

AKM Calibrations

NC License # 032-1057-1 Registration # S000454

AKM Calibrations/AKM Services LLC

1006 Communications Dr., Suite A, Durham NC 27704

Shipping Address: 2608 Erwin Rd Suite 148-243, Durham NC 27705

calibrations@akmcalibrations.com 919.594.0208

Calibration Report/Certification

REPORT# **114405**

PREPARED FOR: **Mazur Instruments**

We certify that the following meter was calibrated on the indicated date using an NIST traceable radiation field source

Model Mazur PRM-7000
Detector 1 Internal GM (LND 713)
Detector 2 None
ID None

SN 70388

Date 8/23/2014

PO# Vince Mazur

Contact Vince Mazur

Calibrated By Robert D. Pearlstein

PRE-CALIBRATION CHECK

- Contamination No Yes; returned without calibration
- Batteries OK Replaced Used AC Power
- Audio OK Malfunction No Audio Function
- Detector OK Malfunction Repaired
- Cables OK Malfunction Repaired
- Switches OK Malfunction Repaired
- HV Circuit OK As Received Reset to 900V Repaired
- Pulse Detector OK Malfunction Repaired
- Electrometer OK Malfunction Repaired

CALIBRATION CONDITIONS

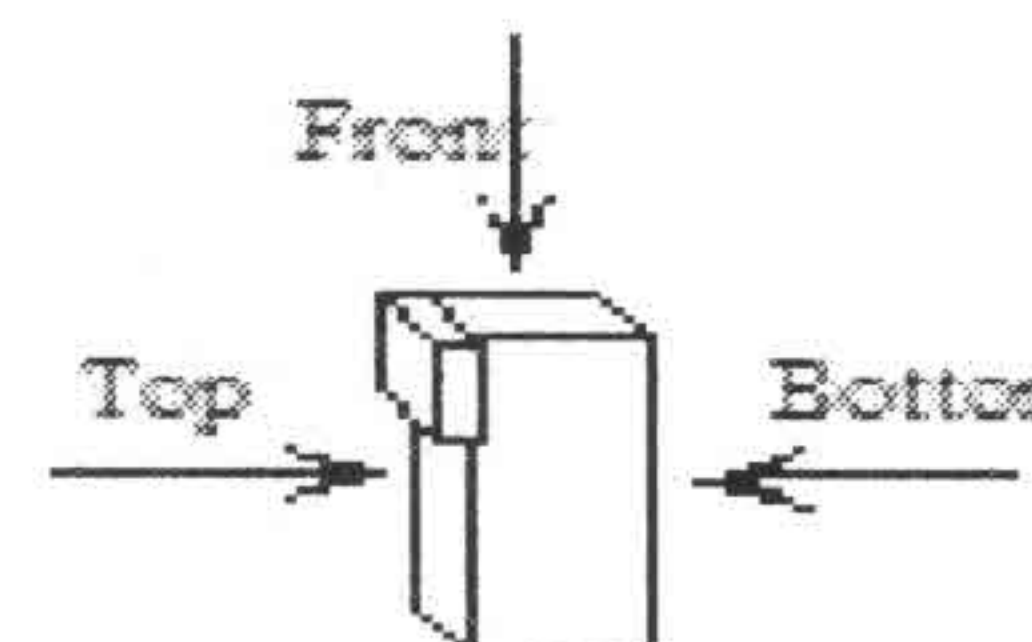
Temperature (°F) 74 Relative Humidity 66% Pressure (mmHg) 1008 mbar

Radiation Beam / Detector Alignment:

- normal to detector long axis normal to bottom surface
- parallel to detector long axis normal to front surface
- normal to detector window normal to side surface
- normal to top surface

Shield/Build-up Cap

- No shield Shield closed
- Shield open Build-up cap used



ACCURACY

Determined using a NIST Traceable Cs-137 source (collimated beam, gamma emission)

Scale: mR/hr

Range

0.5 to 500 Error ≤ 10%

Note: Detector response may vary with energy of the photon radiation. Consult manufacturer's technical sheet for details.

CALIBRATION SOURCES

Cesium 137 gamma Source #773-555
 Approximate Point Source Not Available
 Horizontal collimated beam.
 Exposure through bottom surface/side wall of internal detector.

CHECK SOURCE

No Check Source

PRECISION/CONSTANCY

Readout Stability (Relative Standard Deviation)	Repeated Measurements of Same Field			Test Result
	Obs 1	Obs 2	Obs 3	
6.4% @ 0.5 mR/hr	49 mR/h	49 mR/h	48 mR/h	OK

Meter powered down and re-positioned in radiation field between each observation

OBSERVATIONS / CALIBRATION FACTORS

Range	Scale	"True"*	As Found	As Returned	SEM**	CalFact***
0.1 to 1	mR/hr	0.5	0.52	0.52	0.01	0.96
1 to 10	mR/hr	2.0	1.98	1.98	0.05	1.01
1 to 10	mR/hr	5	5.08	5.08	0.05	0.98
10 to 100	mR/hr	20	20.7	20.7	0.4	0.97
10 to 100	mR/hr	50	48.7	48.7	0.3	1.03
100 to 1000	mR/hr	200	193	193	2	1.04
100 to 1000	mR/hr	500	497	497	0.5	1.01
100 to 1000	mR/hr	1000	>500	>500	ND	ND

*"True" Exposure Rate/Exposure values calculated from NIST traceable source calibration measurements after correcting for source decay, filtration, and source-detector distance (to center of detector).

** SEM = Standard Error of Mean, N = 5 to 10 Observations

*** CalFact = "True" / As Returned (Corrected = Indicated X CalFact)

NA = Not Applicable; ND = Not Determined; NL = Non-Linear; Over = OverRange; PPM = electronically generated pulses per minute (PPS = per second).

ENERGY RESPONSE

Photons

Typical (from Manufacturer's Technical Specifications, not measured)

Not Available

DETECTOR LINEARITY

Exposure Rate

- Linear over entire operating range Linear to at least 500 mR/hr

Count Rate (Radiation Response)

Linear to at least

Exposure Rate	Count Rate

COMMENTS

Meter calibrated for survey of photon radiation fields. Readings should be corrected for energy response if using for radionuclides other than Cs-137.

Reviewed by: _____

Robert D. Pearlstein Ph.D..

SUGGESTED RECALIBRATION DATE: August 23, 2015