Operation of ISO/IEC 17025 and ISO 17034 requirements (ISO 17034 where applicable,) for the purposes of CIPM MRA.

Modifications and operation of the QMS (approx. 5 pages + Appendices [1]).

0 – Fields covered by the QMS:

Fields and relevant EURAMET Technical committees		*Field covered by the QMS? (Y/N)*	*CMCs published? (Y/N)*	*CMCs in the review process? (Y/N)*	*CMCs in the review process covered by QMS? (Y/N)*
TC-AUV	Acoustics, Ultrasound and Vibration	/	/	/	/
TC-EM	Electricity and Magnetism	/	/	/	/
TC-F	Flow	/	/	/	/
TC-IR	Ionizing Radiation	Y	Y	Y	Y
TC-L	Length	/	/	/	/
TC-M	Mass and Related Quantities	/	/	/	/
TC-MC	Metrology in Chemistry	/	/	/	/
	Metrology in Chemistry (CRM)	/	/	/	/
TC-PR	Photometry and Radiometry	/	/	/	/
TC-T	Thermometry	/	/	/	/
TC-TF	Time and Frequency	/	/	/	/

[1] Appendices, when required, should be as short as possible.

1 – Major extensions and modifications of the quality management system and of the quality manual:

Subject	*Reported information*	*Further comments*
a) Organogram of the NMI (showing key staff [2], their names and their roles). The organogram should be reported in Appendix 1, even if unchanged. Changes should be indicated in the comments.	The organogram is reported in Appendix 1.	Substantial changes in the organization of 2025, with respect to 2024, are listed below: • Massimo Pinto has been appointed new Director, following the retirement of Pierino De Felice; • Two new technicians have been added to the Informatics section, Carlo Di Ianni and Gianluca Cappadozzi; • Alessia Ciccotelli has been appointed as new Dosimetry Coordinator, succeeding Massimo Pinto; • Claudia Silvestri has joined the Electromechanical workshop; • The Low Doses Secondary Standard sections for radiodiagnostics and radioprotection have been merged into one single section named “Low Doses Secondary Standard“, maintaining the same staffpersons. • Luca Carrarelli has been appointed as new Responsible of the Radon Section, succeeding Francesco Cardellini, retired.
b) Quality management system (mechanism, processes and technical requirements). Mention main modifications using Appendix 2 if needed.	The QMS kept the same mechanism, processes and technical requirements of previous years.	ENEA-INMRI maintains direct contact with the Ministry of Enterprises and Made in Italy (MIMIT), which provides financial support to ENEA-INMRI through two ongoing MoU.

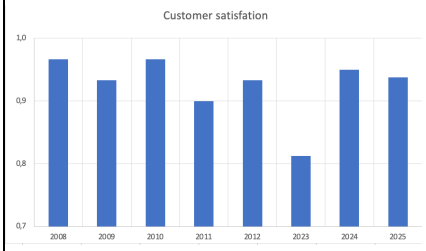
[2] At least Director, Laboratory management and Head of laboratories.

Subject	*Reported information*	*Further comments*
c) Changes and validity of CMCs (published or under review) to be reported here or in Appendix 3: New CMCs (number and technical areas, including the title of corresponding procedures and their application dates). Modified CMCs (number, technical areas). Deleted CMCs (number and technical areas). Greyed out CMCs (number and technical areas). It is assumed that all published CMCs represent services which are valid and available. (see also 6).	New: 3 Modified: 0 Deleted:0	See Appendix3.
d) RM technical procedures If not already reported to TC-Q, please list your general and specific technical procedures concerning certification or your production of RMs (titles in English and dates of approval; use Appendix 4 if needed). If you have already reported it, please refer to the document where it was reported.	Not Applicable.	/

2 – Operation of the quality management system (also covering production of reference materials, if applicable):

Subject	*Reported information*	*Further comments*
a) Approximate number of total calibration and measurement certificates (do not include verification certificates) and number of certificates issued with CIPM MRA logo during the year.	During 2025 INMRI issued 81 calibration certificates, divided into the following areas: Radon: 19 Dosimetry: 37 Radionuclides: 18	/

Subject	*Reported information*	*Further comments*
	No certificates with logo have been issued.	
b) Customer complaints (number and topic concerned, number resolved), use Appendix 5 if needed.	During 2025 INMRI received 2 Complaints, related to 2 Radon certificates from the same Customer: - the first complaint (NC01/2025) is related to elevated environmental radon background levels caused by excavation work near the laboratory. As a corrective action, an environmental radon monitoring instrument will be purchased; - the second (NC02/2025) is due to incorrect reporting of measurements date.	/
c) Nonconformities of any kind (number and topic concerned, number resolved), use Appendix 5 if needed.	During the 2025 INMRI registered 4 Non-Conformities that arose from internal audits and 2 customer complaints (see previous point). The details of the NCs with the description and the related AC are resumed in Appendix 5.	The details of the NCs arose form internal audits are described below: -NC03/2025 is related to missing customer instruments acceptance checklist; -NC05/2025 is related to another way to perform the certificates verification with respect to the way described in the procedure. Both NCs are due a failure to properly disclose procedures.
d) Outcomes of related corrective actions, report about any improvements, use Appendix 5 if needed.	The Corrective Actions of the 2024 have been closed, except of AC 14/2024. During 2025 have been opened 2 ACs: - the first will improve the environmental control in Radon laboratory purchasing further instruments; - with the second AC, training will improve the staff operating methods.	AC14/2024 (corresponding to NC01 Internal Audit on Radionuclides) related to source certificates with CIPM MRA logo, it will be solved before 2027 after the re-establishment of the INMRI primary standard of alpha/beta extended plane sources emission rate. The details of the AC are resumed in Appendix 5.

Subject	Reported information	Further comments
	During 2025 INMRI received 10 customer satisfaction questionnaires. The average degree of satisfaction is 0,94 on range 0 to 1, against a value 0,95 of last year. It is possible to deduce that the customers of INMRI are satisfied of the service since 2008, maintaining a satisfied index always larger than 0,8.	

QMS Annual Report for year 2025 by Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti (ENEA-INMRI) - Italy	
Document: G-TCQ-TMP-003 Version: 6.0 Approved by: BoD 2024-02-14	

Participation in ILCs/PTs in the reported period:

	Type of ILC/PT	Field/subfield	Pilot lab or provider of ILC/PT	Identification of ILC/PT	Parameters/ range of measurements	Status	Evaluation criterion	Result
EURAMET Project 1676	Pilot study (PS) - ILC	Air kerma and peak tube voltage (kVp) in 4 RQR, 2 RQT and 3 new CCPRQ qualitites with XMMs	STUK: reporting pilot laboratory VSL: coordinating pilot laboratory PTB: linking laboratory	EUR-1676.	K_a rate :1-200 mGy/min Tube voltage: 50-120 kV SDD:80-150 cm F:10 cm ripple<0.1%	In progress	E_n-score≤1	
EURAMET Project 1677	Supplementary comparison (SC) - ILC	Air kerma standards for x-ray imaging (4 RQR qualities)	STUK: reporting pilot laboratory VSL: coordinating pilot laboratory PTB: linking laboratory	EUR-1677 EURAMET. RI(I)-S21	K_a rate :1-200 mGy/min Tube voltage: 50-120 kV SDD:80-150 cm F:10 cm ripple<0.1%	In progress	E_n-score≤1	
EURAMET Project 1678	Supplementary comparison (SC) - ILC	Tube voltage for x-ray imaging (4 RQR qualities)	STUK: reporting pilot laboratory VSL: coordinating pilot laboratory PTB: linking laboratory	EUR-1678 EURAMET. RI(I)-S20	K_a rate :1-200 mGy/min Tube voltage: 50-120 kV SDD:80-150 cm F:10 cm ripple<0.1%	In progress	E_n-score≤1	
-	IAEA-SSDL Comparison	4037, Radiation protection	IAEA	-	Air kerma rate from Cs-137	completed	R=Nk(ENEA)/Nk(IAEA) 0,97<R<1.03	Pass

In March 2026, the Dosimetry - RAKR in Brachytherapy (Ir-192) comparison will be launched within the framework of a EURAMET project.
The neutron comparison for SSDLs under EURADOS has already been scheduled.
The following comparisons are to be defined/scheduled:

- A bilateral comparison in radioprotection dosimetry using Co-60 sources;
- A comparison of surface emission rate, based on the ENEA primary standard or via traceability to another NMI;
- A comparison in activity of Radon concentration in air.

4 – On-site visits by peers as specified by EURAMET TC-Q:

Identification of external audit action	Dates on site/remote	Name of auditor(s) with university titles	Affiliation(s)	Qualifications
-	-	-	-	-

Provide brief information about periodicity and systematics of onsite visits by peers and/or accreditation assessments, including planning for the next year. Please, refer to relevant EURAMET TC-Q projects if applicable.

Within autumn 2027, INMRI will undergo a new Quality System peer review through project TC-Q 1123.
Within autumn 2027, INMRI will undergo a peer review in the fields of Radionuclides and Dosimetry also through project TC-Q 1123.

Confirm that all technical assessors (peer review or accreditation) meet the criteria given in "EURAMET Guide for on-site visits by peers in the framework of CIPM MRA" (G-TCQ-PRC-006) and meet the requirements of Appendix 3 of CIPM MRA-G12 document.

YES

If not, please briefly specify: /

5 – Significant risks, opportunities identified, and changes made during the year:

Risks of 2024	Risks modified in 2025	New risks identified on 2025
The renewal of building T11 (therapy-level dosimetry) is still under a major refurbishment planning process and, once completed, a new therapy-level Co-60 source needs to be installed	In 2025, a company was assigned the task to deliver an executive project to renew the building T11 (therapy-level dosimetry) where a new Co-60 irradiator and source will be later installed. This risk remains OPEN	
Neutron Service suspended because permission to operate was temporarily revoked by the national authority due to necessary improvements in the fire extinguishment system	The neutron building is still not operational. An executive project to re-instate its operation, passing through the necessary authorization, is undergoing. This risk remains OPEN	
Although substantial funding was secured by the MiSE-OPER MoU, this funding can only address the contingencies, leaving still unsolved the problem of long-term base-level funding.	New funding obtained by the Ministry of Enterprises and Made in Italy (MIMIT) to run a second edition of the national ILC program (2025-2026). SOLVED	
Some difficulties persist in the procurement of new equipment, given the tight rules of tenders and contracts that are progressively making acquisitions more complex for the Public Administration in Italy.	During 2025 3 new INMRI staffpersons have been busy assisting in the purchasing process. However, this implied a reduction in their time in the research project or other scientific activities. SOLVED	
The MoU with MISE was extended until 31.10.2025 and acquisitions funded by MiSE are essentially complete. However, to complete the acquisitions that are based on ENEA co-funding, an additional extension of the MoU may be sought.	The MoU with MISE is progressing positively, so that an extension has been approved with a new termination date set to July 31st, 2026. SOLVED	
		Expansion of laboratories through the acquisition of new equipment required re-organisation of some labs. Space became limited but some areas that were once used as electronic storage were made vacant and equipment no longer needed was relocated outside of the radiation controlled area.

Opportunities of 2024	Opportunities modified in 2025	New Opportunities identified in 2025
A new public selection process was advertised in late 2024 for the acquisition of new, permanent research staff for INMRI (8 research scientists, 2 technicians). While selection may take 12 months or more, this will bring the staff of INMRI from the current 19 to almost 30. The opportunity exists that with the injection of new personnel the ENEA-INMRI could expand the activities that were not active in the past (eg. brachytherapy dosimetry, diagnostic radiology dosimetry, beta particles dosimetry, expansion of the intercomparison program), due to staff shortage.	8 research scientists, 2 technicians will be part of INMRI between March and June 2026, this injections of new persons is an opportunity to expand both primary measurement capacities and service, including a consolidation of the CMCs.	
Collaboration in peer-reviews of other institutes' QMS offers the opportunity to mature further experience in this context.	This is a permanent opportunity	
Following purchase of many equipment improvement of measurements methods (including uncertainties) is expected.	A mass spectrometer is a new instrument in the radiochemistry laboratory that can improve the research and services in the radionuclide section.	
Refurbishment of some building and better climatic conditions will improve performance of many methods.	The climatic conditions are stable and controlled.	
Yet another MoU was signed with MIMIT (formerly MISE) for the launch of the second national Program for the Promotion of reliability in measurements of ionizing radiation in Italy, injecting further funds for acquisition of materials and consumables, as well as short-term staff. The Program will span the timeframe 2025-2026.	This opportunity is in progress and the number of registrations is larger (~300) than the partecipations in the previous edition of the program of 2021-2022 (~150).	
		Data management was reviewed. New servers were acquired to expand the data storage capacity and the breadth of the local servers including measurement data (QNAP NAS), versioning with git (GitLab server), financial reporting and planning (Claris FileMaker). A new system to manage the calibration certificates approval and signature processes is being sought.
		Training towards the production of reference materials according to ISO 17034 is being sought through an external provider and will be obtained in the first half of 2026.

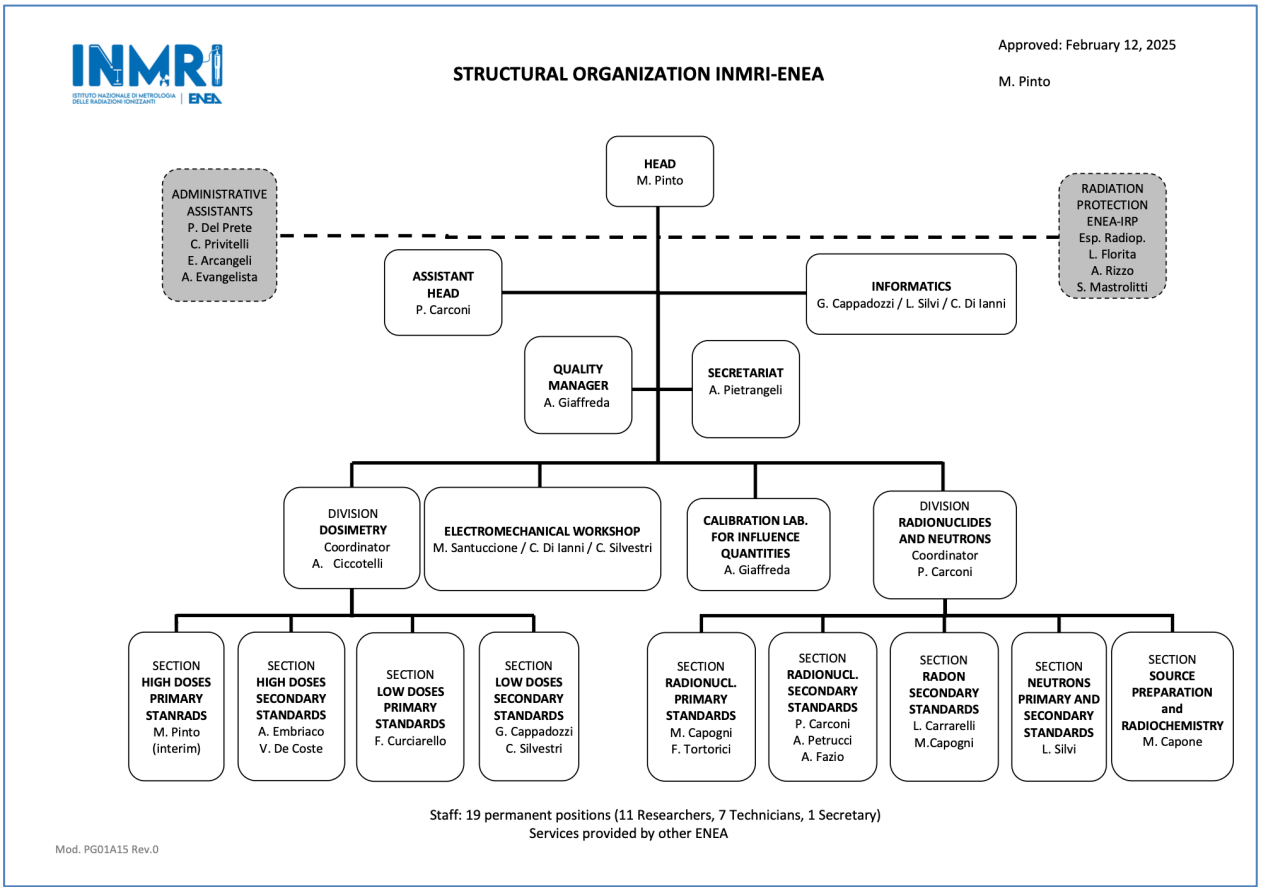
6 – Declaration: All the requirements of ISO/IEC 17025 and ISO 17034 if applicable have been fulfilled in the reported period and all CMCs published by this NMI/DI in the KCDB of the BIPM are valid.

Issued by (person in charge): Alessia Giaffreda-INMRI QM Date: February 22, 2026

Related documents

G-TCQ-PRC-002 Guidelines for QMS annual report

Appendix 1-Structural organization 2025



Appendix 3 – CMC

CMC	CMC Status on KCDB	Procedure Code/Rev/date issue	Title
1) IONIZING RADIATION, DOSIMETRY, Kerma rate, Air, X-ray, 50 kV to 300 kV 2) IONIZING RADIATION, DOSIMETRY, Kerma rate, Air, X-ray, 10 kV to 50 kV	Published on 09/04/2025	PTDOS01 Rev.1 14/01/2025	Calibration of working samples with X radiation (control chambers) in terms of the magnitude of kerma in air rate.
	Published on 09/04/2025	PTDOS02 Rev.1 14/01/2025	Calibration of sample dosimeters with X radiation in terms of the kerma rate magnitude in air and ISO4037 operating quantities.
3) IONIZING RADIATION, RADIOACTIVITY, Activity, liquid, single radionuclide source, F-18, Cu-64, Tc-99m.	Published on 27/07/2025	PTRAN25 Rev.1 22/11/2025	Calibration of radioactive solutions by the NPL-CRC well-type ionization chamber.
4) IONIZING RADIATION, RADIOACTIVITY, Activity, liquid, single radionuclide source, Co-60, Lu-177, I-131, Ho-166, Cu-64	Under review	PTRAN19 Rev.1 22/11/2025	Calibration of low activity standard radioactive sources by HPGe gamma-ray spectrometry.

Appendix 5

N° NC	Source	N° AC	Closed
NC 13/2024	NC06 PEER REVIEW at ENEA: The uncertainty traceability chain	AC 07/2024	yes
NC 16/2024	NC02 Internal Audit on Dosimetry: calibration frequency of dosimetry equipment	AC 10/2024	yes
NC 18/2024	NC01 Internal Audit on Radionuclides: PTRAN21 source certificates without CIPM MRA logo	AC 14/2024	no
NC 01/2025	Complaint on Radon Certificate N° 0086/2025	AC 01/2025	no
NC 02/2025	Complaint on Radon Certificate N° 0099/2025	-	-
NC 03/2025	Missing Checklist of instrument control (Radionuclides section)	AC 02/2025	no
NC 04/2025	Verification of certificates performed in another way respect one described in procedure	AC 02/2025	no