Ionizing Radiation, Argentina, CNEA (National Commission of Atomic Energy)

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**	**Comments**	**NMI Internal Service Identifier**
RADIOACTIVITY																
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (CIEMAT/NIST), balance	1.0E-01	1.0E+05	Bq g^{-1}	Sr-89	glass ampoule	1.0	%	2	~95%	Yes	Liquid-scintillation counting (CIEMAT/NIST), weight set	NIST (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2014
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Na-22	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2015
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Cr-51	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2016
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Mn-54	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2017
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Co-57	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2018
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Co-60	point source, active diameter < 5 mm	1.6	%	2	~95%	Yes	4π(PPC)$\beta-\gamma$ coincidence counting system	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2019
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Se-75	point source, active diameter < 5 mm	3.8	%	2	~95%	Yes	4π(PC)$\beta-\gamma$ coincidence counting system	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2020
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Sr-85	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2021
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Y-88	point source, active diameter < 5 mm	3.3	%	2	~95%	Yes	Gamma ray spectrometer	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2022
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Cd-109	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2023
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Sn-113	point source, active diameter < 5 mm	2.5	%	2	~95%	Yes	Gamma ray spectrometer	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2024
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Ba-133	point source, active diameter < 5 mm	2.5	%	2	~95%	Yes	4π(PC)$\beta-\gamma$ coincidence counting	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2025

Ionizing Radiation, Argentina, CNEA (National Commission of Atomic Energy)

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	Comments	NMI Internal Service Identifier
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Cs-134	point source, active diameter < 5 mm	2.2	%	2	~95%	Yes	4π(PC)$\beta-\gamma$ coincidence counting	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2026
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Cs-137	point source, active diameter < 5 mm	1.9	%	2	~95%	Yes	4π(PC)-γ coincidence efficiency tracer counting	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2027
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Eu-152	point source, active diameter < 5 mm	4.2	%	2	~95%	Yes	4π(PC)$\beta-\gamma$ coincidence counting	CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2028
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Eu-154	point source, active diameter < 5 mm	3.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2029
Activity	Solid, single-radionuclide source	Germanium spectrometer	1.0E+02	2.0E+05	Bq	Am-241	point source, active diameter < 5 mm	4.0	%	2	~95%	Yes	Gamma ray spectrometer	LNE-LNHB	Approved on 10 October 2013	SIM-RAD-CNEA-2030
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	Ga-67	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2084
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	Tc-99m	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2085
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	In-111	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2086
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	I-131	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2087
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	Sm-153	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2088
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	Lu-177	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2089
Activity	Solution, single-radionuclide source	Ionization chamber dose calibrator	1.0E+07	4.0E+10	Bq	Tl-201	5 mL in LMR vials	4	%	2	~95%	Yes	Gamma ray spectrometer (efficiency curve)	LNE-LNHB, CNEA-LMR	Approved on 10 October 2013	SIM-RAD-CNEA-2090

Ionizing Radiation, Argentina, CNEA (National Commission of Atomic Energy)

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	Comments	NMI Internal Service Identifier
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PC)$-γ coincidence counting; balance	1.0E+02	1.0E+06	Bq g^{-1}	Cs-134	acid solution	1.0	%	2	~95%	Yes	$4\pi(PC)$-γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2092
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PC)$–γ coincidence efficiency tracer counting, balance	1.0E+02	1.0E+06	Bq g^{-1}	Cs-137	acid solution	1.3	%	2	~95%	Yes	$4\pi(PC)$–γ coincidence efficiency tracer counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2093
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PC)$–γ coincidence counting, balance	1.0E+02	1.0E+06	Bq g^{-1}	Se-75	acid solution	3.0	%	2	~95%	Yes	$4\pi(PC)$–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2094
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PC)$–γ coincidence counting, balance	1.0E+02	1.0E+06	Bq g^{-1}	Ba-133	acid solution	1.7	%	2	~95%	Yes	$4\pi(PC)$–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2096
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PPC)$–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Co-58	acid solution	1.8	%	2	~95%	Yes	$4\pi(PPC)$–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2097
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PPC)$–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Eu-152	acid solution	3.4	%	2	~95%	Yes	$4\pi(PPC)$–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2098
Activity per unit mass	Solution, single-radionuclide source	Defined solid-angle (Silicon ion implanted detector)	1.0E+02	1.0E+06	Bq g^{-1}	Pu-238	point source	1.0	%	2	~95%	Yes	Defined-solid-angle counter with alpha detector	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2099
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (CIEMAT/NIST), balance	1.0E-01	1.0E+05	Bq g^{-1}	Co-60	glass ampoule	0.6	%	2	~95%	Yes	Liquid-scintillation counting (CIEMAT/NIST), weight set	NIST (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2101
Activity per unit mass	Solution, single-radionuclide source	$4\pi(PPC)$-γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Co-60	acid solution	0.6	%	2	~95%	Yes	$4\pi(PPC)$-γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2102
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (CIEMAT/NIST), balance	1.0E-01	1.0E+05	Bq g^{-1}	P-32	glass ampoule	1.9	%	2	~95%	Yes	Liquid-scintillation counting (CIEMAT/NIST), weight set	NIST (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2103

Ionizing Radiation, Argentina, CNEA (National Commission of Atomic Energy)

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	Comments	NMI Internal Service Identifier
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (CIEMAT/NIST), balance	1.0E-01	1.0E+05	Bq g^{-1}	Tl-204	glass ampoule	0.8	%	2	~95%	Yes	Liquid-scintillation counting (CIEMAT/NIST), weight set	NIST (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2104
Activity per unit mass	Solution, single-radionuclide source	4π(PC)–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Zn-65	acid solution	0.8	%	2	~95%	Yes	4π(PPC)–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2105
Activity per unit mass	Solution, single-radionuclide source	4π(PC)–γ coincidence counting, balance	1.0E+02	1.0E+06	Bq g^{-1}	Ho-166m	acid solution	5.1	%	2	~95%	Yes	4π(PPC)–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2106
Activity per unit mass	Solution, single-radionuclide source	4π(PPC)-γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Ir-192	acid solution	0.9	%	2	~95%	Yes	4π(PPC)-γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2107
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (TDCR), balance	1.0E+03	2.0E+05	Bq g^{-1}	Fe-55	glass ampoule	2	%	2	~95 %	Yes	Liquid-scintillation counting (TDCR), weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2110
Activity per unit mass	Solution, single-radionuclide source	4π(PPC)–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Ge-68/Ga-68	acid solution	1.0	%	2	~95 %	Yes	4π(PPC)β–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2122
Activity per unit mass	Solution, single-radionuclide source	4π(PPC)–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	I-131	acid solution	0.7	%	2	~95 %	Yes	4π(PPC)β–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2134
Activity per unit mass	Solution, single-radionuclide source	4π(PPC)–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Cs-137	acid solution	1.5	%	2	~95 %	Yes	4π(PPC)β–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2137
Activity per unit mass	Solution, single-radionuclide source	4π(PPC)–γ coincidence counting, balance	3.0E+02	3.0E+06	Bq g^{-1}	Am-241	acid solution	0.8	%	2	~95 %	Yes	4π(PPC)β–γ coincidence counting, weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2162
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (TDCR), balance	1.0E+03	2.0E+05	Bq g^{-1}	Co-60	glass ampoule	1	%	2	~95 %	Yes	Liquid-scintillation counting (TDCR), weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2174

Ionizing Radiation, Argentina, CNEA (National Commission of Atomic Energy)

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	Comments	NMI Internal Service Identifier
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (TDCR), balance	1.0E+03	2.0E+05	Bq g^{-1}	Ge-68/Ga-68	glass ampoule	1	%	2	~95 %	Yes	Liquid-scintillation counting (TDCR), weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2177
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (TDCR), balance	1.0E+03	2.0E+05	Bq g^{-1}	Sr-90/Y-90	glass ampoule	1	%	2	~95 %	Yes	Liquid-scintillation counting (TDCR), weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2179
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (TDCR), balance	1.0E+03	2.0E+05	Bq g^{-1}	Y-90	glass ampoule	0.4	%	2	~95 %	Yes	Liquid-scintillation counting (TDCR), weight set	CNEA-LMR (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2180
Activity per unit mass	Solution, single-radionuclide source	Liquid-scintillation counting (CIEMAT/NIST), balance	1.0E-01	1.0E+05	Bq g^{-1}	Sr-90/Y-90	glass ampoule	0.6	%	2	~95 %	Yes	Liquid-scintillation counting (CIEMAT/NIST), weight set	NIST (Bq), SCS-METAS (g)	Approved on 10 October 2013	SIM-RAD-CNEA-2218