

# Global Calibration Laboratory



Global Calibration  
Laboratory



- Your One Stop for ALL Radiation Calibration and Repair Needs
- Largest most modern commercial ionizing radiation calibration lab in the world - 350 square meter with custom-built ranges
- Authorized Calibration and Service facility for Victoreen, Nuclear Associates, Keithley RMD, Inovision, Syncor Radiation Management, and Cardinal Health
- Complies with ISO 9001, ISO 13485, EN 46001, FDA/QSR, and NRC
- Adheres to ISO 17025, ANSI Z540, Mammography MQSA, and CNSC Approved
- Offers an industry-first 24 x 7 Same Day Service

## Unique capabilities

Welcome to the Global Calibration Laboratory. We process over 1,500 instruments per month — some as rapidly as within hours of receiving units from all over the world. We not only calibrate, but we also repair instruments of all industry makes and models. Our 350 sq. meter facility is the largest, most modern commercial ionizing radiation calibration lab and repair facility in the world. Built in 1999, our operation has more beams than any other supplier to provide one-stop service to our customers. Our many ranges have been custom-built to apply to a broad base of medical, nuclear and industrial applications.

## Quality and regulatory benchmarks

GCL takes pride in being one of the best credentialed facilities so that customers can be assured that their test, measurement, and QA needs are met through rigorous compliance with ISO 9001, ISO 13485, EN 46001, FDA/QSR, and NRC. We also adhere to ISO 17025, ANSI Z540, Mammography MQSA, and CNSC Approved.

## Your safe decision

Using Global Calibration Laboratory capabilities can provide that extra measure of safety and assurance not available through many smaller regional calibrators. That's why so many customers send their instruments to someone who specializes in high quality intrinsic calibrations. When your name is on the line, count on us.



Largest most modern world-class calibration and repair facility

## Features

- Certificate of Calibration issued with each instrument
- Extended warranty programs
- Annual calibration reminder service
- Loaner equipment available
- Ten x-ray ranges, 6 gamma sources, and 1 neutron range
- 54 calibration techniques traceable to NIST & PTB
- High rate calibration ranges for radiation therapy and health physics instruments
- Ranges reach 3530 R/hr for high dose rate applications
- Special range designed for low rate calibrations (0.04 mR/hr to 1 R/hr)
- A 15.2 meter range permits low scatter for exact calibration results
- Laser positioning system and automated track for precise measurements



## Service



Repair service

Global Calibration Laboratory serves over 50,000 customers and 191 nuclear power facilities in 75 countries. A team of 25 physicists, engineers, and technicians process 1,500 instrument calibrations and repairs per month, and employ computer tracking to ensure rapid high quality turnaround. Global Calibration Laboratory serves many industry makes and models such as Ludlum, Bicorn, Gammex RMI, X-Rite, Eberline, and Radcal, to name a few.

Global Calibration Laboratory offers an industry-first 24 x 7 Same Day Service, a Priority 3 Day Service, and a Standard 6 Day Service. For those customers who can't afford to be without their instrument for any period of time, Global Calibration Laboratory currently offers a variety of loaner programs. Please contact our Customer Service Department for details.

Global Calibration Laboratory offers one-stop bulk contracts for managing larger instrument "pools" including various asset management alternatives for pools larger than 150 units. (Contact Key Accounts Department for more information.)

Customers receive a Certificate of Calibration with each instrument calibrated -- electronic record backup is available at no charge. Global Calibration Laboratory's computer systems track instruments throughout the calibration/repair process, and detailed unit histories are archived. Computer generated reminder notices, upgrade packages, extended warranty programs, and invoicing alternatives provide flexibility for unique customer situations.

**Calibration Report**  
UNR02  
P-101000-1-8-2002  
As Calibrated

Model Number: 310004  
Serial Number: 101140  
Received: 12/13/01  
In/Out of Tolerance: In Tolerance  
Repair/ID Number: 80047  
Model Name: Dosimeter  
Model Manufacturer: Invision Radiation Measurements, LLC  
Tolerance Conditions: The % error must be less than 0%.

Customer Name: \_\_\_\_\_  
Customer Address: \_\_\_\_\_  
City, State: \_\_\_\_\_

Customer ID #: \_\_\_\_\_  
Customer P-File: \_\_\_\_\_  
ID Number: \_\_\_\_\_  
P-File Number: \_\_\_\_\_

**Notes:**

- During calibration the ion chamber is connected to the dosimeter and placed with the axis of the ion chamber perpendicular to the beam. The instrument is placed in a standard geometry with the face of the ion chamber. The internal procedure used to calibrate the instrument is CMC-10000.
- The calibration of this instrument is traceable to the National Institute of Standards and Technology.
- The uncertainty of the calibration is 2.0%, of which 1.0% is assigned to the uncertainty of the beam. The overall uncertainty was obtained using IEC guidelines.
- This certificate shall not be reproduced except in full, without the written approval of the manufacturer.
- The percent error is calculated by using the following formula:  $\% \text{ Error} = \frac{\text{Reading} - \text{Reference}}{\text{Reference}} \times 100$
- If there are any problems with the calibration of the instrument, please contact the calibration laboratory manager.

**MEASUREMENTS**

Reference (microR)	Reading (microR)	Min. Reading (microR)	Max. Reading (microR)	% Error	Pass/Fail
1107	1115	1110	1120	0.72%	Pass

**DOSE CALIBRATION**

Reference (mR)	Reading (mR)	Min. Reading (mR)	Max. Reading (mR)	% Error	Pass/Fail
224	226	224	228	0.45%	Pass

**MEASUREMENTS**

Reference (microR)	Reading (microR)	Min. Reading (microR)	Max. Reading (microR)	% Error	Pass/Fail
1107	1107	1104	1110	0.00%	Pass

**DOSE CALIBRATION**

Reference (mR)	Reading (mR)	Min. Reading (mR)	Max. Reading (mR)	% Error	Pass/Fail
217	217	215	219	-0.12%	Pass

Calibration Performed by: *[Signature]*  
Technical review by: *[Signature]* Date: *[Date]*

The suggested re-calibration date is: UNR02  
Page 1 of 1

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Ionizing Radiation Specialists

Certificate of Calibration



Customer service

## How to place an order

Please call a customer service representative at 800.850.4606 to receive a Return Authorization (RA) number for your instrument. You will then be given prompt instructions for a quick turnaround.



## Calibration ranges

Six custom-built gamma ranges optimize safe handling, precision results and fast processing. The world-class facility has 5,824 curies of radionuclides on site to ensure Health Physics and Radiation Therapy customers of comprehensive services and fast turnaround.

A 15.2 meter tri-source range provides automated collimation, filtration and positioning with low scatter precision. A dual-source range with 150 mm high-density concrete ceiling assures accurate low-rate 40  $\mu$ R/hr to 1.0 R/hr calibrations. Side walls up to one

meter thick provide ultimate safety, while eliminating scatter and reducing background effects, especially important for high accuracy calibrations.

Global Calibration Laboratory ranges operate in a controlled environment with carefully monitored temperature and humidity, laser positioning systems, automated fixtures, computer controls, and specialized software routines, which help guarantee the highest quality intrinsic calibrations.



Dual-source range (500 mCi  $^{137}\text{Cs}$ , 4 Ci  $^{137}\text{Cs}$ )



Tri-source range (20 Ci  $^{137}\text{Cs}$ , 2000 Ci  $^{137}\text{Cs}$ , 1300 Ci  $^{60}\text{Co}$ )

## Calibrations

Ten x-ray ranges cover every customer application, including constant potential, high frequency, three-phase and single-phase power sources. Two dedicated mammography ranges permit 19 Molybdenum and Rhodium Target techniques and 35 Tungsten anode techniques traceable to NIST and PTB. A unique 7.3 meter low energy tunnel calibrates instruments which measure TV tube radiation output.

Personnel with over 100 years combined experience:

- Adjust internal electronics for direct read so no correction is required
- Repair defective systems
- Verify performance with electronic calibration
- Make mechanical adjustment as required
- Perform preventive maintenance to maximize up time
- Track product history to assure long-term product stability



High frequency mammography



Calibration service



## Calibration Specifications

Medical physics calibrations tungsten anode						
Equivalent beam code	Potential (kV)	Filtration				HVL mm Al
		mm Al	mm Cu	mm Sn	mm Pb	
L20	20					0.07
L100	100	1.98				2.75
M30	30	0.50				0.33
M50	50	1.00				0.98
M60	60	1.50				1.68
M80	80	2.6				2.98
M100	100	5.0				5.1
M150	150	5.0	0.25			10.2
M200	200	4.1	1.12			14.9
M250	250	5.0	3.2			18.5
H50	50	4.0			0.12	4.4
H60	60	4.0	0.6			6
H100	100	4.0	5			13.5
H150	150	4.0	4	1.5		16.8
H200	200	4	0.6	4	0.77	19.5
H250	250	4	0.6	1	2.7	21.5
DV30	30	2.5				0.98
DV40	40	2.5				1.44
DV50	50	2.5				1.81
DV60	60	2.5				2.13
DV70	70	2.5				2.45
DV80	80	2.5				2.78
DV90	90	2.5				3.1
DV100	100	2.5				3.48
DV120	120	2.5				4.15
DV150	150	2.5				5.36
DH40	40	6.5				2.2
DH50	50	12.5				3.75
DH60	60	18.5				5.35
DH70	70	23.5				6.77
DH80	80	28.5				8.12
DH90	90	32.5				9.26
DH100	100	36.5				10.15
DH120	120	42.5				11.67
DH150	150	47.5				13.36

Radiation therapy calibrations			
Radionuclide sources	Minimum rate	Maximum rate	
2000 Ci <sup>137</sup> Cs	0.02 R/hr	850 R/hr	
20 Ci <sup>137</sup> Cs	0.1 mR/hr	4 R/hr	
4 Ci <sup>137</sup> Cs	0.5 mR/hr	1 R/hr	
500 mCi <sup>137</sup> Cs	0.04 mR/hr	150 mR/hr	
1300 Ci <sup>60</sup> Co	0.01 R/hr	450 R/hr	
Collimated 2200 Ci <sup>60</sup> Co	2575 R/hr	3530 R/hr	

Medical physics calibrations molybdenum/rhodium anode					
Equivalent beam code	Potential (kV)	Filtration			HVL mm Al
		mm Mo	mm Rh	mm Al	
Mo/Mo 28	28	0.032			0.33
Mo/Mo 35	35	0.032			0.39
Mo/Rh 28	28	0.032			0.41
Rh/Rh 25	25		0.029		0.35
Rh/Rh 40	40		0.029		0.56
Mo/Mo28x	28	0.030		2	0.63
Rh/Rh/35x	35		0.029	2	0.898
MV20	20	0.030			0.223
MV25	25	0.030			0.282
MV30	30	0.030			0.337
MV35	35	0.030			0.374
MV40	40	0.030			0.402
MV50	50	0.030			0.440
MH20	20	0.030		2	0.450
MH25	25	0.030		2	0.580
MH30	30	0.030		2	0.670
MH35	35	0.030		2	0.749
MH40	40	0.030		2	0.825
MH50	50	0.030		2	0.968

Low energy calibration	
Potential	HVL
27.5 kV	1.1 mm Al

Health physics calibrations			
Sources	Minimum rate	Maximum rate	
2000 Ci <sup>137</sup> Cs	0.02 R/hr	850 R/hr	
20 Ci <sup>137</sup> Cs	0.1 mR/hr	4 R/hr	
4 Ci <sup>137</sup> Cs	0.5 mR/hr	1 R/hr	
500 mCi <sup>137</sup> Cs	0.04 mR/hr	150 mR/hr	
1300 Ci <sup>60</sup> Co	0.01 R/hr	450 R/hr	
Lightly filtered x-ray techniques	5 R/hr	250 R/hr	
Medium filtered x-ray techniques	2 R/hr	180 R/hr	
Heavily filtered x-ray techniques	0.1 R/hr	3 R/hr	

**We provide custom calibrations and testing for a variety of special applications.**

Specifications are subject to change without notice.  
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