

# West Caldwell Calibration Laboratories Inc.

## Certificate of Calibration

for

### ACOUSTIC CALIBRATOR

Manufactured by: 3M  
 Model No: AC-300 (ID#SOCAL-07)  
 Serial No: AC300009328  
 Calibration Recall No: 30143



Submitted By:

Customer:  
 Company: Gruentec Cia. Ltda.  
 Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. AC-300 (ID 3M)

Upon receipt for Calibration, the instrument was found to be:

Within ( X )

tolerance of the indicated specification. See attached Report of Calibration.

The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

James Zhu

Quality Manager  
 ISO/IEC 17025:2005

Calibration Date: 12-Jul-19

Certificate No: 30143 -2

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

**West Caldwell  
 Calibration  
 Laboratories, Inc.**

uncompromised calibration  
 1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

**West Caldwell Calibration Laboratories, Inc.**  
 uncompromised calibration  
 1575 State Route 96, Victor NY 14564



Calibration Lab. Cert. # 1533.01

# REPORT OF CALIBRATION

for

**3M Calibrator**  
**Company: Gruentec Cia. Ltda.**

**Model No.: AC-300**

**Serial No.: AC300009328**  
**ID No.: SOCAL-07**

**Calibration results:**

Before data: ..... After data: .....  
 Before & after data same: ...X...  
**All tested parameters: Pass**

**Laboratory Environment:**

Ambient Temperature: **22.6** °C  
 Ambient Humidity: **50.1** % RH  
 Ambient Pressure: **98.726** kPa  
 Calibration Date: **12-Jul-2019**  
 Calibration Due: **12-Jul-2020**  
 Report Number: **30143 -2**  
 Control Number: **30143**

**Measured Data Summary:**

**Sound Pressure Level at 1000 Hz and pressure of 1013 hPa (mbar)**  
**was 114.33 dB re 20µPa**

(Calibrator tested with ½" adaptor no. 056-990)

**IEC 1094-4 Type WS 2 P Microphone was used for measurement.**

|                              |                     |                      |
|------------------------------|---------------------|----------------------|
|                              | <b>114dB @ 1kHz</b> | <b>114dB @ 250Hz</b> |
| <b>Sound Pressure Level:</b> | <b>Pass</b>         | <b>Pass</b>          |
| <b>Frequency:</b>            | <b>Pass</b>         | <b>Pass</b>          |
| <b>Distortion:</b>           | <b>Pass</b>         | <b>Pass</b>          |
| <b>Stability:</b>            | <b>Pass</b>         | <b>Pass</b>          |

The above listed instrument meets or exceeds the tested manufacturer's specifications.

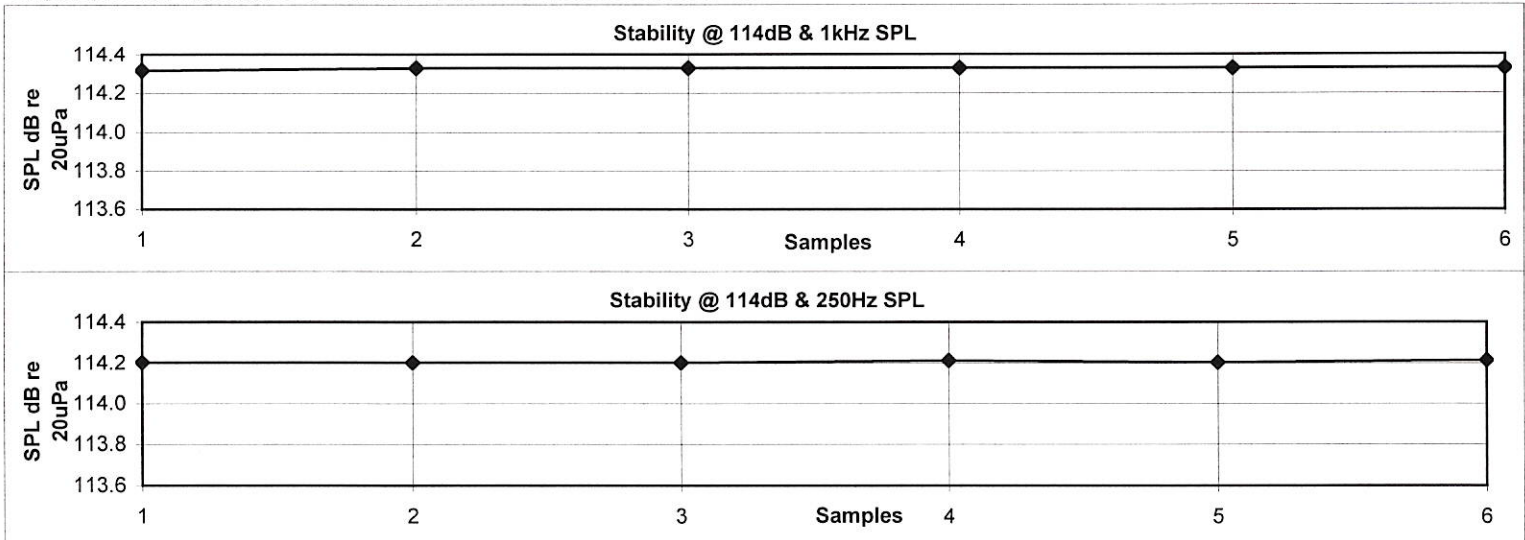
The IEC 942:1988 Class 1 specifications, passed.

The ANSI S 1.40-1984 specifications, passed.

This Calibration is traceable through NIST test numbers: **683/290345-18**

The expanded uncertainty of calibration: 0.11 dB at 95% confidence level with a coverage factor of k=2.

Graph represents six samples of Sound Pressure Level measured at 5sec. interval.



The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure :

**Rev. 7.0 Jan. 24, 2014 Doc. # 1038 AC3003M**

Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures

intended to implement the requirements of ISO10012-1, IEC Guide 25, ANSI/NCSL Z540-1, (MIL-STD-45662A) and ISO 17025

**Cal. Date: 12-Jul-2019**

Measurements performed by: .....

**Calibrated on WCCL system type 9700**

**James Zhu**

This document shall not be reproduced, except in full, without the written approval from West Caldwell Cal. Labs. Inc.

Rev. 7.0 Jan. 24, 2014 Doc. # 1038 AC3003M

**West Caldwell Calibration Laboratories Inc.**

1575 State Route 96, Victor NY 14564

Tel. (585) 586-3900 FAX (585) 586-4327

**Calibration Data Record**

for

**3M Calibrator****Model No.: AC-300****Serial No.: AC300009328****Company: Gruentec Cia. Ltda.****All tested parameters: Pass****Measured Sound Pressure Level ( Six samples measured at 5 sec. interval)**

|        |                | <b>1kHz</b>        |                     | <b>250Hz</b>       |                     |
|--------|----------------|--------------------|---------------------|--------------------|---------------------|
| Sample | 1              | 114.32 dB re 20µPa |                     | 114.20 dB re 20µPa |                     |
|        | 2              | 114.33             |                     | 114.20             |                     |
|        | 3              | 114.33             |                     | 114.20             |                     |
|        | 4              | 114.33             |                     | 114.21             |                     |
|        | 5              | 114.33             |                     | 114.20             |                     |
|        | 6              | 114.33             |                     | 114.21             |                     |
|        | <b>Average</b> | <b>114.33</b>      | Spec. 114dB ± 0.4dB | <b>114.21</b>      | Spec. 114dB ± 0.4dB |

**Frequency measured (Three samples at 30 sec. Interval)**

|        |                |                |                     |               |                      |
|--------|----------------|----------------|---------------------|---------------|----------------------|
| Sample | 1              | 1000.05 Hz     |                     | 251.20 Hz     |                      |
|        | 2              | 1000.05        |                     | 251.20        |                      |
|        | 3              | 1000.04        |                     | 251.20        |                      |
|        | <b>Average</b> | <b>1000.05</b> | Spec. 1000Hz ± 0.5% | <b>251.20</b> | Spec. 251.2Hz ± 0.5% |

The Frequency expanded uncertainty of calibration:45µHz/Hz at 95% confidence level with a coverage factor of k=2.

**Distortion measured** -53.9 dB -45.4 dB Spec. ≤-30.5dB

| Instruments used for calibration: |        |              | Date of Cal. | Traceability No. | Re-cal. Due Date |
|-----------------------------------|--------|--------------|--------------|------------------|------------------|
| Brüel & Kjær                      | 4231   | S/N 2308998  | 16-Jul-2018  | 683/290345-18    | 17-Jul-2019      |
| Brüel & Kjær                      | 4134   | S/N 854464   | 16-Jul-2018  | 683/290345-18    | 17-Jul-2019      |
| Brüel & Kjær                      | 2669   | S/N 2148476  | 16-Jul-2018  | 683/290345-18    | 17-Jul-2019      |
| Brüel & Kjær                      | 2636   | S/N 1323964  | 17-Jul-2018  | 683/290345-18    | 18-Jul-2019      |
| HP                                | 33120A | S/N US360458 | 19-Jul-2018  | ,1010733         | 20-Jul-2019      |

**Cal. Date: 12-Jul-2019****Tested by: James Zhu**

Calibrated on WCCL system type 9700

This document shall not be reproduced, except in full, without the written approval from West Caldwell Cal. Labs. Inc.

Rev. 7.0 Jan. 24, 2014 Doc. # 1038 AC3003M