

Steven Courtemanche

From: Michael Baselice [MichaelB@spectragases.com]
Sent: Thursday, February 05, 2009 1:14 PM
To: Steven Courtemanche
Subject: FW: Emailing: scan0009, scan0008
Attachments: scan0009.jpg; scan0008.jpg

<<scan0009.jpg>> Hi <<scan0008.jpg>> Steve:

Following up on actions I noted from our inspection, I have attached the calibration of our Ion Chamber. It was calibrated 1/27/09.

Michael Baselice
RSO
Spectra Gases
+908-477-4397

-----Original Message-----

From: Jorge Silva
Sent: Friday, January 30, 2009 12:50 PM
To: Michael Baselice
Subject: Emailing: scan0009, scan0008

The message is ready to be sent with the following file or link attachments:

scan0009
scan0008

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

GCL Calibration Certificate

Report No: AC-2307-3757

Calibration: As Calibrated

Results: In Tolerance

Manufacturer: Fluke Biomedical

Model: 451P-RYR

Serial No: 2307

Model Description: Pressurized Ion Chamber Survey Meter

Date Calibrated: 27-Jan-09

Customer: SPECTRA GASES
320 Mt. Pleasant Ave.

Newark, NJ 07104

Date Received: 26-Jan-09

743.26 mmHg

21.38 degrees Celsius

40.6 % Relative Humidity

Customer's Requested Due Date: 27-Jan-10

NOTES

This calibration is traceable to the National Institute of Standards and Technology.

The calibration is warranted to be within specified accuracy limits, at the time of calibration. In the event of a calibration error, our liability is limited to standard recalibration cost.

Proper function and reliability of the instrument described in this document are highly dependent upon handling and use. It is recommended the user establish a technique to monitor the constancy of the instrument response before and after its return to the manufacturer.

This certificate shall not be reproduced except in full, without the written approval of the calibration laboratory.

If there are any problems with the calibration of the instrument, please contact the Calibration Laboratory Director.

Calibrated by: Kay, Rodger
Technician

Date: 27-Jan-09

Reviewed by: 
Claire Grehofsky, Director GCL

Date: 27-Jan-09

Report No: AC - 2307-3757

Check Source Reading	N/A
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Rate Calibration							
Source	Distance (cm)	No. of Atten	UUT Range	Units	Reference Rate	UUT Rate	% Error
20 Ci Cs-137	981.66	5	0 to 500	uR/hr	180	172.9	-3.94 - Pass
20 Ci Cs-137	955.83	4	0 to 500	uR/hr	360	372.1	3.36 - Pass
20 Ci Cs-137	952.18	3	0 to 5	mR/hr	1.8	1.778	-1.22 - Pass
20 Ci Cs-137	930.45	2	0 to 5	mR/hr	3.6	3.488	-3.11 - Pass
20 Ci Cs-137	941.21	1	0 to 50	mR/hr	18	18	0.00 - Pass
20 Ci Cs-137	951.05	0	0 to 50	mR/hr	36	36.03	0.08 - Pass
2000 Ci Cs-137	817.26	3	0 to 500	mR/hr	180	181.9	1.06 - Pass
2000 Ci Cs-137	801.18	2	0 to 500	mR/hr	360	358.2	-0.50 - Pass
2000 Ci Cs-137	818.74	0	0 to 5	R/hr	3.6	3.559	-1.14 - Pass

Dose Calibration					
Integration Calibration Point	UUT Range	Units	Reference Exposure	UUT Exposure	% Error
2000 Ci Cs-137, 100 sec	0 to 50	mR	10	10	0.00 - Pass

Calibration Procedure: CAL-450-451.pdf

Calibration Description: The 451P-RYR has an operating range of 0 to 5 R/hr. The unit is exposed through the side of the detector and calibrated on all ranges. All readings were corrected for background. The % Error was calculated using Equation 1.

Environmental Constraints: The 451P-RYR survey meter is designed to read accurately from -20 to 50C. The unit is pressurized, therefore, requires no air density corrections.

Calibration Uncertainty: 3.6% with 2.2% associated with the uncertainty of the source.

Accuracy Requirement: 10% of Reading

Equation 1:
$$\%Error = \frac{100 * (UUT - Reference)}{Reference}$$