

Certificate of Conformance

Issued to: Upstate Medical Physics
1029 Pine St.
Palmer, MA, 01096

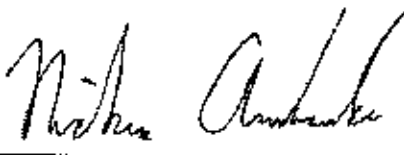
<u>Equipment Description</u>	<u>Model</u>	<u>S/N</u>
Control Unit	9010	90-2343
Converter	9060	99-1659
Ion Chamber	10X5-6-2R	16643
Ion Chamber	10X5-6M-2R	8977

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure PP1102, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 and other related documents. The equipment has been found to conform in all respects. These test procedures are designed to ensure that the tested equipment meets or exceeds all aspects of Radcal's published product specifications and requirements. Radcal is an ACLASS accredited calibration lab that meets the requirements of ISO 17025 and ANSI/NCLS Z540-1, cert number AC-1553.

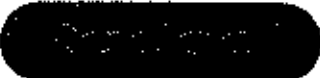
All measurements performed during the testing employ equipment traceable to NIST or another recognized National Laboratory such as Physikalisch-Technische Bundesanstalt (PTB).

For additional information please refer to Radcal's Product note: "The Importance of Conformance Testing". Radcal recommends revalidation in 12 months.

Certificate Issue Date: 07-Oct-14

By: 
Authorized Representative

Radcal Corporation
426 W. Duarte Rd. Monrovia, CA 91016
Tel: (626) 357-7921 FAX: (626) 357-8863 email: service@radcal.com



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<u>Equipment Description</u>	<u>Model</u>	<u>S/N</u>
Control Unit	4082	42-0275

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure PP1102, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, P11045, P11055 and other related documents. The equipment has been found to conform in all respects. These test procedures are designed to ensure that the tested equipment meets or exceeds all aspects of Radcal's published product specifications and requirements. Radcal is an ACLASS accredited calibration lab that meets the requirements of ISO 17025 and ANSI/NCLZ Z540-1, cert number AC-1553.

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Tel: (626) 357-7921
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Service No: S112857

Certificate of Conformance

Issued To: Upstate Medical Physics
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Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X5-W	48-1845

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4087132, Radcal Quality Manual PP1007, Radcal Calibration Program Policy and Procedure PP1038 and other related documents. These procedures are designed to ensure that the tested equipment meets or exceeds Radcal's specifications and the requirements of ANSI/NCLS Z540-1-1994.

All measurements performed during the testing employ equipment traceable to NIST or another recognized National Laboratory such as Physikalisch-Technische Bundesanstalt (PTB).

Radcal recommends a recalibration interval of 12 months.

Certificate Issue Date: October 7, 2014

By: 
Authorized Reviewer

Radcal Corporation

428 W. Duarte Rd.
Monrovia, CA 91016
Tel: (626) 357-7921
Fax: (626) 357-8863

Service No: S112857
Date: October 7, 2014

Certificate of Conformance

Measurement Test Conditions

An Electromed EDEC-80 X-ray generator equipped with a Varian Model A192 tungsten target x-ray tube was used as the source of the required x-ray beam. The generator ripple is less than 0.5 kV. The X-ray Generator's filtration is set to produce a half value layer of 2.89 mmAl at 70kV. The output of the generator was measured by a Radcal Dynalyzer IIIU. The Dynalyzer outputs was recorded at a 7 kHz sampling rate by a 16-bit analog-to-digital converter and the results were averaged over 200mS. All reported measurement results have an accuracy of better than $\pm 1\%$ at the 95% confidence level.

Test Methods

The measurements were made in accordance with Radcal Test Procedure A4087132

Limitations of Use:

See Manufacturer's specifications


Conditions of Measurement

Temperature: 24 °C
Humidity: 34%

Note: Corrections for environmental conditions are not required for this equipment

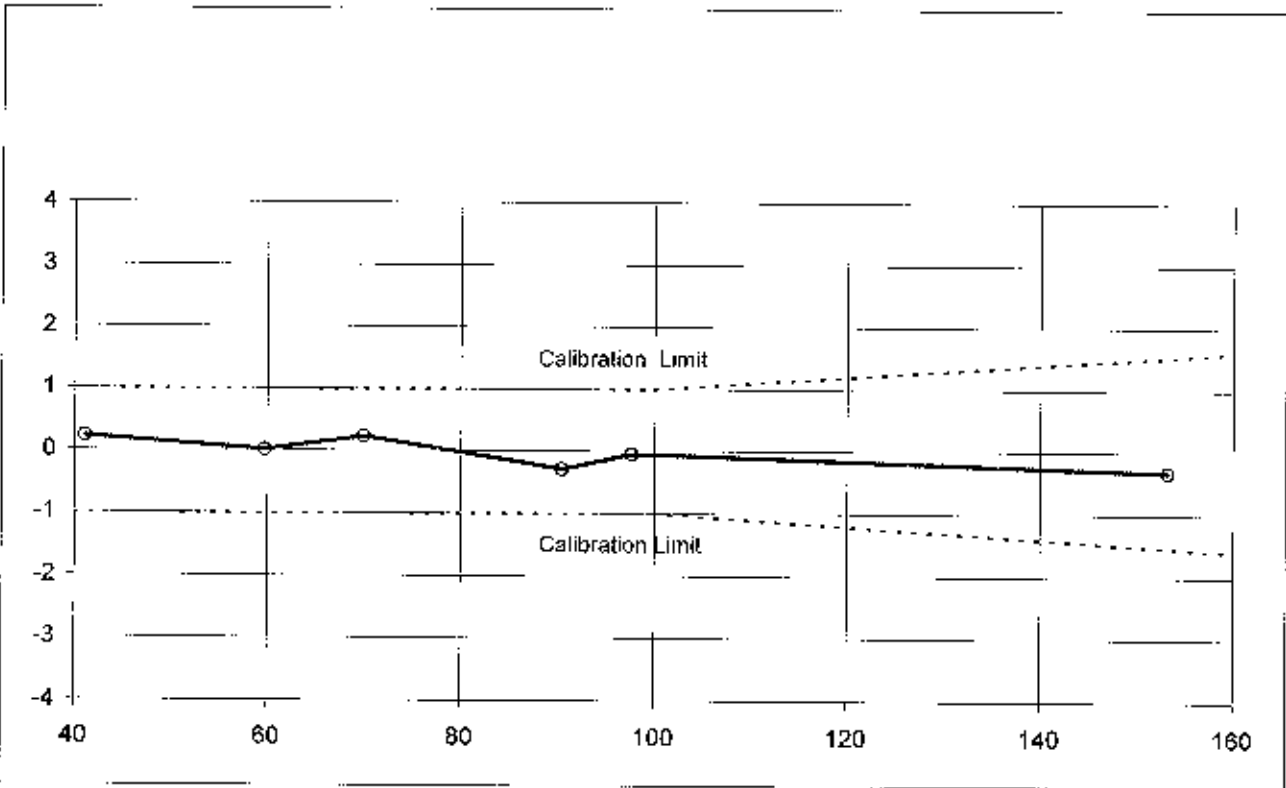
Measurement Results

AccukV 40X5-W Diagnostic Sensor calibration

 25 ma , 750 ms, 2.89 mmAl half value layer at 70kVp, 53 cm target to detector

Dynalyzer kV	Accu kV kVAvg	Error	Error %	Pass/Fail
41.1	41.3 kV	0.21 kV	0.5%	Pass
59.7	59.7 kV	-0.01 kV	0.0%	Pass
70.0	70.2 kV	0.21 kV	0.3%	Pass
90.5	90.2 kV	-0.31 kV	-0.3%	Pass
97.7	97.7 kV	-0.07 kV	-0.1%	Pass
153.2	152.8 kV	-0.34 kV	-0.2%	Pass

AccukV 40X5-W Diagnostic Sensor 48-1845
Calibration Error (kV) vs. Tube Voltage (kV)
2.89 mm Al HVL at 70kV



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Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X5-MO	48-1160

The equipment identified above has been calibrated and tested using Radcal service acceptance procedure A4087133, Radcal Quality Manual PP1007, Radcal Calibration Program Policy and Procedure PP1038 and other related documents. These procedures are designed to ensure that the tested equipment meets or exceeds Radcal's specifications and the requirements of ANSI/NCLS Z540-1-1994. For additional information please refer to Radcal's Product Note: "The Importance of Conformance Testing"

All measurements performed during the testing employ equipment traceable to NIST or another recognized National Laboratory such as Physikalisch-Technische Bundesanstalt (PTB).

Radcal recommends a recalibration interval of 12 months.

Certificate Issue Date: October 7, 2014

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Measurement Test Conditions

A Lorad M-II Mammographic X-ray generator equipped with Mo target and a beryllium window x-ray tube was used as the source of the required x-ray beam. The generator ripple is less than 0.1 kV. A 30µm Mo filter was added to the beam. The Accu-kV sensor's long axis was aligned perpendicular to the tube anode-cathode axis for all measurements. The output of the generator was measured with a Radcal HV-1 High-Voltage Divider. The voltage divider output was recorded at a 7 kHz sampling rate by a 16-bit analog to digital converter and the results were averaged over 100 mS. All reported measurement results have an accuracy of better than ±1 % at the 95% confidence level.

Test Methods

The measurements were made in accordance with Radcal Test Procedure A4087133.

Limitations of Use:

See Manufacturer's specifications

Conditions of Measurement

Temperature: 24 °C
Humidity: 34%

Note: Corrections for environmental conditions are not required for this equipment

Measurement Results

AccuKV 40X5-MO Mammographic Sensor Calibration

25-40 mA, 500 ms, 30 µm Mo total filtration, 30.5 cm target to detector

Invasive kV	Accu kV kVAvg	Error		Pass/Fail
22.21 kV	22.41 kV	0.20 kV	0.90%	Pass
23.38 kV	23.41 kV	0.05 kV	0.21%	Pass
24.52 kV	24.59 kV	0.07 kV	0.29%	Pass
25.67 kV	25.81 kV	0.14 kV	0.55%	Pass
29.12 kV	29.25 kV	0.13 kV	0.45%	Pass
38.34 kV	38.41 kV	0.07 kV	0.18%	Pass

AccukV 40X5-MO Mammographic Sensor 48-1160
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration

