Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

KCDB

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
RADIOACTIVITY																
Activity per unit mass	Single nuclide solution	Liquid scintillation counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	H-3	tritiated water, glass ampoule	2.0	%	2	~ 95%	Yes	4P-LS-BP-00-00-TD, LSC-TDCR counter, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2001	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	Liquid scintillation counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	P-32	glass ampoule	5.0	%	2	~ 95%	Yes	4P-LS-BP-00-00-TD, LSC-TDCR counter, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2002	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	Liquid scintillation counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Ni-63	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-LS-BP-00-00-TD, LSC-TDCR counter, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2003	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	Liquid scintillation counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Sr-89	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-LS-BP-00-00-TD, LSC-TDCR counter, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2004	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	Liquid scintillation counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Tl-204	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-LS-BP-00-00-TD, LSC-TDCR counter, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2005	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	LSC counting or 4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Am-241	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-LS-AP-00-00-00 LSC-TDCR counter or 4P-PC-AP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2006	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.99E+05	Bq g^{-1}	Co-60	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2007	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Mn-54	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2008	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Zn-65	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2009	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Se-75	solution, glass ampoule	7.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2010	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Ag-110m	solution, glass ampoule	8.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2011	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	I-131	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2012	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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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
Activity per unit mass	Single nuclide solution	Ionization chamber, balance	1.00E+05	4.00E+07	Bq g-1	I-131	solution, glass vial	3.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2012	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Ba-133	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2013	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Cs-134	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2014	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Cs-137	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2015	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Ce-139	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2016	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+05	Bq g^{-1}	Eu-152	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP/XR/AE/CE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2017	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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**
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Yb-169	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2018	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+03	Bq g^{-1}	Ir-192	solution, glass ampoule	2.0	%	2	~ 95%	Yes	4P-PC-BP/XR/AE/CE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2019	Approved on 10 September 2013
Surface emission rate per solid angle	Single nuclide solid source	2π sr proportional counter	1.00E+02	1.00E+04	s^{-1}	Sr-90/Y-90	point source	4.0	%	2	~ 95%	Yes	2P-PC-BP-00-00-00, 2piPC counter	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2020	Approved on 10 September 2013
Surface emission rate per solid angle	Single nuclide solid source	2π sr proportional counter	1.00E+02	8.00E+04	s^{-1}	Sr-90/Y-90	surface source; disc, diameter of 10 mm to 50 mm; rectangular 100 mm X 100 mm, 100 mm x 150 mm	6.0	%	2	~ 95%	Yes	2P-PC-BP-00-00-00, 2piPC counter	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2021	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Co-60	point source	3.5	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2022	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Ba-133	point source	3.5	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, NaI(Tl)crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2023	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Cs-134	point source	3.5	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2024	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Cs-137	point source	3.5	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2025	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Eu-152	point source	3.5	%	2	~ 95%	Yes	4P-PC-BP/XR/AE/CE-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2026	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	4.00E+03	4.00E+05	Bq	Am-241	point source	3.5	%	2	~ 95%	Yes	4P-PC-AP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2027	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Co-60	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2028	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Ba-133	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2029	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Cs-134	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2030	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Cs-137	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2031	Approved on 10 September 2013
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Eu-152	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-BP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2032	Approved on 10 September 2013

Ionizing Radiation, Romania, IFIN-HH ("Horia Hulubei" National Institute of Research and Development for Physics and Nuclear Engineering)

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**
Activity	Single nuclide solid source	4πPC-γ coincidence counting, NaI(Tl) counting, balance	1.00E+02	5.00E+03	Bq	Am-241	solid source, cylinder, water equivalent, diameter 73 mm, height 40 mm, mass 170 g	5.0	%	2	~ 95%	Yes	4P-PC-AP-NA-GR-CO, 4piPC-g system, NaI(Tl) crystal, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2033	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+04	Bq g^{-1}	Co-57	solution, glass ampoule	2.5	%	2	~ 95%	Yes	4P-PC-XR/AE-NA-GR-CO, 4piPC-g system, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2034	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	4πPC-γ coincidence counting, balance	4.00E+03	8.00E+04	Bq g^{-1}	Tc-99m	solution, glass ampoule	3.0	%	2	~ 95%	Yes	4P-PC-CE-NA-XR-CO, 4piPC-g system and UA-00-00-GH-GR-00, HPGe spectrometer, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2035	Approved on 10 September 2013
Activity per unit mass	Single nuclide solution	Ionization chamber, balance	1.00E+05	4.00E+07	Bq g^{-1}	Tc-99m	solution, glass ampoule	3.5	%	2	~ 95%	Yes	4P-PC-CE-NA-XR-CO, 4piPC-g system and UA-00-00-GH-GR-00, HPGe spectrometer, standard balance	IFIN-HH, National Institute of Metrology (NMI) for balance	EUR-RAD-IFIN-HH-2036	Approved on 10 September 2013