



HPNW
HEALTH PHYSICS NORTHWEST

August 10, 2021

Jarrold Parasma
President
Protech Medical
1360 North Killian Drive, Suite 2
Lake Park, Florida 33403

Dear Jarrod:

Enclosed are the attenuation and lead equivalency results for the angio glove that was received by Health Physics Northwest on February 26, 2021. At your request, all tests were conducted in accordance with IEC 61331-1 Edition 2.0 2014-05, using an inverse broad beam geometry. All of this testing was performed at our office following the calibration of our ion-chamber and installation of a new X-ray generator.

If you have any questions or need any additional information, please contact our office.

Sincerely,

Matt Brien, BS
Medical Physicist

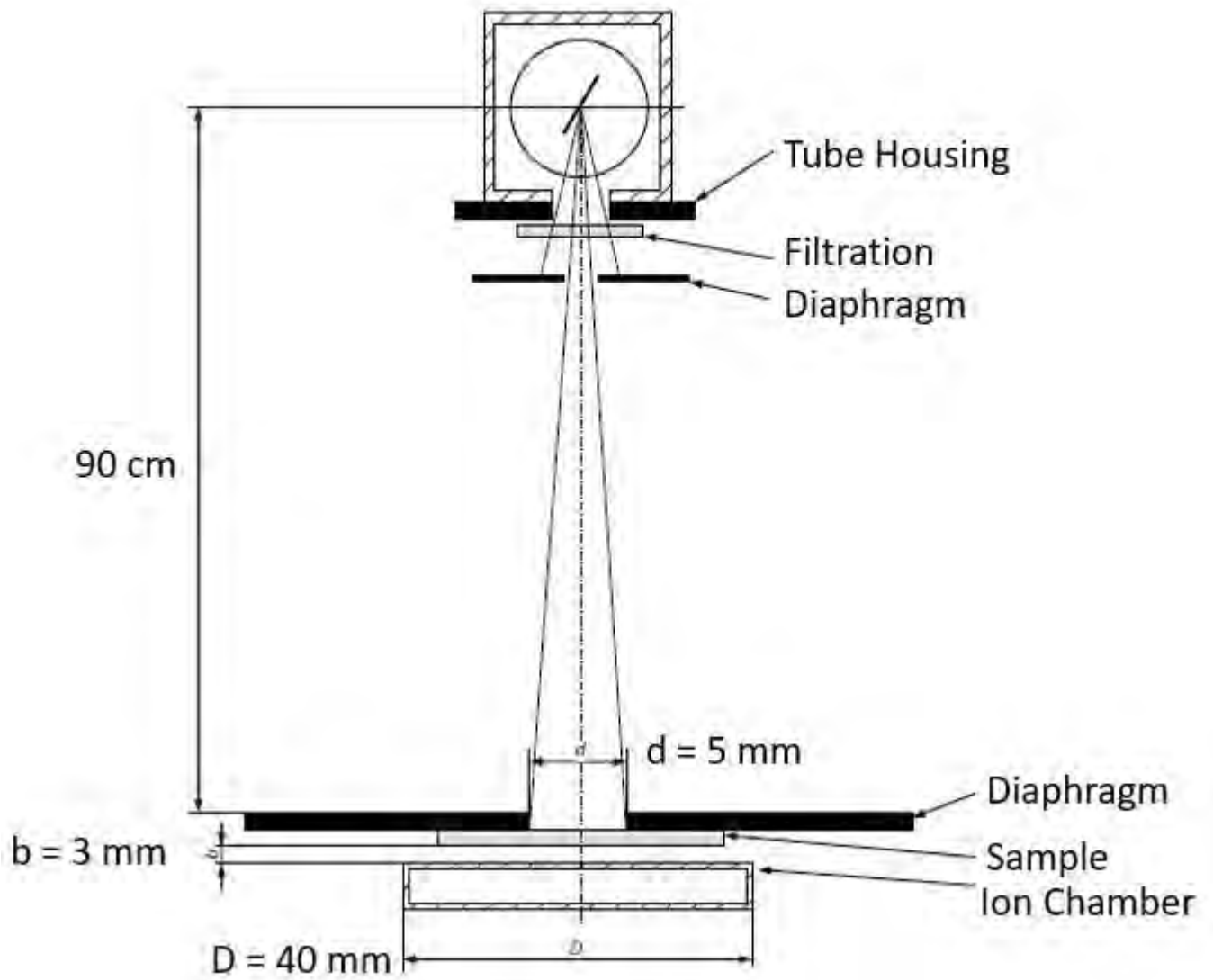
Encl.

Test Report

- 1.) Name and address of laboratory (and location of performed tests):
Health Physics Northwest
7525 SE Lake Road
Milwaukie, Oregon 97267
- 2.) Unique identification of test report:
Report 104
- 3.) Name and address of customer:
Protech Medical
1360 North Killian Drive, Suite 2
Lake Park, Florida 33403
- 4.) Identification of the methods used:
 - IEC 61331-1: Edition 2.0 2014-05
 - Inverse Broad Beam Condition
- 5.) Description of, condition of, and unambiguous identification of the tested items:
 - **Angio Glove**
 - Labeled as 0.5 mm lead equivalent
 - Right Middle Finger and Right Palm (Palm Side)
 - 1 Layer
- 6.) Date of receipt of all test items:
February 26, 2021
- 7.) Date of testing:
August 10, 2021 (testing was performed following the calibration of our ion-chamber and installation of a new X-ray generator)
- 8.) Dates of calibration of equipment used for this testing:
 - March 5, 2021 – Unfors RaySafe X2 R/F Sensor (used to measure and kV and half-value layer)
 - April 26, 2021 – Fluke ion-chamber (used to measure exposure)
- 9.) Identification of person authorizing the test report:
Jarrod Parasmo, Protech Medical

Test Report

Measuring arrangement with an inverse broad beam condition (IEC 61331-1: 2014-05)
Not Drawn to Scale



Test Report

Radiation Qualities and Signal to Noise Condition (IEC 61331-1: 2014-05)

X-ray Tube Voltage	Measured X-ray Tube Voltage	First Half-Value Layer	Signal to Noise Condition
59 kV	60.0 kV	2.11 mm Al	Pass
79 kV	79.7 kV	2.80 mm Al	Pass
100 kV	100.3 kV	3.48 mm Al	Pass
120 kV	119.5 kV	4.17 mm Al	Pass
150 kV	148.4 kV	5.14 mm Al	Pass

Test 1: Angio Glove – Middle Finger:

Attenuation Ratio	606.80:	inverse broad beam	60 kV	HVL = 2.11 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.52*:	inverse broad beam	60 kV	HVL = 2.11 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	66.80:	inverse broad beam	80 kV	HVL = 2.80 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.49:	inverse broad beam	80 kV	HVL = 2.80 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	30.56:	inverse broad beam	100 kV	HVL = 3.48 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.49:	inverse broad beam	100 kV	HVL = 3.48 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	23.39:	inverse broad beam	120 kV	HVL = 4.17 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.50:	inverse broad beam	120 kV	HVL = 4.17 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	17.04:	inverse broad beam	148 kV	HVL = 5.14 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.51:	inverse broad beam	148 kV	HVL = 5.14 mm Al	IEC 61331-1: 2014-05

Test 2: Angio Glove - Palm:

Attenuation Ratio	1076.11:	inverse broad beam	60 kV	HVL = 2.11 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.61*:	inverse broad beam	60 kV	HVL = 2.11 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	77.02:	inverse broad beam	80 kV	HVL = 2.80 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.52:	inverse broad beam	80 kV	HVL = 2.80 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	33.78:	inverse broad beam	100 kV	HVL = 3.48 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.51:	inverse broad beam	100 kV	HVL = 3.48 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	25.25:	inverse broad beam	120 kV	HVL = 4.17 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.52:	inverse broad beam	120 kV	HVL = 4.17 mm Al	IEC 61331-1: 2014-05
Attenuation Ratio	17.69:	inverse broad beam	148 kV	HVL = 5.14 mm Al	IEC 61331-1: 2014-05
Lead Equivalent	0.52:	inverse broad beam	148 kV	HVL = 5.14 mm Al	IEC 61331-1: 2014-05

*These samples attenuate more than 99.5% of X-rays produced at this tube potential. This approaches the limits for accurately determining lead equivalency. The percent error for determining lead equivalency under these conditions is significantly higher than the percent error for samples with lower attenuation.