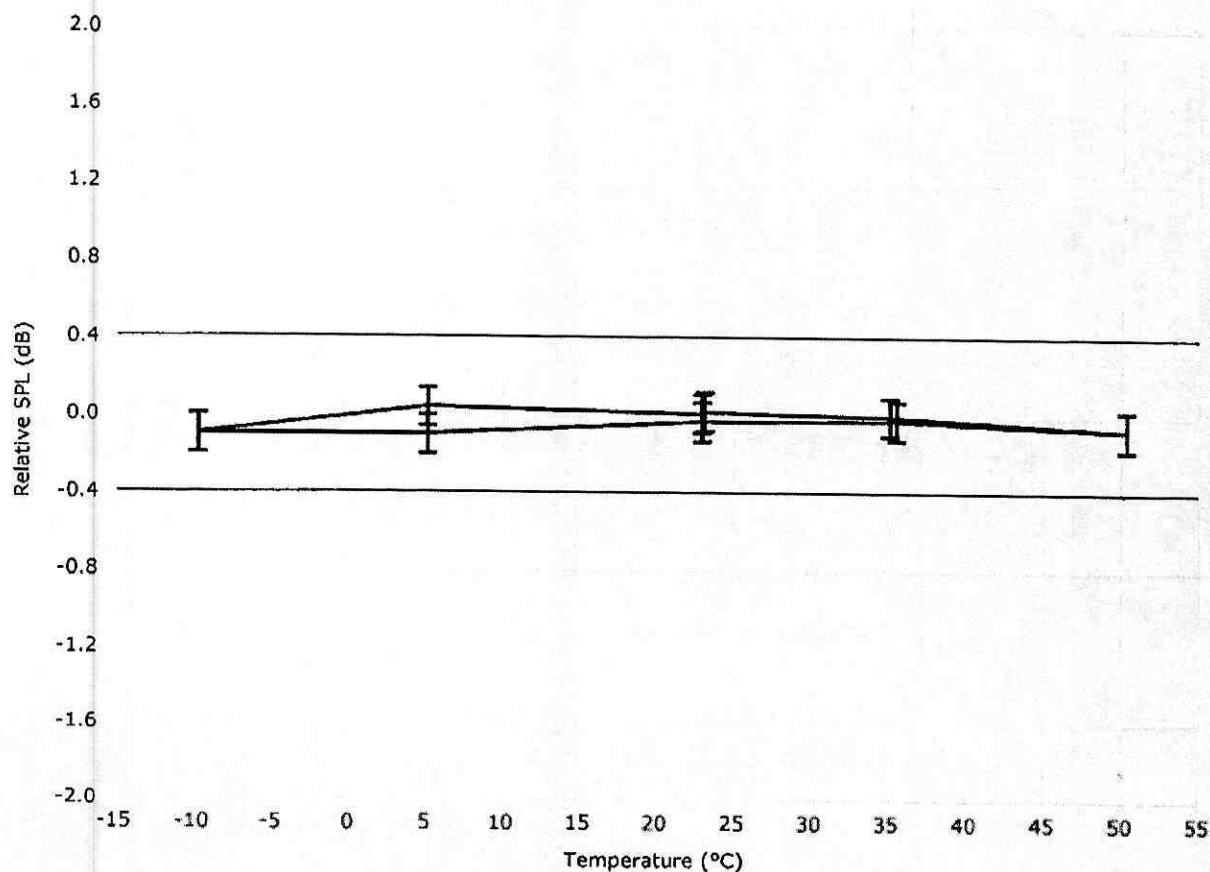


## Model CAL200 Relative SPL vs. Temperature

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](http://www.LarsonDavis.com)

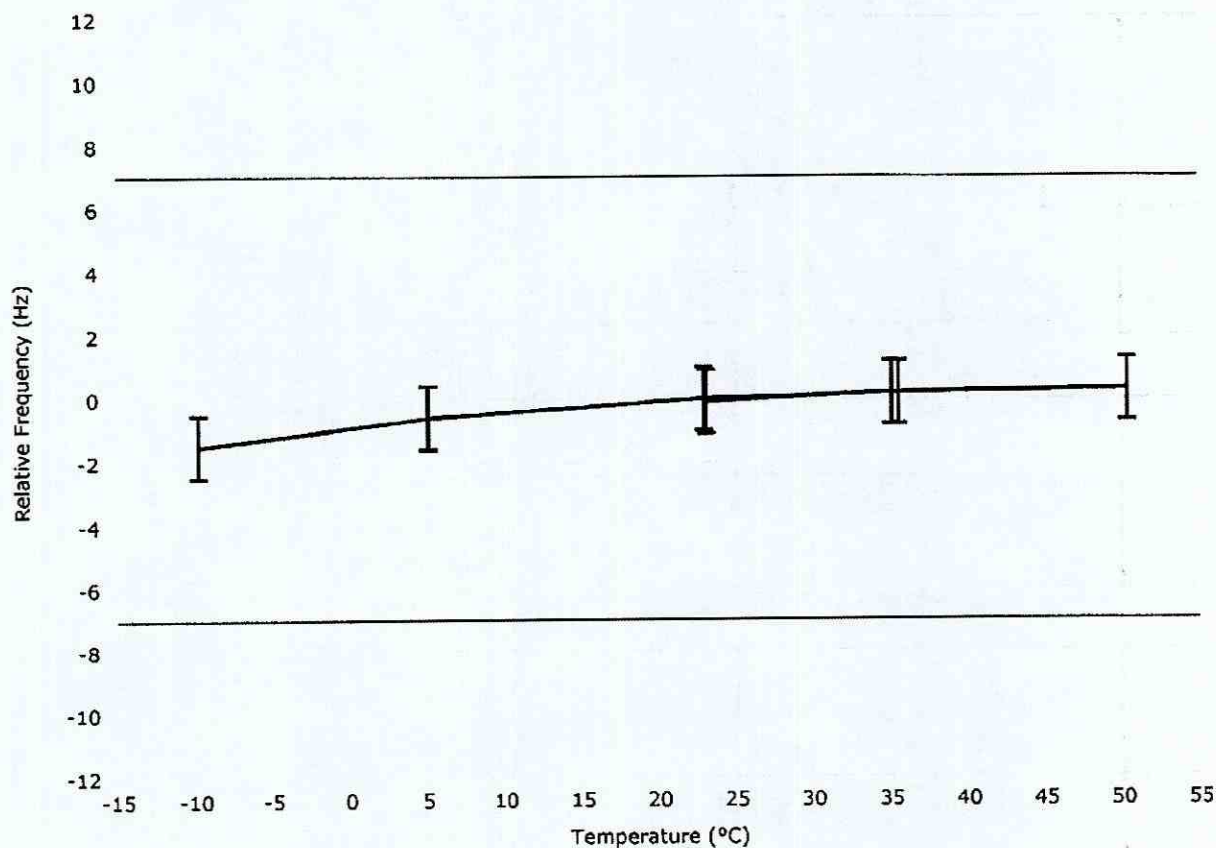


## Model CAL200 Relative Frequency vs. Temperature

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](http://www.LarsonDavis.com)