



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

DYTRAN INSTRUMENTS INC.
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CALIBRATION

Valid To: May 31, 2012

Certificate Number: 2672.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Electrical

| Parameter/Range | Frequency | CMC ² (±) | Comments |
|---|---|---|---------------------|
| AC Voltage ³ | (20 to 50) Hz 50 Hz to 10 kHz | 1.6 % of reading 0.53 % of reading | Fluke 45 multimeter |
| Capacitance – @ 1 kHz | 0.1 µF 0.01 µF 1000 pF | 1 % of reading 1 % of reading 1 % of reading | Tenma 72-9 Z`14260 |
| DC Voltage ³ – Measure | (0 to 30) V | 0.11 % of reading + 20 µV | Fluke 45 multimeter |
| Resistance ³ – Measure Fixed Points | (0 to 300) kΩ 300 kΩ to 3 MΩ (3 to 30) MΩ (30 to 300) MΩ | 0.12 % of reading 0.13 % of reading 0.35 % of reading 2.0 % of reading | Fluke 45 multimeter |

II. Mechanical

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|---|--|--|--|
| Acceleration Sensitivity – Frequency Response | 1 Hz 0.25 g | 2.1 % of reading | APS long-stroke shaker w/ 7500A3 |
| | (2 to 20) Hz 1 g | 2.1 % of reading | Comparison, using vibration test systems shaker (VG 100Ca-6) w/3010M14 |
| | (20 to 100) Hz 1 g | 2.0 % of reading | |
| | (100 to 2500) Hz 1 g | 1.5 % of reading | |
| | (2500 to 10 000) Hz 1 g | 2.8 % of reading | |
| | | | |
| Acceleration Sensitivity Deviation due to Temperature | -55 °C to 270 °C 100 Hz, 1 g | 4.3 % of reading | Labworks shaker w/ 3120A |
| Acceleration Amplitude Linearity Vibration (0 to 80) g | 100 Hz 300 Hz 1000 Hz | 1.9 % of reading 1.8 % of reading 2.9 % of reading | Comparison, using vibration test systems shaker (VG100Ca-6) w/3010M14 |
| Acoustic Pressure – Fixed Point | 160 dB 1000 Hz | 2.5 % of reading | Comparison to model 2013B in electromagnetic driver |
| Impulse Force | (0 to 1000) lbf (1000 to 5000) lbf | 3.8 % of reading 1.0 % of reading | 5868A load cell |
| Shock | (0 to 5000) g | 3.0 % of reading | 5868A load cell |
| Static Force | (0 to 4) lbf (0 to 500) lbf (500 to 10 000) lb (10 000 to 100 000) lb | 0.7 % of reading 1.0 % of reading 1.0 % of reading 1.2 % of reading | Dead weight Ring dynamometer Ring dynamometer Load cell |



| Parameter/Equipment | Range | CMC ² (±) | Comments |
|------------------------|---|------------------------------|-------------------------|
| Static Pressure | (0 to 1000) psig (1000 to 15 000) psig | 0.9 % of rdg 0.9 % of rdg | Twin seal pressure pump |
| Transverse Sensitivity | 328 Hz, 1 g | 5.0 % of rdg | CV395 spectrum analyzer |

¹ This laboratory offers commercial calibration service.

² Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ The measurands stated are generated with the Fluke 45 series of instruments. This capability is suitable for the calibration of the devices intended to measure the stated measurand in the ranges indicated. CMC's are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.





World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

DYTRAN INSTRUMENTS INC.

Chatsworth, CA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 28th day of September 2010.





Peter Meyer

President & CEO
For the Accreditation Council
Certificate Number 2672.01
Valid to May 31, 2012

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.