CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Accurate Instrument Repair, Inc.

27122 Burbank
Foothill Ranch, CA 92610
(and the satellite location listed on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President
Expiry Date: 30 July 2027
Certificate Number: L2207

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
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 April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
AND
ANSI/NCSL Z540-1-1994 (R2002)

Accurate Instrument Repair, Inc.
27122 Burbank
Foothill Ranch, CA 92610
Patrick Turner 949-454-2874

CALIBRATION

ISO/IEC 17025 Accreditation Granted: **30 July 2025**

Certificate Number: **L2207** Certificate Expiry Date: **30 July 2027**

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gage Blocks [2]	Up to 4 in	(2.3 + 1.8*L*) µin	Comparison to Master Gage Blocks, Electromechanical Comparator
Gage Blocks [2]	(5 to 20) in	(2 + 2*L*) µin	Comparison to Master Gage Blocks, Electromechanical Comparator
Cylindrical Ring Gages [2]	Up to 14 in	(4.4 + 4.1*D*) µin	Comparison to Labmaster® Universal, Gage Blocks
Cylindrical Plug Gages [2] High Accuracy	Up to 6 in	(5.8 + 3.8*L*) µin	Comparison to Labmaster® Universal, Gage Blocks
Cylindrical Plug Gages [2] (Plain)	Up to 6 in	(28 + 3.5*L*) µin	Comparison to Supermicrometer®, Gage Blocks

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Surface Plates [1,2] Overall Flatness Local Area Flatness (repeat readings)	 (21 to 140) inDL Up to 0.001 in	 $8.5 \sqrt{DL}$ µin 33 µin	In accordance with Fed Spec GGG-P-463 using Leveling System Repeat Gage
Calipers [1,2]	Up to 40 in	$(380 + 1.8L)$ µin	Comparison to Gage Blocks
Indicators [1,2]	Up to 0.5 in Up to 1 in (1 to 12) in	30 µin 290 µin $(320 + 0.9L)$ µin	Comparison to Indicator Calibrator, Height Master, Gage Blocks
Outside Micrometers [1,2]	Up to 36 in	$(51 + 2.3L)$ µin	Comparison to Gage Blocks, Ring Gages, Plug Gages
Inside Micrometers [1,2]	Up to 24 in	$(350 + 0.3L)$ µin	Comparison to Gage Blocks, Ring Gages, Plug Gages
Height Gages [1,2]	Up to 40 in	$(62 + 2.7L)$ µin	Comparison to Gage Blocks, Surface Plate, Indicator
Super Micrometer, Bench Micrometers [1]	Up to 1 in	14 µin	Comparison to Gage Blocks
Optical Comparators [1] X,Y Axis Magnification	 Up to 12 in Up to 12 in (10X, 20X, 50X)	 120 µin 690 µin	Comparisons to Glass Master, Magnification Scale

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Services performed at satellite location

26235 Enterprise Court
Lake Forest, CA 92630
(all shipping, receiving and administrative functions are conducted at the main location)

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Generate [1]	(0 to 329) µA 330 µA to 3.29 mA (3.3 to 32.9) mA (33 to 329.9) mA 330 mA to 1.09 A (1.1 to 2.9) A (3 to 10.9) A (11 to 20.5) A	0.2 nA/µA + 27 nA 0.11 µA/mA + 67 nA 0.12 µA/mA + 0.29 µA 0.12 µA/mA + 2.7 µA 0.23 mA/A + 49 µA 0.43 mA/A + 91 µA 0.57 mA/A + 0.7 mA 1.5 mA/A + 1.1 mA	Comparison to Fluke Multifunction Calibrator
DC Current – Generate Clamp Meters [1]	Up to 1 000 A	24 µA/A + 64 µA	Comparison to Multifunction Calibrator, 50-turn Current Coil
DC Current – Measure [1]	(0 to 10) mA (10.1 to 100) mA 100.1 mA to 1 A (1.1 to 3) A (3.1 to 100) A	0.57 µA/mA + 2.4 µA 0.57 µA/mA + 7.3 µA 1.1 µA/mA + 0.14 mA 1.4 mA/A + 0.7 mA 0.047 % of reading	Comparison to HP/Agilent Multimeter, Current Shunt
AC Current – Source [1]	Up to 10 kHz Up to 329.9 µA 330 µA to 3.29 mA (3.3 to 32.9) mA (33 to 329.9) mA Up to 5 kHz 330 mA to 2.9 A (3 to 10.9) A (11 to 20.5) A	 9 nA/µA + 0.23 µA 5.8 µA/mA + 0.4 µA 2.3 µA/mA + 3.5 µA 2.3 µA/mA + 0.12 mA 6.9 mA/A + 1.2 mA 35 mA/A + 2.3 mA 35 mA/A + 5.3 mA	Comparison to Fluke Multifunction Calibrator
AC Current – Measure [1]	Up to 3 A 10 Hz to 5 kHz	2.8 mA/A	Comparison to HP/Agilent Multimeter

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source [1] (Simulation)	Up to 10.9 Ω (11 to 32.9) Ω (33 to 109.9) Ω (110 to 329.9) Ω (0.33 to 1.09) kΩ (1.1 to 3.29) kΩ (3.3 to 10.9) kΩ (11 to 109.9) kΩ (0.11 to 1.09) MΩ (1.1 to 3.29) MΩ (3.3 to 10.9) MΩ (11 to 32.9) MΩ (33 to 109.9) MΩ (110 to 329.9) MΩ (0.33 to 1.1) GΩ	50 µΩ/Ω + 1.2 mΩ 36 µΩ/Ω + 1.8 mΩ 33 µΩ/Ω + 1.6 mΩ 33 µΩ/Ω + 2.3 mΩ 34 µΩ/Ω + 2.1 mΩ 34 mΩ/kΩ + 24 mΩ 33 mΩ/kΩ + 27 mΩ 34 mΩ/kΩ + 0.23 Ω 38 mΩ/kΩ + 2.2 Ω 70 Ω/MΩ + 37 Ω 157 Ω/MΩ + 52 Ω 0.31 kΩ/MΩ + 2.6 kΩ 0.57 kΩ/MΩ + 4.4 k Ω 3.7 kΩ/MΩ + 0.11 MΩ 17 kΩ/MΩ + 1.1 MΩ	Comparison to Fluke Multifunction Calibrator
Resistance – Measure [1]	Up to 100 Ω 100.1 Ω to 1 MΩ (1.1 to 10) MΩ (10.1 to 100) MΩ	0.12 mΩ/Ω + 4.6 mΩ 0.13 mΩ/Ω + 14 mΩ 0.46 kΩ/MΩ + 0.11 kΩ 9.2 kΩ/MΩ + 12 kΩ	Comparison to HP/Agilent Multimeter
DC Voltage – Source [1]	(0 to 329) mV (0.33 to 3.29) V (3.3 to 32.9) V (33 to 329) V (330 to 1 000) V	0.2 µV/mV + 1.7 µV 13.1 µV/V + 2.3 µV 14 µV/V + 29 µV 20.8 µV/V + 0.24 mV 20.6 µV/V + 2.3 mV	Comparison to Fluke Multifunction Calibrator
AC Voltage – Source [1]	Up to 50 kHz (1 to 32.9) mV (33 to 329) mV 330 mV to 3.29 V (3.3 to 32.9) V Up to 10 kHz (33 to 329.9) V (330 to 1 020) V	 1.2 µV/mV + 7 µV 0.4 µV/mV + 11 µV 0.35 µV/mV + 59 µV 0.4 mV/V + 1.4 mV 0.36 mV/V + 7.8 mV 0.36 mV/V + 1.4 mV	Comparison to Fluke Multifunction Calibrator
DC Voltage – Measure [1]	(0 to 100) mV (0.1 to 1) V (1.1 to 10) V (10.1 to 100) V (100.1 to 1 000) V	55 nV/mV + 4.5 µV 45 nV/mV + 9.6 µV 40 µV/V + 69 µV 54 µV/V + 0.78 mV 53 µV/V + 12 mV	Comparison to HP/Agilent Multimeter

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure [1]	Up to 750 V (3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	 12 µV/V + 3.5 µV 4.5 mV/V + 22 µV 1.2 mV/V + 67 µV 2 V/V + 45 µV 7.9 mV/V + 13 µV 52 mV/V + 1.9 µV	Comparison to HP/Agilent Multimeter
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure [1]	Type J (-210 to 1 200) °C Type K (-100 to 1 000) °C Type T (-150 to 400) °C Type E (-100 to 1 000) °C	 0.31 °C 0.3 °C 0.28 °C 0.25 °C	Comparison to Fluke Multifunction Calibrator
Capacitance – Source [1] (Simulation) 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz (10 to 50) Hz (10 to 20) Hz (10 to 6) Hz (10 to 2) Hz (10 to 0.6) Hz (10 to 0.2) Hz	 (0.19 to 3.29) nF (3.3 to 10.9) nF (11 to 109.9) nF (110 to 329.9) nF (0.33 to 1.09) µF (1.1 to 3.29) µF (3.3 to 10.9) µF (11 to 32.9) µF (33 to 109.9) µF (110 to 329.9) µF (0.33 to 1.09) mF (1.1 to 3.29) mF (3.3 to 10.9) mF (11 to 32.9) mF (33 to 110) mF	 5.8 pF/nF + 12 pF 2.9 pF/nF + 12 pF 2.9 nF/nF + 0.12 nF 2.9 pF/nF + 0.34 nF 2.9 nF/µF + 1.2 nF 3.3 nF/µF + 2.5 nF 3 nF/µF + 11 nF 4.7 nF/µF + 34 nF 5.3 nF/µF + 0.11 µF 5.3 nF/µF + 0.34 µF 5.1 µF/mF + 1.3 µF 5.3 µF/mF + 3.6 µF 5.3 µF/mF + 12 µF 8.9 µF/mF + 36 µF 13 µF/mF + 0.12 mF	Comparison to Fluke Multifunction Calibrator

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Force Measuring Instruments [1]	(0 to 500) lbf	0.01 % of reading + 0.011 lb	Comparison to NIST Class F Weights

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Calibration Systems	(0.002 to 1 000) lbf·ft	0.04 % of reading	Comparison to Torque Arms, Weights
Torque Indicating Devices [1]	(0.002 to 1 000) lbf·ft	0.12 % of reading	Comparison to Torque Calibration System
Pressure – Source [1]	(-2 to 2) psig Up to 29 psig Up to 50 psia (35 to 1 000) psig (300 to 30 000) psig	0.006 % of reading + 0.000 09 psi 0.006 % of reading + 0.000 13 psi 0.011 % of reading + 0.000 39 psi 0.011 % of reading + 0.007 7 psi 0.023 % of reading + 0.000 1 psi	Comparison to Digital Pressure Calibrators (N_2, Hydraulic)
Mass Determination (SI)	Up to 200 g 50 g to 5 kg Up to 20 kg	0.000 29 % of reading + 29 µg 0.000 26 % of reading + 1.4 mg 0.000 23 % of reading + 18 mg	Comparison to ASTM E617 Class 1 Weights, Mass Comparators
Mass Determination (Avoirdupois)	Up to 50 lb	0.000 2 % of reading + 0.042 lb	Comparison to ASTM E617 Class 1 Weights, Mass Comparators
Balances, Scales [1,3] (SI)	Up to 200 g (200 to 500) g 500 g to 30 kg	0.000 3 % of reading + 39 µg 0.000 2 % of reading + 0.83 mg 0.000 3 % of reading + 7.3 mg	ASTM E617 Class 1 weights and internal procedure CP-0046.1 utilized in the calibration of the weighing system.
Balances, Scales [1,3] (Avoirdupois)	Up to 90 lb	0.000 05 % of reading + 0.000 5 lb	ASTM E617 Class 1 weights and internal procedure CP-0046.1 utilized in the calibration of the weighing system.
Balances, Scales [1,3] (Avoirdupois)	Up to 80 kg	0.011 % of reading + 0.11 g	ASTM E617 Class 4 weights and internal procedure CP-0046.1 utilized in the calibration of the weighing system.
Scales [1,3] (Avoirdupois)	Up to 600 lb	0.011 % of reading + 0.001 5 lb	NIST Class F weights and internal procedure CP-0046.1 utilized in the calibration of the weighing system.

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Humidity – Generate	(10 to 90) %RH	0.59 %RH	Derived from Temperature and Pressure method using Two-Pressure Humidity Generator.
Humidity – Measure [1]	(10 to 90) %RH	1.4 %RH	Comparison to Humidity Indicator
Electronic based Sensors and Mechanically-driven Thermometers [1]	(-70 to 315) °C	0.001 % of reading + 0.095 °C	Comparison to PRT, Sun Chamber
Electronic based Sensors and Mechanically-driven Thermometers [1]	0 °C	0.027 °C	Comparison to PRT, VWR Liquid Bath
Electronic based Sensors and Mechanically-driven Thermometers [1]	(-100 to 80) °C	0.003 % of reading + 0.035 °C	Comparison to PRT, Hart/Lauda Liquid Bath
Electronic based Sensors and Mechanically-driven Thermometers [1]	(35 to 280) °C	0.004 9 % of reading + 0.023 ° C	Comparison to PRT, Hart Liquid Bath
Electronic based Sensors and Mechanically-driven Thermometers [1]	(35 to 700) °C	0.004 9 % of reading + 0.021 ° C	Comparison to PRT, Hart Dry Well
Temperature – Measure [1]	(-200 to 660) °C	0.005 % of reading + 0.022 °C	Comparison to PRT

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Generate [1]	45 Hz to 2 MHz	5.8 mHz/Hz + 3.7 mHz	Comparison to Fluke Multifunction Calibrator
Frequency – Measure [1]	45 Hz to 300 kHz	0.12 mHz/Hz + 0.16 Hz	Comparison to HP/Agilent Multimeter

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (*k*=2), corresponding to a confidence level of approximately 95%.

Notes:

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1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. *L* = length in inches, *D* = diameter in inches, *DL* = diagonal length in inches.
3. The measurement uncertainty for Scales and Balances is highly dependent upon the resolution of the unit under test. The CMC presented here does not include the resolution of the unit under test. The resolution will be included in the reported measurement uncertainty at the time of calibration.
4. Unless otherwise specified in the far-right column under the field of Calibration, the calibration procedure utilized by the laboratory was developed internally.

Jason Stine, Vice President

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