



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

UNIVERSITY OF WISCONSIN RADIATION CALIBRATION LABORATORY
 Room B1002, WIMR
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CALIBRATION

Valid To: January 31, 2025

Certificate Number: 1664.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1, 5}:

I. Ionizing Radiation and Dosimetry

Parameter/Equipment	Range	CMC ^{2, 3} (±)	Comments
Ionization Chambers/ Therapy Class – ⁶⁰ Co Air Kerma ⁶⁰ Co Dose to Water ¹³⁷ Cs Air Kerma X-Rays	Up to 150 cGy/min Up to 150 cGy/min Up to 20 cGy/min (20 to 250) kVp	1.5 % 1.4 % 1.6 % 1.0 %	NIST calibrated reference class ionization chambers
Ionization Chambers/ Diagnostic Class – X-Rays: Tungsten Anode Molybdenum Anode	(20 to 250) kVp (23 to 35) kVp	1.9 % 1.9 %	NIST calibrated reference class ionization chambers
Ionization Chambers/ Health Physics Radiation Protection – ⁶⁰ Co Air Kerma ¹³⁷ Cs Air Kerma X-Rays	Up to 150 cGy/min Up to 20 cGy/min (20 to 250) kVp	1.5 % 1.6 % 1.9 %	NIST calibrated reference class ionization chambers

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
Well-Type Brachytherapy Ionization Chambers – HDR: ¹⁹² Ir LDR ⁶ : ¹⁹² Ir, ¹²⁵ I, ¹⁰³ Pd, ¹³⁷ Cs, ¹³¹ Cs	(1 U = 1 μGy ² /hr) Up to 50 kU Up to 500 U	 2.8 % 2.7 %	 NIST calibrated ¹³⁷ Cs brachytherapy sources; reference class well-type ionization chambers calibrated against NIST calibrated sources for short-lived isotopes such as ¹⁹² Ir, ¹²⁵ I, ¹³¹ Cs, and ¹⁰³ Pd
Radioactive Brachytherapy Sources – LDR ⁶ : ¹³⁷ Cs, ¹³¹ Cs, ¹⁹² Ir, ¹²⁵ I, ¹⁰³ Pd	 Up to 500 U	 1.9 %	 NIST calibrated Cs ¹³⁷ brachytherapy sources, reference class well-type ionization chambers calibrated against NIST calibrated sources for short-lived isotopes such as ¹⁹² Ir, ¹²⁵ I, ¹³¹ Cs, and ¹⁰³ Pd
Well-Type Intra-Vascular Ionization Chambers – ⁹⁰ Sr Absorbed Dose	 Up to 200 mGy/s	 15 %	 NIST traceable absorbed dose to water source calibrations
Electrometers – Charge (Coulomb) Current (Ampere)	 25 pC to 10 000 nC 1 pA to 1000 nA	 0.21 % 0.21 %	 NIST traceable time, voltage, and resistance standards

Parameter/Equipment	Range	CMC ^{2, 3} (±)	Comments
Non-Invasive kVp Meters – Radiographic Mammographic	(50 to 150) kVp (25 to 35) kVp	1.0 % 1.0 %	NIST traceable multi-nuclide source and calibrated x-ray units
Radiation Protection Survey Instruments – ¹³⁷ Cs Exposure	0.02 mR/hr to 20 R/hr	6.5 %	NIST calibrated reference class ionization chamber used to calibrate radiation beam air kerma or exposure rate
TLD ⁴ , Radiochromic Film and Artifact Irradiation – ⁶⁰ Co ¹³⁷ Cs X-Ray High Energy Photons (6 to 18) MV and Electrons (4 to 16) MeV	Up to 150 cGy/min Up to 20 cGy/min (20 to 250) kVp Up to 2400 cGy/min	3.6 % 3.6 % 3.6 % 3.6 %	NIST calibrated reference class ionization chambers calibrated in reproduced beams using replacement technique
TLD ⁴ Services – Dose Verification Dose Determination	On-Patient, or Custom Geometry	3.6 % 5.0 %	NIST calibrated reference class ionization chamber for calibration of radiation beam air kerma, dose, or exposure
Well-Type Ionization Chambers/Electronic Brachytherapy Sources	Up to 5 mGy/s	4.0 %	NIST traceable air kerma rate for electronic brachytherapy sources

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 In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.

⁴ TLD is Thermoluminescent Dosimeter.

⁵ This scope meets A2LA's *P112 Flexible Scope Policy*.

⁶ Derived from uncertainty budget for ¹⁰³Pd, ¹²⁵I, and ¹³¹Cs, which are the most common LDR isotopes. Source directionality may increase the uncertainty.



Accredited Laboratory

A2LA has accredited

UNIVERSITY OF WISCONSIN RADIATION CALIBRATION LABORATORY

Madison, WI

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets 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 April 2017).



Presented this 5th day of December 2022.

A blue ink signature of a person, likely the Vice President of Accreditation Services, written over a horizontal line.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1664.01
Valid to January 31, 2025

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