

## Ionizing Radiation, IAEA (International Atomic Energy Agency)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Reference Standard used in calibration			
Quantity	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage factor	Level of Confidence	Is the expanded uncertainty a relative one?	Reference standard	Source of traceability	NMI Internal Service Identifier	Comments
Absorbed dose to water rate	Secondary standard ionization chamber	Calibration against a transfer standard in a water phantom	2.0E-04	2.00E-02	Gy s <sup>-1</sup>	Co-60	IAEA TRS-398	1	%	2	not specified	Yes	Secondary standard ionization chamber NE-2561	BIPM	IAEA-RAD 1001	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	2.0E-04	2.00E-02	Gy s <sup>-1</sup>	Co-60	IAEA TRS-277	0.8	%	2	not specified	Yes	Secondary standard ionization chamber NE-2561	BIPM	IAEA-RAD 1002	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	2.0E-04	2.0E-03	Gy s <sup>-1</sup>	X-ray, 50 kV to 250 kV	BIPM-CCEMRI, 100 kV to 250 kV	0.8	%	2	not specified	Yes	Secondary standard ionization chamber NE-2561	BIPM	IAEA-RAD 1003	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	4.0E-04	4.0E-03	Gy s <sup>-1</sup>	X-ray, 10 kV to 50 kV	BIPM-CCEMRI, 10 kV to 50 kV	0.8	%	2	not specified	Yes	Secondary standard ionization chamber PTW-23342	BIPM	IAEA-RAD 1004	Approved on 22 February 2007
Reference air kerma rate	Well type ionization chamber	Irradiation with a calibrated Cs-137 brachytherapy low dose rate source	5.0E-08	1.0E-07	Gy s <sup>-1</sup>	Cs-137	CDC1100 and CDCS J5	2.4	%	2	not specified	Yes	Cs-137 brachytherapy gamma ray source	NIST	IAEA-RAD 1005	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a secondary standard free in air	1.0E-04	7.0E-04	Gy s <sup>-1</sup>	X-ray, 23 kV to 35 kV	IEC 61267, Mammography, Mo beams	1.6	%	2	not specified	Yes	Secondary standard ionization chamber Radcal 14772	PTB	IAEA-RAD 1006	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a secondary standard free in air	1.0E-04	7.0E-03	Gy s <sup>-1</sup>	X-ray, 25 kV to 40 kV	IEC 61267, Mammography, Rh beams	1.2	%	2	not specified	Yes	Secondary standard ionization chamber Radcal 1472	NIST	IAEA-RAD 1007	Approved on 22 February 2007
Air kerma rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	6.0E-07	3.0E-06	Gy s <sup>-1</sup>	X-ray	ISO 403, Narrow spectrum series, 40 kV to 300 kV	1.2	%	2	not specified	Yes	Secondary standard ionization chamber LS-01	PTB	IAEA-RAD 1008	Approved on 22 February 2007

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Air kerma rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	2.00E-07	2.00E-06	Gy s <sup>-1</sup>	Cs-137	ISO 4037	0.8	%	2	not specified	Yes	Secondary standard ionization chamber LS-01	BIPM	IAEA-RAD 1009	Approved on 22 February 2007
Air kerma	Secondary standard ionization chamber	Calibration against a transfer standard free in air	1.5E-08	1.5E-07	Gy s <sup>-1</sup>	Co-60	ISO 4037	0.8	%	2	not specified	Yes	Secondary standard ionization chamber LS-01	BIPM	IAEA-RAD 1010	Approved on 22 February 2007
Ambient dose equivalent rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	6.0E-07	3.0E-06	Gy s <sup>-1</sup>	X-ray	ISO 4037-1, 3 m, Narrow spectrum series, 40 kV to 300 kV	3.1	%	2	not specified	Yes	Secondary standard ionization chamber HS-01	PTB	IAEA-RAD 1011	Approved on 22 February 2007
Ambient dose equivalent rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	2.00E-07	2.00E-06	Sv h <sup>-1</sup>	Cs-137	ISO 4037	1.2	%	2	not specified	Yes	Secondary standard ionization chamber HS-01	BIPM	IAEA-RAD 1012	Approved on 22 February 2007
Ambient dose equivalent rate	Secondary standard ionization chamber	Calibration against a transfer standard free in air	1.5E-08	1.5E-07	Sv h <sup>-1</sup>	Co-60	ISO 4037	1.2	%	2	not specified	Yes	Secondary standard ionization chamber HS-01	BIPM	IAEA-RAD 1013	Approved on 22 February 2007