



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

RADIAN RESEARCH INC.
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CALIBRATION

Valid To: July 31, 2019

Certificate Number: 3784.01

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

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
AC Energy – Generate Watt-Hours	16.7 mWh to 33.3 kWh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-60° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	11 µWh/VAh Alternately: 0.0011 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RS-703-A and RS-933 calibration systems
AC Energy – Generate VAR-Hours	16.7 mVARh to 33.3 kVARh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-90° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	15 µVARh/VAh	RS-703-A and RS-933 calibration systems

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
AC Energy – Generate VA-Hours	16.7 mVAh to 33.3 kVAh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (5 to 1000) s Test Time (50 to 60) Hz	11 μVAh/VAh Alternately: 0.0011 % @ 0° Phase Angle 0.0022 % @ ± 60° Phase Angle	RS-703-A and RS-933 calibration systems
AC Energy – Measure Watt-Hours	16.7 mWh to 33.3 kWh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-60° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	10 μWh/VAh Alternately: 0.001 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RD-22 bank
AC Energy – Measure VAR-Hours	16.7 mVARh to 33.3 kVARh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-90° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	14 μVARh/VAh	RD-22 bank
AC Energy – Measure VA-Hours	16.7 mVAh to 33.3 kVAh Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (5 to 1000) s Test Time (50 to 60) Hz	10 μVAh/VAh Alternately: 0.001 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RD-22 bank

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
AC Power – Generate Watts	12 W to 120 kW Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-60° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	11 μW/VA Alternately: 0.0011 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RS-703A and RS-933 calibration systems
AC Power – Generate VAR	12 W to 120 kW Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-90° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	15 μVAR/VA	RS-703A and RS-933 calibration systems
AC Power – Generate VA	12 W to 120 kW Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (5 to 1000) s Test Time (50 to 60) Hz	11 μVA/VA Alternately: 0.0011 % @ 0° Phase Angle 0.0022 % @ ± 60° Phase Angle	RS-703A and RS-933 calibration systems
AC Power – Measure Watts	12 W to 120 kW Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-60° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	10 μW/VA Alternately: 0.001 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RD-22 bank

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
AC Power – Measure VAR	(12 to 120) VAR Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (-90° to 60°) Phase Angle (5 to 1000) s Test Time (50 to 60) Hz	14 μVAR/VA	RD-22 bank
AC Power – Measure VA	12 VA to 120 kVA Over: (120 to 600) V @ 60 Hz (120 to 480) V @ 50 Hz (0.2 to 200) A (5 to 1000) s Test Time (50 to 60) Hz	10 μVA/VA Alternately: 0.001 % @ 0° Phase Angle 0.0021 % @ ± 60° Phase Angle	RD-22 bank

¹ This laboratory offers commercial calibration service.

² Calibration and Measurement Capability Uncertainty (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. CMCs 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 stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a fraction/percentage of the reading plus a fixed floor specification.



Accredited Laboratory

A2LA has accredited

RADIAN RESEARCH, INC.

Lafayette, IN

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 R205 – *Specific Requirements: Calibration Laboratory Accreditation Program*. 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 19th day of July 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 3784.01
Valid to July 31, 2019

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