

Service Report

Received: 11-Jun-15

The equipment was tested for conformance with Radcal specifications using applicable Conformance test procedures. These procedures include inspection, operation with an x-ray machine and electrical test. The results are summarized below:

Model Number	Serial Number	Description	Meets Mfr Spec	Spec limit (±)	Cal Date
9096	96-0064	Control Unit - Accu-Pro	Yes	Pass/Fail	16-Jun-15
9660	01-2115	Ion Chamber Converter	Yes	Pass/Fail	16-Jun-15
10X6-6	03-0246	Ion Chamber	Yes	4%	16-Jun-15
40X12-W	52-0113	Diagnostic kV Sensor	Yes	Pass/Fail	16-Jun-15
10X6-6M	04-0257	Ion Chamber	Yes	4%	16-Jun-15
40X9-MO	49-0045	Mammography kV Sensor	Yes	Pass/Fail	16-Jun-15

Service requested:

Perform conformance test, inspection and issue certificate.

Service performed:

Replaced broken BNC connector on 9096 control unit.

The main cable KV connector was intermittent.

Replaced main cable to fix problem.

The 40X9-W Diagnostic kV Sensor was recalibrated for optimal performance.

The 10X5-6M ionization chamber was calibrated to meet the requirements of FDA-MQSA "Final rules for Quality Mammographic Standards".

Issued Report on Calibration 115081.

Issued Certificate of Conformance.

Parts Replaced

Part No.	Quantity	Description	Unit cost	Ext cost
CON/73101-0570	1	BNC, PC MNT RT ANG, MTL SHELL/IN	\$8.25	\$8.25



Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor, New York 14564

Equipment Description

Model

S/N

Ion Chamber

10X6-6

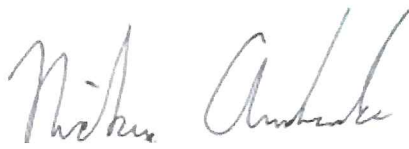
03-1060

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/NCLZ 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: 16-Oct-15

By: 
Authorized Representative

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



Ref No: S115081

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

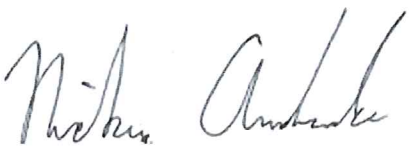
<u>Equipment Description</u>	<u>Model</u>	<u>S/N</u>
Control Unit - Accu-Pro	9096	96-0064
Ion Chamber Converter	9660	01-2115
Ion Chamber	10X6-6	03-0246
Ion Chamber	10X6-6M	04-0257

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/NCLZ 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: 16-Jun-15

By: 
Authorized Representative

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Service No: 115081

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0045

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: June 16, 2015

By: 
Authorized Reviewer

Radcal Corporation

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

Service No: 115081

Date: June 16, 2015

Certificate of Conformance

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 30 μ m 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: 25 °C
Humidity: 37%

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

Measurement Results

AccuKv 40X9-MO Mammographic Sensor Calibration

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

Invasive kV	Accu kV kVAvg	Error		Pass/ Fail
22.25 kV	22.50 kV	0.25 kV	1.12%	Pass
23.40 kV	23.50 kV	0.10 kV	0.43%	Pass
24.56 kV	24.60 kV	0.04 kV	0.16%	Pass
25.71 kV	25.60 kV	-0.11 kV	-0.43%	Pass
29.16 kV	29.10 kV	-0.06 kV	-0.21%	Pass
38.39 kV	38.30 kV	-0.09 kV	-0.23%	Pass

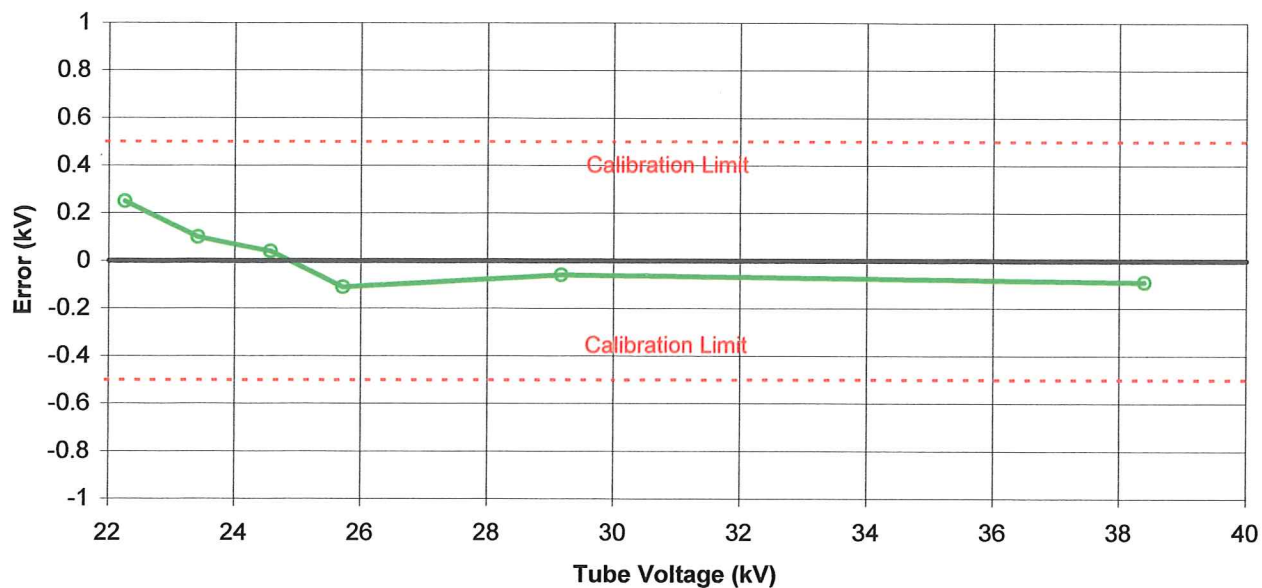
Radcal Corporation

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Monrovia, CA 91016
Tel: (626) 357-7921
Fax: (626) 357-8863

Service No: 115081

Date: June 16, 2015

AccukV 40X9-MO Mammographic Sensor 49-0045
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration



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

Service No: S117229

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, New York 14564

Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

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: February 12, 2016

By: 
Authorized Reviewer

Radcal Corporation

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

Service No: S115081

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

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: June 16, 2015

By: 
Authorized Reviewer

Radcal Corporation

426 W. Duarte Rd.
Monrovia, CA 91016
Tel: (626) 357-7921
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Service No: S115081**Date:** June 16, 2015

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: 35%

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

Measurement Results**AccukV 40X12-W Diagnostic Sensor calibration**

EMED 1 Values 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
40.9	40.8 kV	-0.12 kV	-0.3%	Pass
59.6	59.4 kV	-0.17 kV	-0.3%	Pass
69.8	69.6 kV	-0.16 kV	-0.2%	Pass
86.2	86.7 kV	0.46 kV	0.5%	Pass
97.6	97.6 kV	0.03 kV	0.0%	Pass
153.1	152.3 kV	-0.75 kV	-0.5%	Pass

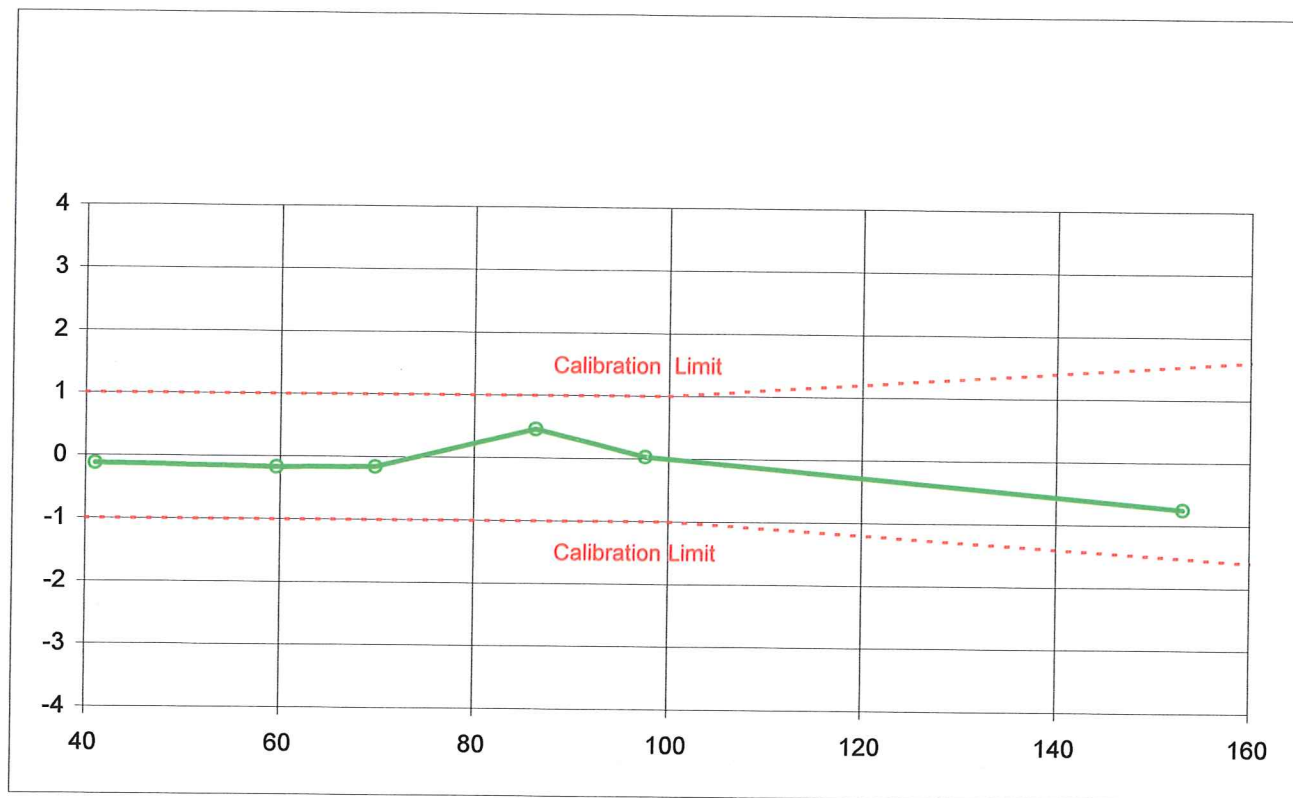
Radcal Corporation

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Monrovia, CA 91016
Tel: (626) 357-7921
Fax: (626) 357-8863

Service No: S115081

Date: June 16, 2015

AccukV 40X12-W Diagnostic Sensor 52-0113
Calibration Error (kV) vs. Tube Voltage (kV)
2.89 mm Al HVL at 70kV



Report No: 115081CAL

MQSA⁽¹⁾ Certificate of Calibration

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

Equipment Description	Model	S/N	Asset No.
Control Unit - Accu-Pro	9096	96-0064	N/A
Ion Chamber	10X6-6M	04-0257	N/A
Ion Chamber Converter	9660	01-2115	N/A

Condition of Equipment As-Left:
In Tolerance

Remarks: Prior to calibration, the equipment was examined and found to be in good condition and performed in accordance with the manufacturer's specifications with the exceptions listed below:
1. None


The equipment identified above has been calibrated and tested using standard Radcal calibration and acceptance procedures in accordance with Radcal Quality Manual PP1007, 4600130 - CertCal - Mammo Chamber.XLT Rev:NC1 and technical requirements contained in the customer's order. These procedures are designed to ensure that the tested equipment meets or exceeds the stated specifications and the requirements of ANSI/NCLS Z540-1-1994.

⁽¹⁾See MQSA Advisory Note attached.

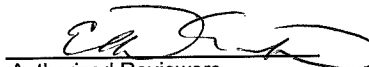
All measurements performed during the testing employ equipment traceable to NIST or another recognized National Laboratory such as Physikalisch-Technische Bundesanstalt (PTB). All calibration results included with this certificate were recorded at the time of measurement and shall not imply anything about the instrument's future stability. This must be determined from previous historical data.

Calibration Date: 16 June 2015
Date of Report 16 June 2015
Interval, as defined by MQSA: 24 months after date of calibration
Calibration Due: 16 June 2017

Calibration Tech.:


CRC

By:


Authorized Reviewers
P. Sunde / E. Macintosh

MQSA⁽¹⁾ Certificate of Calibration**Measurement Test Conditions**

A Lorad M-IV Mammographic X-ray generator equipped with Tungsten target and a beryllium window x-ray tube was used as the source of the required mammographic x-ray beam. The generator ripple is less than 1 kV. Filters were added to produce the required beam (see data). The output of the generator was measured with a Radcal Dynalyzer invasive voltage divider. The HV-1 output was measured with an analog-to-digital converter with an uncertainty of $\pm 0.1\%$. All reported kVp, mA and time measurement results have an uncertainty of better than $\pm 1\%$ at the 95% confidence level. Dose measurements were made using the substitution method and normalized with a reference mammographic dose diode. Reported dose and dose rate measurement results have an uncertainty of better than $\pm 5\%$ at the 95% confidence level.

Conditions of Measurement

Temperature: 22.0 °C
Pressure: 99.81 kPa
Humidity: 42%

NOTE: All dose measurements were normalized to 22°C, 101.3 kPa.

"CF" = correction factor and True Reading = CF x Reading

All exposures were made with the DUT oriented perpendicular to the beam.

The beam(s) were collimated to not expose the chamber stem

Exposure Properties

ISO Beam	Added Filtration (mm Al)	First HVL (mm Al)	Homog. Coeff. hc	Set kV	Avg. Current mA	Avg. Time ms	Distance (Perp.)
M30	0.496	0.366	0.68	30	90	223	75 cm

Calibration Results

Exposure #	Standard	DUT	DUT CF
	Dose mR	Dose mR	
1	336.2	350.3	0.960
2	336.3	349.2	0.963
3	336.3	350.4	0.960
Avg.	336.3	350.0	0.961

Radcal Corporation

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

Initial Cal Report

Service No: S115081**Date:** June 16, 2015**Equipment Description**

Accu-kV Diagnostic Sensor
Control Unit

Model

40X12-W
4085

S/N

52-0113
45-0585

Conditions of Measurement

Temperature: 24 °C

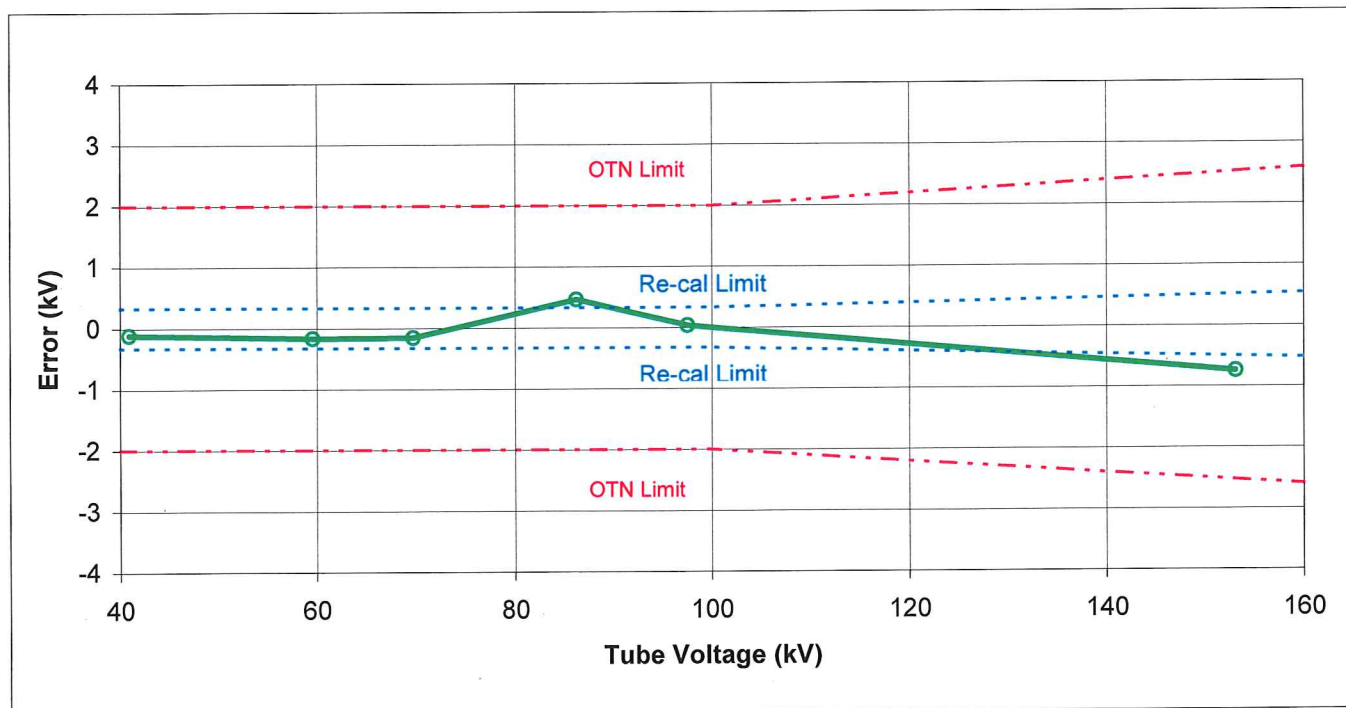
Humidity: 35%

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

Measurement Results**EMED 1 Values**

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

Dynalyzer kV	Accu kV kVAvg	Error	Error %	Action
40.9	40.8 kV	-0.12 kV	-0.3%	Pass
59.6	59.4 kV	-0.17 kV	-0.3%	Pass
69.8	69.6 kV	-0.16 kV	-0.2%	Pass
86.2	86.7 kV	0.46 kV	0.5%	Recal
97.6	97.6 kV	0.03 kV	0.0%	Pass
153.1	152.3 kV	-0.75 kV	-0.5%	Recal

AccukV 40X12-W Diagnostic Sensor 52-0113**Calibration Error (kV) vs. Tube Voltage (kV)****2.89 mm Al HVL at 70kV**

Service Report

Received: 12-Jun-13

The equipment was tested for conformance with Radcal specifications using applicable Conformance test procedures. These procedures include inspection, operation with an x-ray machine and electrical test. The results are summarized below:

Model Number	Serial Number	Description	Meets Mfr Spec	Spec limit (±)	Cal Date
9096	96-0064	Control Unit - Accu-Pro	Yes	Pass/Fail	20-Jun-13
9660	01-2115	Ion Chamber Converter	Yes	Pass/Fail	20-Jun-13
10X6-6	03-0246	Ion Chamber	Yes		20-Jun-13
10X6-6M	04-0257	Ion Chamber	Yes		20-Jun-13
40X12-W	52-0113	Sensor	Yes	Pass/Fail	20-Jun-13
40X9-MO	49-0045	Sensor	Yes	Pass/Fail	20-Jun-13

Service requested:

Perform conformance test, inspection and issue certificate.

Service performed:

Upon receipt, the equipment met manufacturer's specifications.

Replaced batteries.

The 10X6-6M ionization chamber was calibrated to meet the requirements of FDA-MQSA "Final rules for Quality Mammographic Standards".

Issued Report on Calibration 8233.

Issued Certificate of Conformance.

Parts Replaced

Part No.	Quantity	Description	Unit cost	Ext cost
BAT/NIMH-C	2	BATTERY, NIMH C-CELL 2500MAH	\$0.00	\$0.00



Ref No: S112927

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

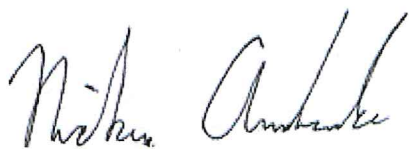
<u>Equipment Description</u>	<u>Model</u>	<u>S/N</u>
Ion Chamber	10X6-6	03-0246

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/NCLZ 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: 15-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



Ref No: S108898

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564


<u>Equipment Description</u>	<u>Model</u>	<u>S/N</u>
Control Unit - Accu-Pro	9096	96-0064
Ion Chamber Converter	9660	01-2115
Ion Chamber	10X6-6	03-0246
Ion Chamber	10X6-6M	04-0257

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. 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, Part II. The equipment has been found to conform in all respects.

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: 20-Jun-13

By: 
Authorized Representative

Radcal Corporation
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Radcal Corporation

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Tel: (626) 357-7921

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Service No: S108898

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564


Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

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: June 20, 2013

By: 
Authorized Reviewer

Radcal Corporation

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

Service No: S108898
Date: June 20, 2013

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: 26%

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

Measurement Results

AccukV 40X12-W Diagnostic Sensor calibration

EMED 1 Values

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

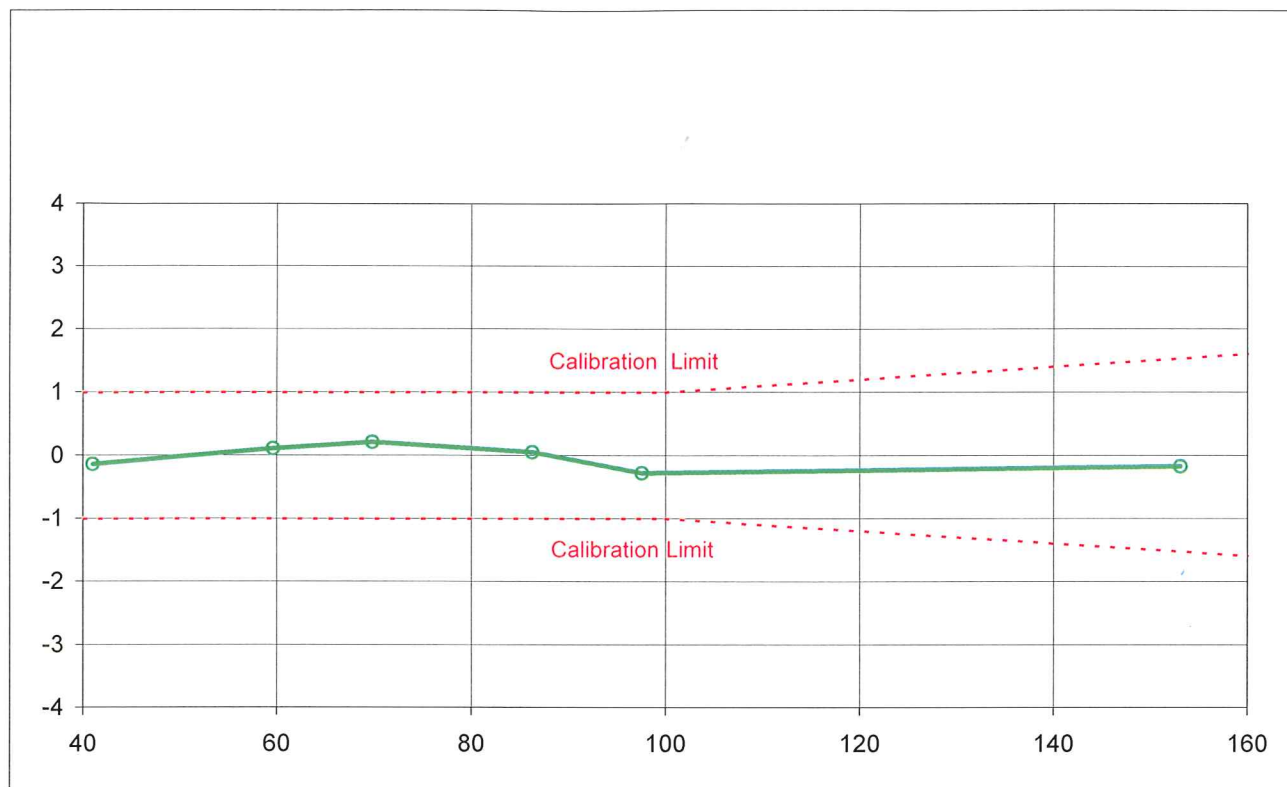
Dynalyzer kV	Accu kV kVAvg	Error	Error %	Pass/Fail
41.0	40.8 kV	-0.15 kV	-0.4%	Pass
59.6	59.7 kV	0.10 kV	0.2%	Pass
69.8	70.0 kV	0.20 kV	0.3%	Pass
86.3	86.3 kV	0.04 kV	0.0%	Pass
97.6	97.3 kV	-0.29 kV	-0.3%	Pass
153.1	152.9 kV	-0.19 kV	-0.1%	Pass

Radcal Corporation

426 W. Duarte Rd.
Monrovia, CA 91016
Tel: (626) 357-7921
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Service No: S108898
Date: June 20, 2013

AccukV 40X12-W Diagnostic Sensor 52-0113
Calibration Error (kV) vs. Tube Voltage (kV)
2.89 mm Al HVL at 70kV



Radcal Corporation

Report on Calibration

Report Number 8233

Page 1 of 2

INSTRUMENT SUBMITTED BY Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564
VB06102013


As Left Calibration

IDENTIFICATION Model 9096 Radiation Monitor S/N: 96-0064
with Model 9660 Converter S/N: 01-2115
with Model 10X6-6M Ion Chamber S/N: 04-0257

The test results listed below are believed to have an overall accuracy of $\pm 5\%$ at the 95% confidence level. All measurements have been made to a precision of $< \pm 2\%$. For unsealed ion chambers, the results have been normalized to one standard atmosphere and 22.0° Celsius. Temperature and pressure corrections were applied to all readings.

The exposure at the calibration position was determined by an NIST-Calibrated three terminal ion chamber which was corrected for ambient temperature and pressure. NIST reports DG 8639/87 and DG 8640/87 identify the chambers used.

Calibrated on June 20, 2013

By 
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Radcal Corporation

Report on Calibration

Report Number 8233

Page 2 of 2

Calibration Data

Chamber Model	S/N	Beam Code	Tube Potential (kVp)	First HVL (mm Al)	Homogeneity Coefficient (1)	Correction Factor (2)	Approx Exp Rate (R/min)	Distance (cm)
10X6-6M	04-0257	M30	30	0.36	0.63	1.00	10.7	50


Ambient Temperature 21.9°C
Ambient Pressure 999 mb

Chamber Polarizing Voltage
At Chamber 274 V

Notes:

- (1) - Homogeneity Coefficient = First HVL / Second HVL
- (2) - Correction Factor =
(True Exposure/Test Instrument Reading) X Chamber Multiplication Factor.
- 3 - The ion chamber instrument stem was oriented perpendicular to the beam direction.
- 4 - All measurements, unless otherwise noted, were performed in integrate mode.
- 5 - The electrometer readout unit has been tested in exposure and exposure rate modes over its entire operating range utilizing standard current sources. It was found to meet or exceed the manufacturer's specifications.

Calibrated on June 20, 2013

By 
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Service Report

Received: 27-Jun-11

The equipment was tested for conformance with Radcal specifications using applicable Conformance test procedures. These procedures include inspection, operation with an x-ray machine and electrical test. The results are summarized below:

Model Number	Serial Number	Description	Meets Mfr Spec	Spec limit (±)	Cal Date
9096	96-0064	Control Unit - Accu-Pro	Yes	Pass/Fail	15-Jul-11
9660	01-2115	Ion Chamber Converter	Yes	Pass/Fail	15-Jul-11
10X6-6	03-0246	Ion Chamber	Yes		15-Jul-11
10X6-6M	04-0257	Ion Chamber	Yes		15-Jul-11
40X12-W	52-0113	Sensor	Yes	Pass/Fail	15-Jul-11
40X9-MO	49-0045	Sensor	Yes	Pass/Fail	15-Jul-11

Service requested:

Mammography kV service (inconsistent readings above 30kV) and calibration.
Perform conformance test, inspection and issue certificate.

Service performed:

Unable to duplicate customers problem statement.
Replaced 40x9-MO sensor s/n 49-0039 with s/n 49-0045 as preventative maintenance.
The 10x6-6 ion chamber cap was dented.
Replaced chamber cap.
The chamber dag was loose.
Repaired and recalibrated chamber.
Performed necessary upgrades.
The 10X6-6M ionization chamber was calibrated to meet the requirements of FDA-MQSA "Final rules for Quality Mammographic Standards".
Issued Report on Calibration 7635.
Issued Certificate of Conformance.

Parts Replaced

Part No.	Quantity	Description	Unit cost	Ext cost
4001002-003	1	MP-CAP	\$37.90	\$0.00

Radcal Corporation

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

Service No: S108898

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0045

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: June 20, 2013

By: 
Authorized Reviewer

Radcal Corporation

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

Service No: S108898**Date:** June 20, 2013

Certificate of Conformance

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 30 μ m 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: 23 °C

Humidity: 29%

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

Measurement Results**AccuKv 40X9-MO Mammographic Sensor Calibration**

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

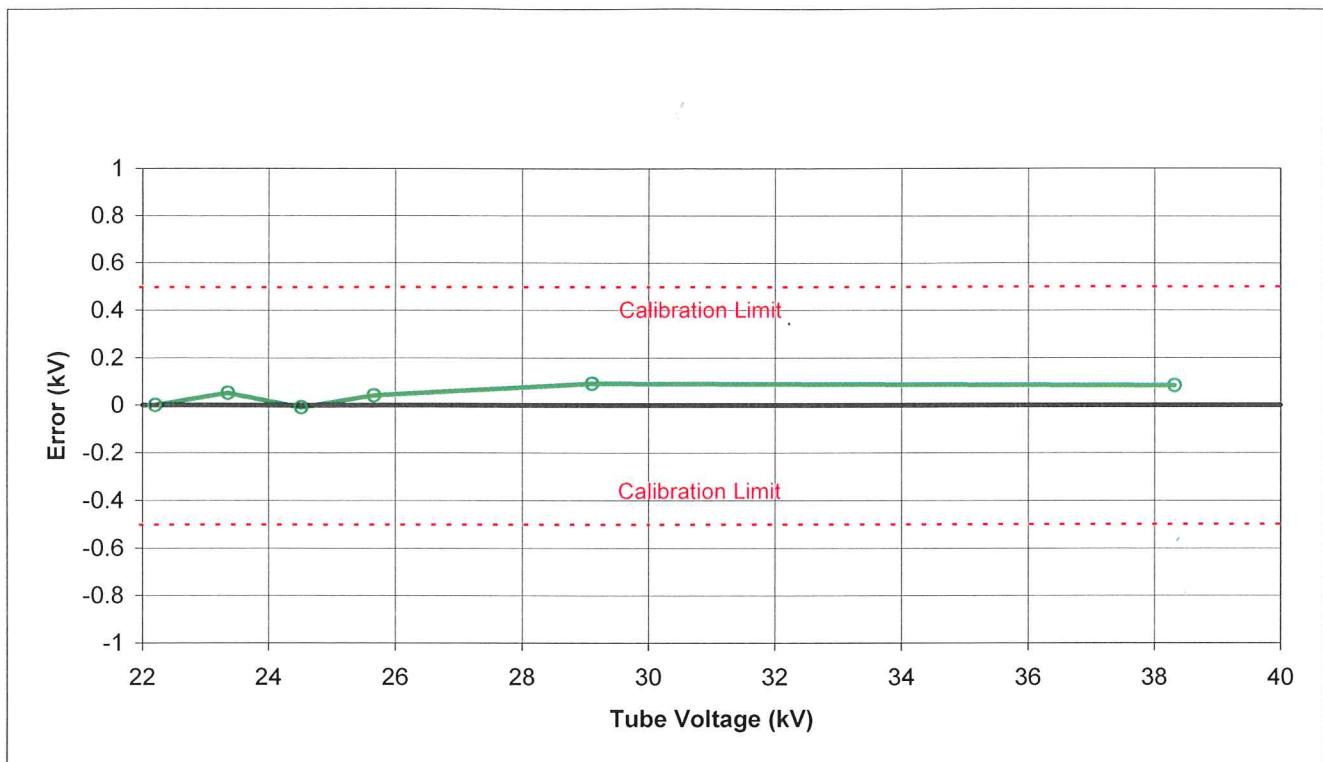
Invasive kV	Accu kV kVAvg	Error		Pass/ Fail
22.20 kV	22.20 kV	0.00 kV	0.00%	Pass
23.35 kV	23.40 kV	0.05 kV	0.21%	Pass
24.51 kV	24.50 kV	-0.01 kV	-0.04%	Pass
25.66 kV	25.70 kV	0.04 kV	0.16%	Pass
29.11 kV	29.20 kV	0.09 kV	0.31%	Pass
38.32 kV	38.40 kV	0.08 kV	0.21%	Pass

Radcal Corporation

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Tel: (626) 357-7921
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Service No: S108898
Date: June 20, 2013

AccukV 40X9-MO Mammographic Sensor 49-0917
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration





Ref No: S102281

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564

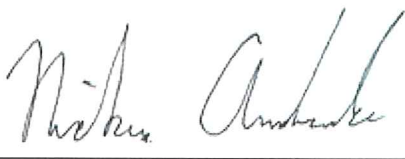
Equipment Description	Model	S/N
Control Unit - Accu-Pro	9096	96-0064

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure PS2002, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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, Part II. The equipment has been found to conform in all respects.

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: 15-Jul-11

By: 
Authorized Representative

Radcal Corporation
426 W. Duarte Rd. Monrovia, CA 91016
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Page 1 of 1
A4500005 R



Ref No: S102281

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Victor NY 14564

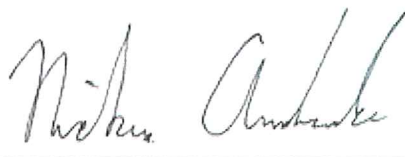
Equipment Description	Model	S/N
Ion Chamber Converter	9660	01-2115

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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, Part II. The equipment has been found to conform in all respects.

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: 15-Jul-11

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Ref No: S102281

Certificate of Conformance

Issued to: Upstate Medical Physics
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Victor NY 14564

Equipment Description	Model	S/N
Ion Chamber	10X6-6	03-0246

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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, Part II. The equipment has been found to conform in all respects.

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: 15-Jul-11

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Ref No: S102281

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564


Equipment Description	Model	S/N
Ion Chamber	10X6-6M	04-0257

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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, Part II. The equipment has been found to conform in all respects.

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: 15-Jul-11

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Service No: S102281

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0045

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: July 15, 2011

By: 
Authorized Reviewer

Radcal Corporation

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Monrovia, CA 91016
Tel: (626) 357-7921
Fax: (626) 357-8863

Service No: S102281
Date: July 15, 2011

Certificate of Conformance

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 30 μ m 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: 23 °C
Humidity: 35%

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

Measurement Results**AccuKv 40X9-MO Mammographic Sensor Calibration**

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

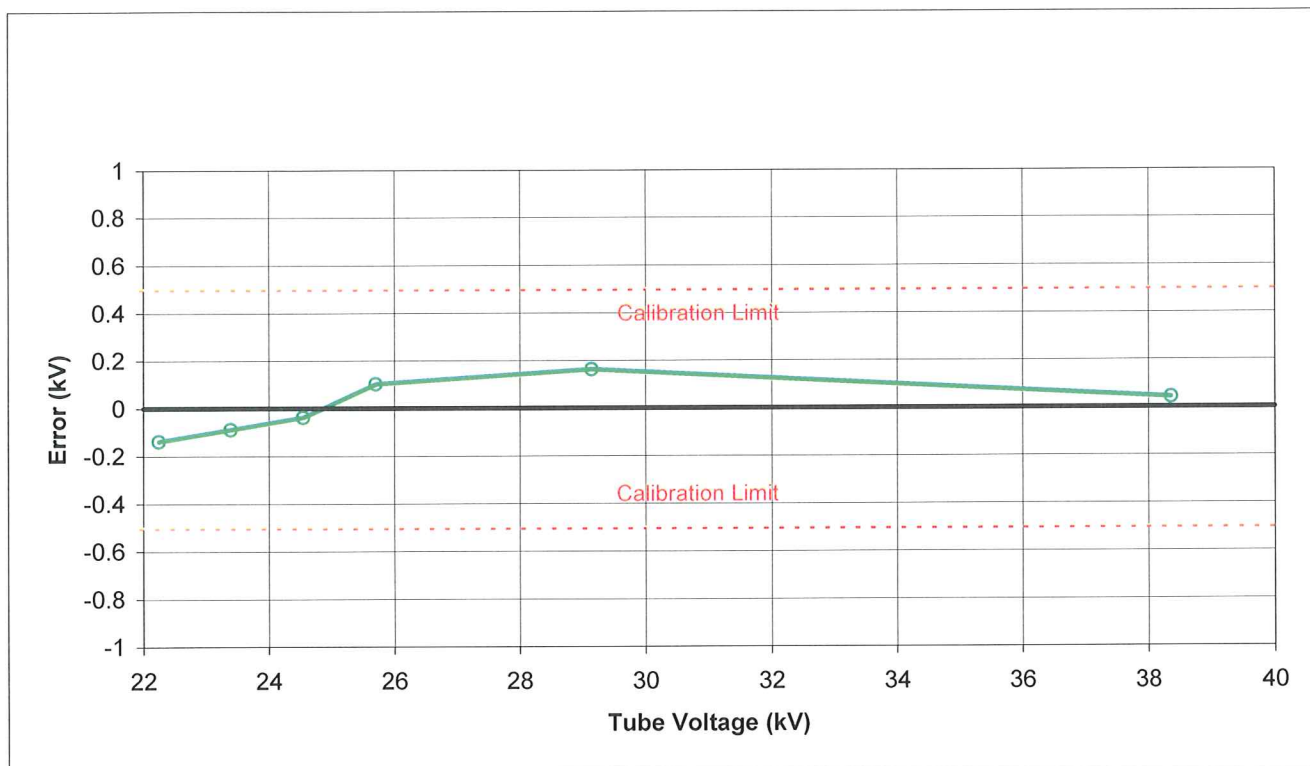
Invasive kV	Accu kV kVAvg	Error		Pass/ Fail
22.24 kV	22.10 kV	-0.14 kV	-0.63%	Pass
23.39 kV	23.30 kV	-0.09 kV	-0.38%	Pass
24.54 kV	24.50 kV	-0.04 kV	-0.16%	Pass
25.70 kV	25.80 kV	0.10 kV	0.39%	Pass
29.14 kV	29.30 kV	0.16 kV	0.55%	Pass
38.36 kV	38.40 kV	0.04 kV	0.10%	Pass

Radcal Corporation

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

Service No: S102281
Date: July 15, 2011

AccukV 40X9-MO Mammographic Sensor 49-0045
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration



Radcal Corporation

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

Service No: S102281

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564

Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

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/NCLC 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: July 15, 2011

By: 

Authorized Reviewer

Radcal Corporation

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

Service No: S102281
Date: July 15, 2011

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: 22 °C
Humidity: 31%

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

Measurement Results

AccukV 40X12-W Diagnostic Sensor calibration

EMED 2 Values

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

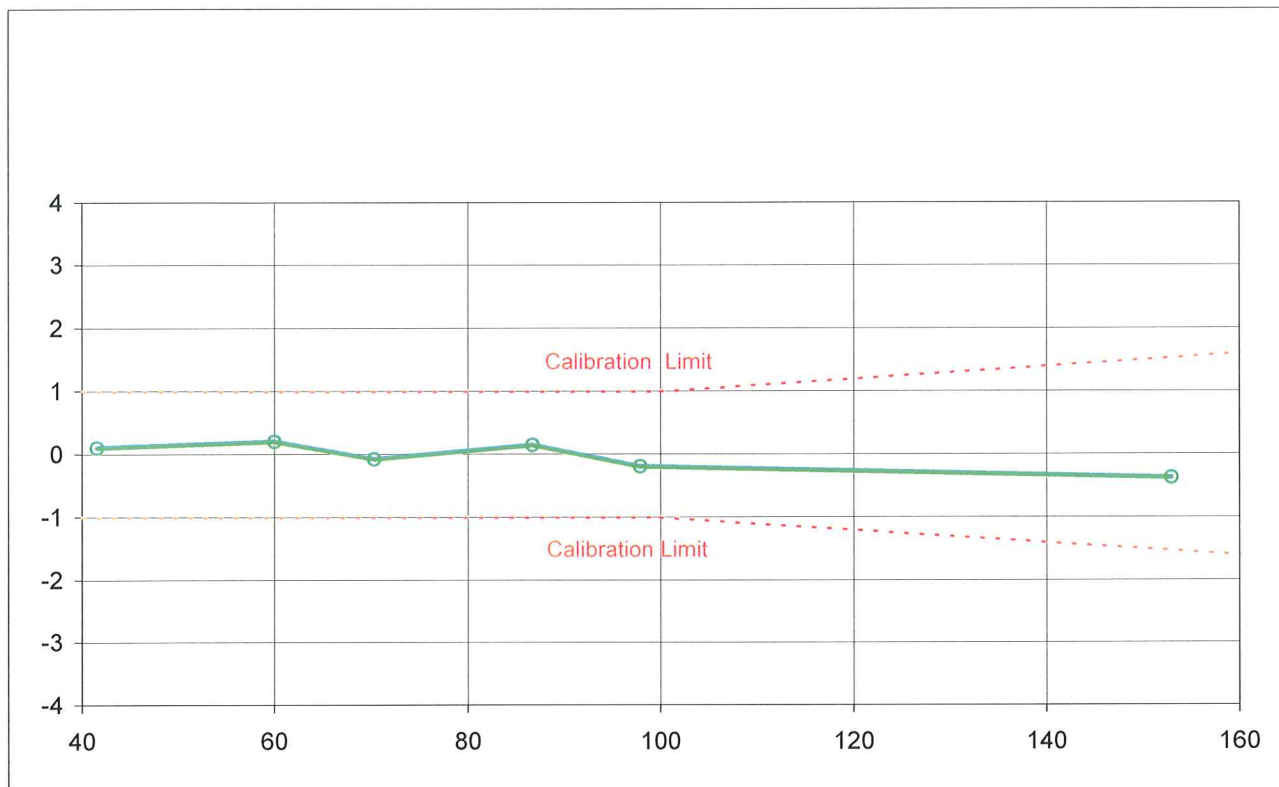
Dynalyzer kV	Accu kV kVAvg	Error	Error %	Pass/Fail
41.5	41.6 kV	0.09 kV	0.2%	Pass
60.0	60.2 kV	0.19 kV	0.3%	Pass
70.3	70.2 kV	-0.09 kV	-0.1%	Pass
86.7	86.8 kV	0.13 kV	0.2%	Pass
97.9	97.7 kV	-0.21 kV	-0.2%	Pass
153.0	152.6 kV	-0.39 kV	-0.3%	Pass

Radcal Corporation

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

Service No: S102281
Date: July 15, 2011

AccukV 40X12-W Diagnostic Sensor 52-0113
Calibration Error (kV) vs. Tube Voltage (kV)
2.89 mm Al HVL at 70kV



Radcal Corporation

Report on Calibration

Report Number 7635

Page 1 of 2

INSTRUMENT SUBMITTED BY Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564


As Left Calibration

IDENTIFICATION Model 9096 Radiation Monitor S/N: 96-0064
with Model 9660 Converter S/N: 01-2115
with Model 10X6-6M Ion Chamber S/N: 04-0257

The test results listed below are believed to have an overall accuracy of $\pm 5\%$ at the 95% confidence level. All measurements have been made to a precision of $< \pm 2\%$. For unsealed ion chambers, the results have been normalized to one standard atmosphere and 22.0° Celsius. Temperature and pressure corrections were applied to all readings.

The exposure at the calibration position was determined by an NIST-Calibrated three terminal ion chamber which was corrected for ambient temperature and pressure. NIST reports DG 8639/87 and DG 8640/87 identify the chambers used.

Calibrated on July 15, 2011

By 
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Radcal Corporation

Report on Calibration

Report Number 7635

Page 2 of 2

Calibration Data

Chamber Model	S/N	Beam Code	Tube Potential (kVp)	First HVL (mm Al)	Homogeneity Coefficient (1)	Correction Factor (2)	Approx Exp Rate (R/min)	Distance (cm)
10X6-6M	04-0257	M30	30	0.36	0.63	0.99	11.8	50

Ambient Temperature 23.0°C
Ambient Pressure 999 mb

Chamber Polarizing Voltage
At Chamber 273 V

Notes:

- (1) - Homogeneity Coefficient = First HVL / Second HVL
- (2) - Correction Factor =
(True Exposure/Test Instrument Reading) X Chamber Multiplication Factor.
- 3 - The ion chamber instrument stem was oriented perpendicular to the beam direction.
- 4 - All measurements, unless otherwise noted, were performed in integrate mode.
- 5 - The electrometer readout unit has been tested in exposure and exposure rate modes over its entire operating range utilizing standard current sources. It was found to meet or exceed the manufacturer's specifications.

Calibrated on July 15, 2011

By En
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Service Report

Received: 17-Jun-10

The equipment was tested for conformance with Radcal specifications using applicable Conformance test procedures. These procedures include inspection, operation with an x-ray machine and electrical test. The results are summarized below:

Model Number	Serial Number	Description	Meets Mfr Spec	Spec limit (±)	Cal Date
40X9-MO	49-0039	Sensor	No	Pass/Fail	22-Jun-10

Service requested:

Two errors pop up.

Perform conformance test, inspection and issue certificate.

Service performed:

Verified customers problem statement.

The 40x9-MO sensor detector was bad.

Replaced sensor detector and recalibrated.

Out of tolerance notification not required as customer is aware of problem.

Issued Certificate of Conformance.

Parts Replaced

Part No.	Quantity	Description	Unit cost	Ext cost
SVC/SENSDETECT	1	REPLACEMENT SENSOR DETECTOR	\$575.00	\$0.00

Radcal Corporation

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

Service No: S98512

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor, NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0039

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: June 22, 2010

By: 
Authorized Reviewer

Radcal Corporation

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

Service No: S98512**Date:** June 22, 2010

Certificate of Conformance

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 30 μ m 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: 23 °C

Humidity: 35%

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

Measurement Results**AccuKv 40X9-MO Mammographic Sensor Calibration**

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

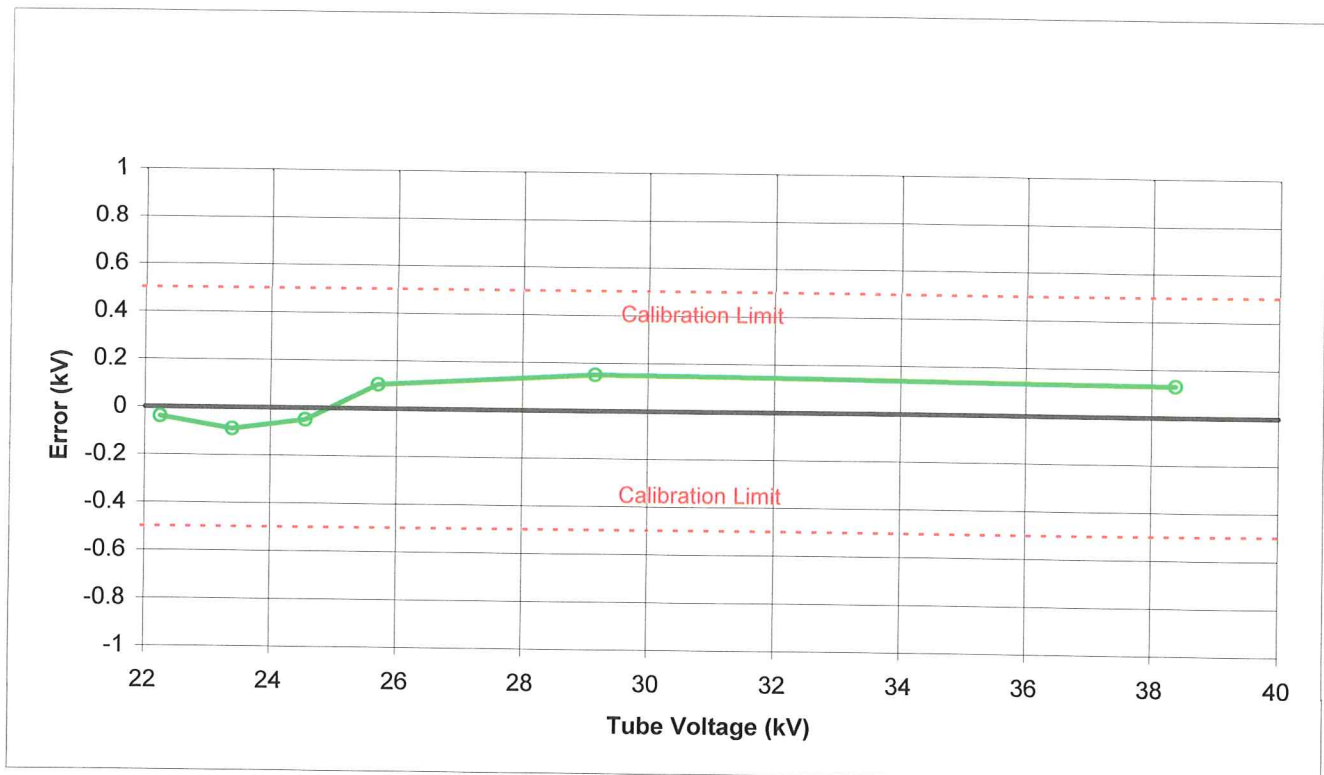
Invasive kV	Accu kV kVAvg	Error		Pass/ Fail
22.24 kV	22.20 kV	-0.04 kV	-0.18%	Pass
23.39 kV	23.30 kV	-0.09 kV	-0.38%	Pass
24.55 kV	24.50 kV	-0.05 kV	-0.20%	Pass
25.70 kV	25.80 kV	0.10 kV	0.39%	Pass
29.15 kV	29.30 kV	0.15 kV	0.51%	Pass
38.37 kV	38.50 kV	0.13 kV	0.34%	Pass

Radcal Corporation

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

Service No: S98512
Date: June 22, 2010

AccukV 40X9-MO Mammographic Sensor 49-0039
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration



Service Report

Received: 23-Oct-09

The equipment was tested for conformance with Radcal specifications using applicable Conformance test procedures. These procedures include inspection, operation with an x-ray machine and electrical test. The results are summarized below:

Model Number	Serial Number	Description	Meets Mfr Spec	Spec limit (±)	Cal Date
9096	96-0064	Control Unit - Accu-Pro	Yes	Pass/Fail	09-Nov-09
9660	01-2115	Ion Chamber Converter	Yes	Pass/Fail	09-Nov-09
10X6-6	03-0246	Ion Chamber	Yes		09-Nov-09
10X6-6M	04-0257	Ion Chamber	Yes		09-Nov-09
40X12-W	52-0113	Sensor	Yes	Pass/Fail	09-Nov-09
40X9-MO	49-0039	Sensor	Yes	Pass/Fail	09-Nov-09

Service requested:

Perform conformance test, inspection and issue certificate.

Service performed:

Replaced converter s/n 01-1088 with s/n 01-2115 due to fail zero.

Performed necessary upgrades.

The 40X12-W Diagnostic kV Sensor was recalibrated for optimal performance.

The 40x12-W sensor failed calibration due to bad detector.

Replaced sensor s/n 49-0740 with s/n 49-0039.

The 10X6-6M ionization chamber was calibrated to meet the requirements of FDA-MQSA "Final rules for Quality Mammographic Standards".

Issued Report on Calibration 7133.

Issued Certificate of Conformance.

Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564

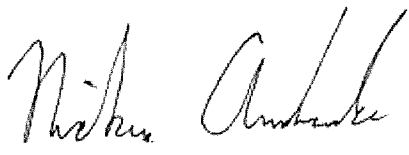
Equipment Description	Model	S/N
Control Unit - Accu-Pro	9096	96-0064

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure PS2002, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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).

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

Certificate Issue Date: 09-Nov-09

By: 
Authorized Representative

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Victor NY 14564

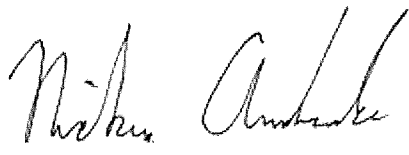
Equipment Description	Model	S/N
Ion Chamber Converter	9660	01-2115

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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.

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Certificate Issue Date: 09-Nov-09

By: 
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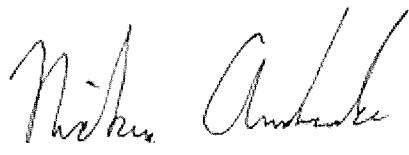
Equipment Description	Model	S/N
Ion Chamber	10X6-6	03-0246

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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).

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Certificate Issue Date: 09-Nov-09

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Authorized Representative

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

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Certificate of Conformance

Issued to: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564


Equipment Description	Model	S/N
Ion Chamber	10X6-6M	04-0257

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4500005, Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055 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).

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

Certificate Issue Date: 09-Nov-09

By: 
Authorized Representative

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Radcal Corporation
426 W. Duarte Rd.
Monrovia, CA 91016
Tel: (626) 357-7921
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Service No: S95719

Certificate of Conformance

Issued To: Upstate Medical Physics
1290 Blossom Dr.
Victor NY 14564


Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

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/NCLC 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: November 9, 2009

By: 
Authorized Reviewer

Radcal Corporation

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Service No: S95719

Certificate of Conformance

Issued To: Upstate Medical Physics
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Victor NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0039

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: November 9, 2009

By: 
Authorized Reviewer

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Tel: (626) 357-7921
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Service No: S95719**Date:** November 9, 2009

Certificate of Conformance

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 30 μ m 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: 23 °C

Humidity: 35%

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

Measurement Results**AccukV 40X9-MO Mammographic Sensor Calibration**

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

Invasive kV	Accu kV kVAvg	Error		Pass/ Fail
22.28 kV	22.40 kV	0.12 kV	0.54%	Pass
23.44 kV	23.50 kV	0.06 kV	0.26%	Pass
24.59 kV	24.60 kV	0.01 kV	0.04%	Pass
25.74 kV	25.80 kV	0.06 kV	0.23%	Pass
29.20 kV	29.30 kV	0.10 kV	0.34%	Pass
38.44 kV	38.60 kV	0.16 kV	0.42%	Pass

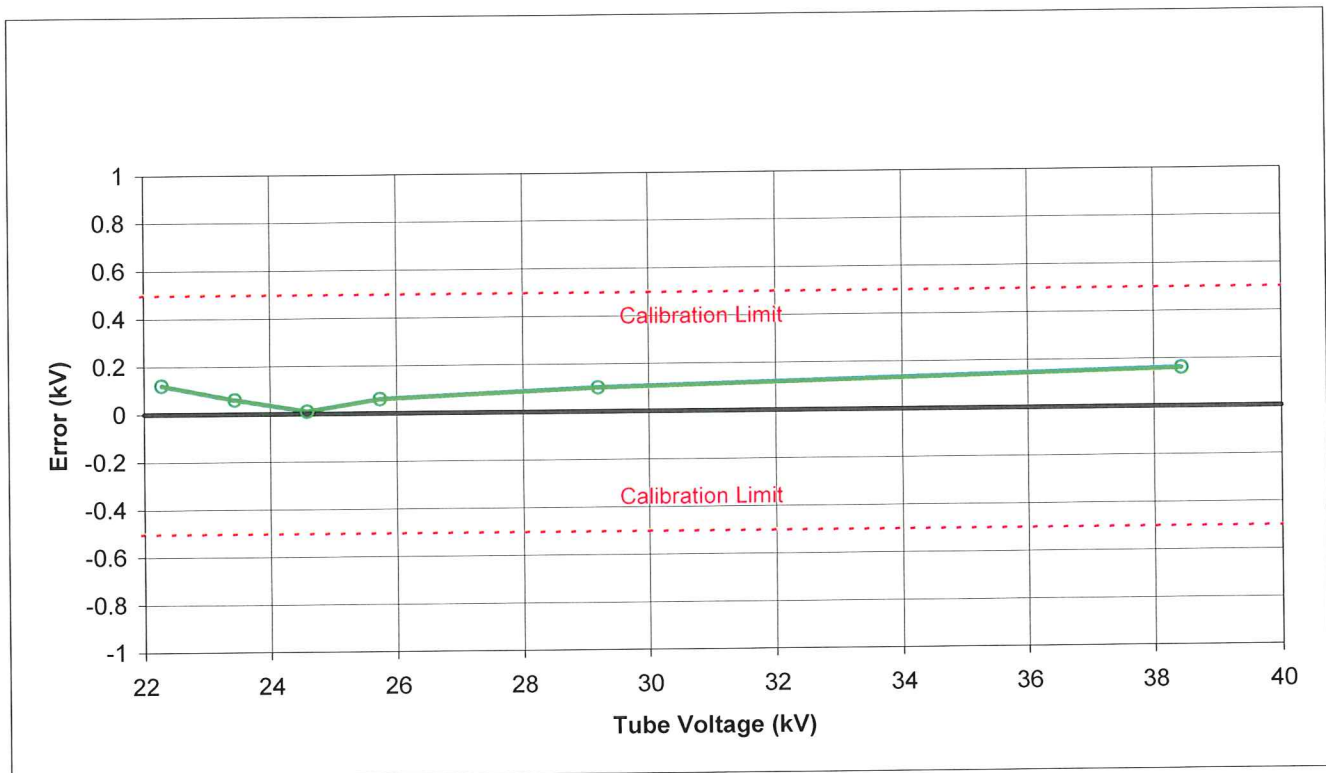
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Service No: S95719

Date: November 9, 2009

AccukV 40X9-MO Mammographic Sensor 49-0039
Calibration Error (kV) vs. Tube Voltage (kV)
30 μ m Mo Total Filtration



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Fax: (626) 357-8863

Service No: S95719

Date: November 9, 2009

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: 21%

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

Measurement Results

AccukV 40X12-W Diagnostic Sensor calibration

EMED 2 Values 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
41.4	41.4 kV	-0.03 kV	-0.1%	Pass
59.9	60.0 kV	0.07 kV	0.1%	Pass
70.2	70.2 kV	-0.02 kV	0.0%	Pass
86.6	86.6 kV	0.03 kV	0.0%	Pass
97.8	97.8 kV	-0.02 kV	0.0%	Pass
152.6	152.7 kV	0.08 kV	0.1%	Pass

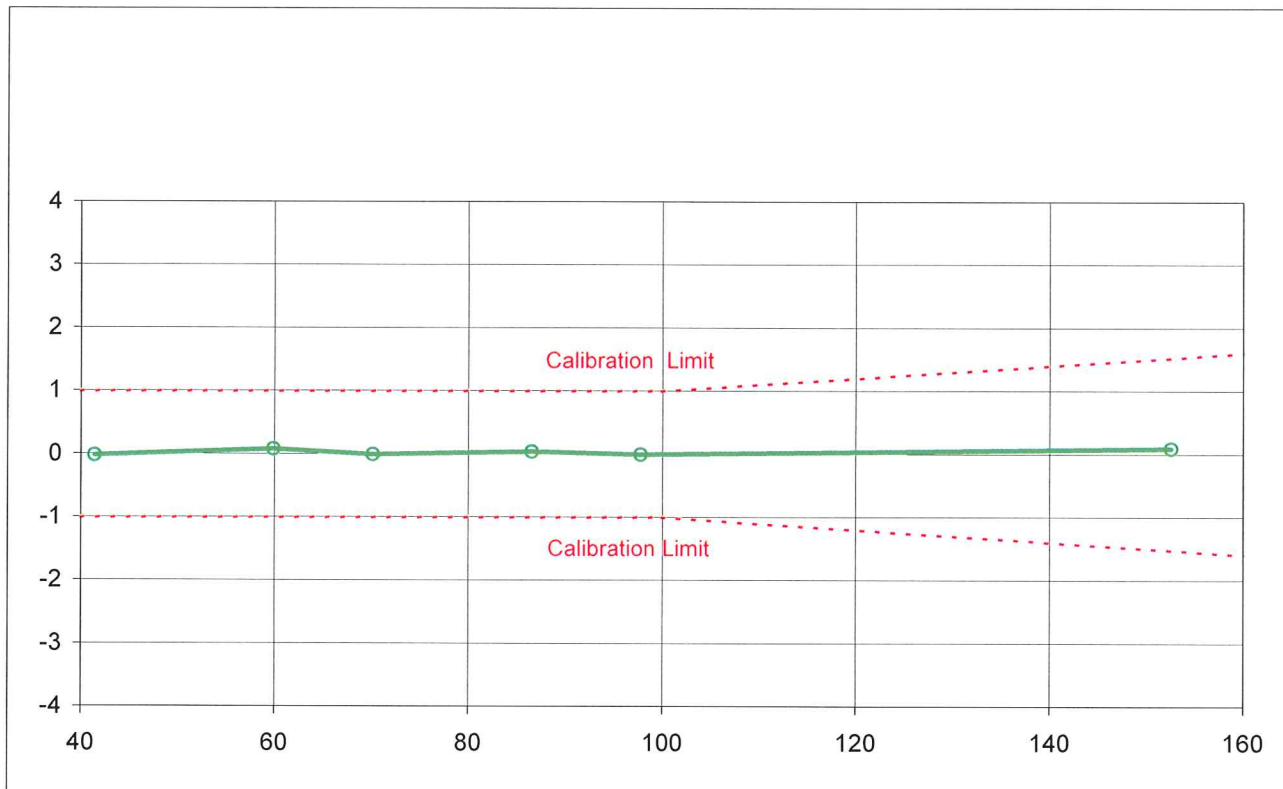
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Service No: S95719

Date: November 9, 2009

AccukV 40X12-W Diagnostic Sensor 52-0113
Calibration Error (kV) vs. Tube Voltage (kV)
2.89 mm Al HVL at 70kV



Radcal Corporation

426 W. Duarte Rd.
Monrovia, CA 91016
Tel: (626) 357-7921
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Initial Cal Report

Service No: S95719**Date:** October 27, 2009**Equipment Description**

Accu-kV Diagnostic Sensor
Control Unit

Model

40X12-W
9096

S/N

52-0113
96-0594

Conditions of Measurement

Temperature: 24 °C

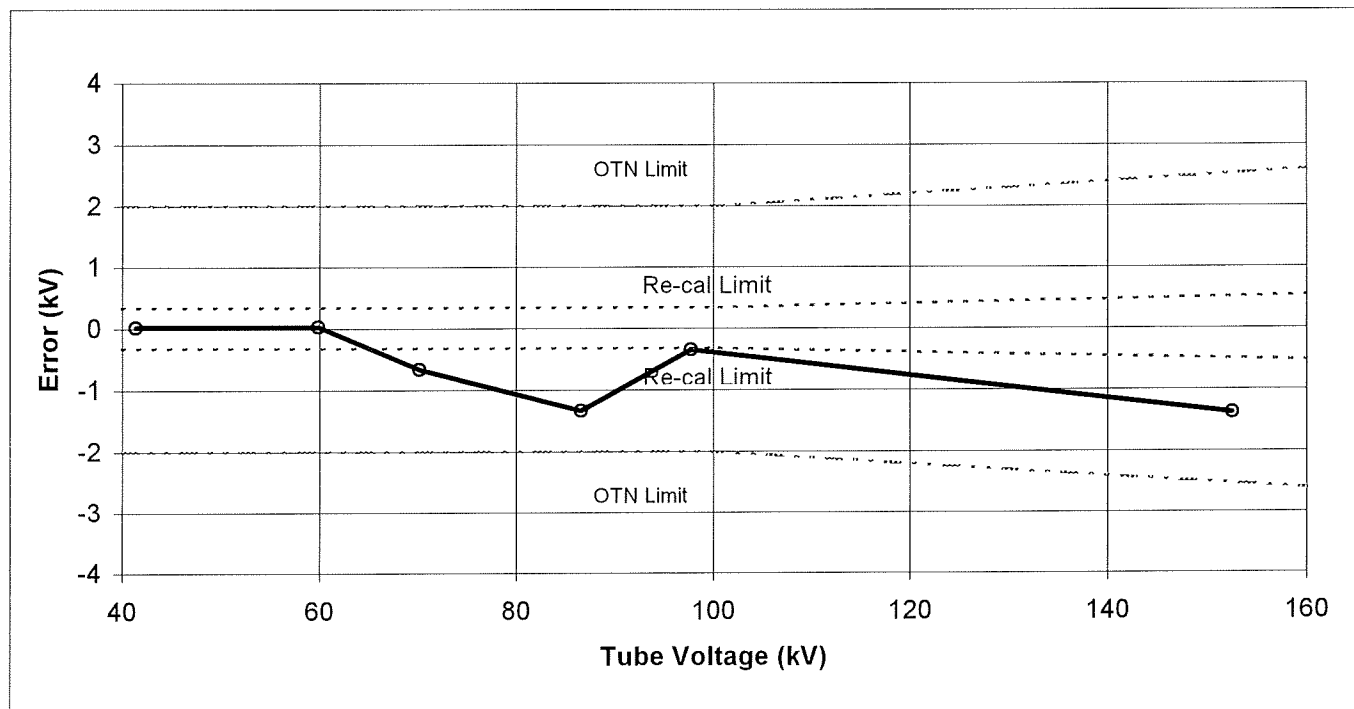
Humidity: 28%

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

Measurement Results**EMED 2 Values**

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

Dynalyzer kV	Accu kV kVAvg	Error	Error %	Action
41.4	41.4 kV	0.02 kV	0.0%	Pass
59.9	59.9 kV	0.03 kV	0.1%	Pass
70.2	69.5 kV	-0.66 kV	-0.9%	Recal
86.5	85.2 kV	-1.33 kV	-1.5%	Recal
97.7	97.4 kV	-0.35 kV	-0.4%	Recal
152.6	151.2 kV	-1.37 kV	-0.9%	Recal

AccukV 40X12-W Diagnostic Sensor 52-0113**Calibration Error (kV) vs. Tube Voltage (kV)****2.89 mm Al HVL at 70kV**

Radcal Corporation
 426 W. Duarte Rd.
 Monrovia, CA 91016
 Tel: (626) 357-7921
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Initial Calibration

Service No: S95719
Date: October 28, 2009

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-MO	49-0740
Control Unit	4085	45-0574

Conditions of Measurement

Temperature: 24 °C

Humidity: 25%

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

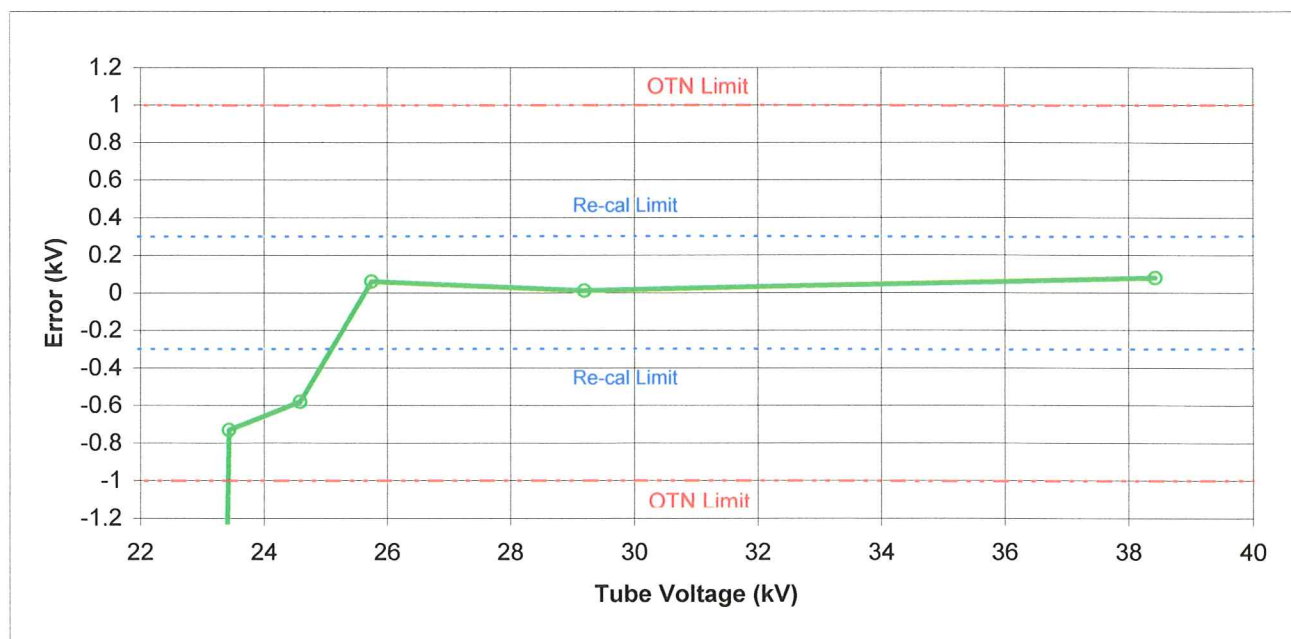
Measurement Results

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

Invasive kV	Accu kV kVAvg	Error		Status
22.27 kV	0.00 kV	-22.27 kV	-100.00%	Replace
23.43 kV	22.70 kV	-0.73 kV	-3.12%	Recal
24.58 kV	24.00 kV	-0.58 kV	-2.36%	Recal
25.74 kV	25.80 kV	0.06 kV	0.23%	Pass
29.19 kV	29.20 kV	0.01 kV	0.03%	Pass
38.42 kV	38.50 kV	0.08 kV	0.21%	Pass

Generate OTN

AccukV 40X9-MO Mammographic Sensor 49-0740
Calibration Error (kV) vs. Tube Voltage (kV)
30 µm Mo Total Filtration



Radcal Corporation

Report on Calibration

Report Number 7133

Page 1 of 2

INSTRUMENT SUBMITTED BY Upstate Medical Physics
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As Left Calibration

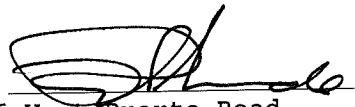
IDENTIFICATION

Model 9096 Radiation Monitor S/N: 96-0064
with Model 9660 Converter S/N: 01-2115
with Model 10X6-6M Ion Chamber S/N: 04-0257

The test results listed below are believed to have an overall accuracy of $\pm 5\%$ at the 95% confidence level. All measurements have been made to a precision of $< \pm 2\%$. For unsealed ion chambers, the results have been normalized to one standard atmosphere and 22.0° Celsius. Temperature and pressure corrections were applied to all readings.

The exposure at the calibration position was determined by an NIST-Calibrated three terminal ion chamber which was corrected for ambient temperature and pressure. NIST reports DG 8639/87 and DG 8640/87 identify the chambers used.

Calibrated on November 9, 2009

By 
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Radcal Corporation

Report on Calibration

Report Number 7133

Page 2 of 2

Calibration Data

Chamber Model	S/N	Beam Code	Tube Potential (kVp)	First HVL (mm Al)	Homogeneity Coefficient (1)	Correction Factor (2)	Approx Exp Rate (R/min)	Distance (cm)
10X6-6M	04-0257	M30	30	0.36	0.63	1.00	14.3	50


Ambient Temperature 23.0°C
Ambient Pressure 1000 mb

Chamber Polarizing Voltage
At Chamber 274 V

Notes:

- (1) - Homogeneity Coefficient = First HVL / Second HVL
- (2) - Correction Factor =
(True Exposure/Test Instrument Reading) X Chamber Multiplication Factor.
- 3 - The ion chamber instrument stem was oriented perpendicular to the beam direction.
- 4 - All measurements, unless otherwise noted, were performed in integrate mode.
- 5 - The electrometer readout unit has been tested in exposure and exposure rate modes over its entire operating range utilizing standard current sources. It was found to meet or exceed the manufacturer's specifications.

Calibrated on November 9, 2009

By 
426 West Duarte Road
Monrovia, California 91016
Phone: (626) 357-7921
FAX: (626) 357-8863

Certificate of Conformance

Ref No.: 19106

Issued to

Upstate Medical Physics
7867 Parish Road
Victor NY 14564

Identification

MODEL 9096 ACCU-PRO CONTROL UNIT S/N 96-0064

MODEL 9660 ION CHAMBER DIGITIZER S/N 01-1088

MODEL 10X6-6M ION CHAMBER S/N 04-0257


MODEL 10X6-6 ION CHAMBER S/N 03-0246

The equipment identified above has been calibrated and tested using production acceptance procedure , Radcal Quality Manual PP1007, Radcal Policy and Procedure PP1038, PI1045, PI1055, and other related documents. These test procedures are designed to ensure that the tested equipment meets or exceeds all aspects of Radcal's published product specifications. The equipment has been found to conform in all respects.

All measurements performed during the acceptance 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: 31-Dec-07

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Report No: 19106

Certificate of Conformance

Issued To: Upstate Medical Physics
7867 Parish Road
Victor NY 14564

Equipment Description	Model	S/N
Accu-kV Diagnostic Sensor	40X12-W	52-0113

The equipment identified above has been calibrated and tested using Radcal calibration and acceptance procedure A4087108, 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: 31-Dec-2007

By: 
Authorized Reviewer

Radcal Corporation

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Tel: (626) 357-7921
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Report No: 19588

Certificate of Conformance

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7867 Parish Road
Victor NY 14564

Equipment Description	Model	S/N
Accu-kV Mammographic Sensor	40X9-M	49-0740

The equipment identified above has been calibrated and tested using Radcal production acceptance procedure A4087109, 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: May 15, 2008

By: 
Authorized Reviewer