



Designer and Manufacturer  
of  
Scientific and Industrial  
Instruments

# CERTIFICATE OF CALIBRATION

**LUDLUM MEASUREMENTS, INC.**

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325-235-5494

☐ 10744 Dutchtown Road  
865-392-4601

Sweetwater, TX 79556, U.S.A.

Knoxville, TN 37932, U.S.A.

CUSTOMER CABRERA SERVICES

ORDER NO. 20286937/433767

Mfg. Ludlum Measurements, Inc. Model 3

Serial No. 218266

Mfg. Ludlum Measurements, Inc. Model 44-9

Serial No. PL229628

Cal. Date 31-Mar-16 Cal Due Date 31-Mar-17 Cal. Interval 1 Year Meterface 202-608

Check mark ☒ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 32 % Alt 688.0 mm Hg

☐ New Instrument ☐ Instrument Received ☒ Within Toler.  $\pm 10\%$  ☐ 10-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☒ Mechanical ck. ☒ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity

☒ F/S Resp. ck. ☒ Reset ck. ☐ Window Operation ☐ Geotropism

☒ Audio ck. ☐ Alarm Setting ck. ☒ Batt. ck. (Min. Volt) 2.2 VDC

☐ Calibrated in accordance with LMI SOP 14.8 ☐ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set 900 V Input Sens. 29 mV Det. Oper. 900 V at 29 mV Threshold Dial Ratio = mV

☐ HV Readout (2 points) Ref./Inst. / V Ref./Inst. / V

## COMMENTS:

Th230 SN:E121495 Size:19800dpm, Counts:3kcpm, Background:50cpm, 4pi Eff:14.89%

Tc99 SN:5280 Size:93200dpm, Counts:23kcpm, Background:50cpm, 4pi Eff:24.62%

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 100	150 mR/hr	<u>1.55</u>	<u>1.5</u>
X 100	50 mR/hr	<u>0.52</u>	<u>0.5</u>
X 10	15 mR/hr	<u>1.6</u>	<u>1.5</u>
X 10	5 mR/hr	<u>0.55</u>	<u>0.5</u>
X 1	1.5 mR/hr = <u>4620cpm</u>	<u>1.5</u>	<u>1.5</u>
X 1	1.0 mR/hr	<u>1.0</u>	<u>1.0</u>
X 0.1	<u>462</u> cpm	<u>1.4</u>	<u>1.5</u>
X 0.1	<u>154</u> cpm	<u>0.45</u>	<u>0.5</u>

\*Uncertainty within  $\pm 10\%$  C.F. within  $\pm 20\%$

X 0.1 Range(s) Calibrated Electronically

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
Digital Readout			Log Scale		

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.

The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978

State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N: ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 5105 ☐ 5717CO  
☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☒ G112 ☒ M565 ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be S/N: ☐ T-304 Ra-226 S/N: ☐ Y992

☐ Alpha S/N ☐ Beta S/N ☐ Other

☒ m 500 S/N 190566 ☐ Oscilloscope S/N ☒ Multimeter S/N 86250390

Calibrated By: [Signature]

Date 31-Mar-16

Reviewed By: [Signature]

Date 31-Mar-16

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

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AC Inst. ☐ Passed Dielectric (Hi-Pot) and Continuity Test  
Only ☐ Failed: