Technical protocol

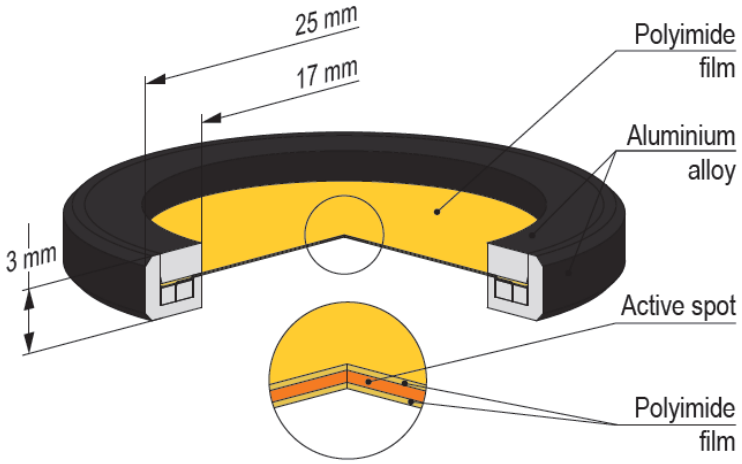
COOMET.RI(II)-S3 of activity measurement in point gamma sources (OSGI) of Co-60, Cs-137, Eu-152

Introduction

The main application of point gamma sources (OSGI) is the calibration of high-resolution gamma spectrometers. These spectrometers are used in the nuclear industry, and for checking the radioactivity content of foodstuffs and the environment – as a consequence, all nuclear sites and independent environmental monitoring laboratories have a set of such instruments.

Sample description

The source design based on thin polyimide films in order to minimize gamma photons absorption. Active spot: < 3 mm. Active spot is sealed between 2 or 4 50 μm thick polyimide films. Sealed films are mounted into aluminum ring with diameter 25 mm and 3 mm high. Approximate activity: 50 kBq.



Measurement

Participants will be required to report activities [in Bq] of Co-60, Cs-137, Eu-152 in the samples. Full uncertainties budged and methods descriptions should be included in the report. Report form will be sent to participants later. Uncertainty estimation shall be performed according to GUM. A reference date of the measurement is set at February 1st, 2023.

Control procedure

After a visual inspection, there should be a wipe test for detecting surface contamination. The surface to be wiped should be not directly the source's surface but the surface of the source package closest to the source itself. Another alternative could be to measure that surface directly in the gamma spectrometer for detecting any surface contamination, when feasible. If contamination is detected, then the sources will be no longer able to be used for the comparison.

Nuclear Data

It is recommended to use the nuclear data from BIPM Monographie BIPM-5.

Time schedule

Distribution of the samples will be in July 2023.

Return of the samples: 1st round – October 2023, 2nd round – March 2024, 3nd round – August 2024, 4nd round – January 2025, 5th round – June 2025

Reporting deadline: 15 September 2025

Draft A distributed: 30 October 2025

VNIIM role

VNIIM will serve as a pilot laboratory. The VNIIM will be responsible for buying the point gamma sources and dispatching them to the participants. VNIIM will prepare the reporting form for the comparison results.

1. Sending to NMI (participant):

- VNIIM will arrange and pay for the customs clearance of the standard on the territory of the Russia, delivery of the standard to the NMI under CPT provisions airport of ZZZZ (specify the big city with international airport), YYYY (specify the country of the NMI) (INCOTERMS 2020).
- NMI will arrange and pay for the customs clearance of the standard on the territory of YYYY (NMI's country), delivery of the standard from the airport to the NMI.

2. Return from the NMI to VNIIM:

- NMI will arrange and pay for the customs clearance of standards on the territory of YYYY (NMI's country), return delivery of standards to VNIIM under CPT provisions airport Pulkovo, St. Petersburg, Russia (INCOTERMS 2020).
- VNIIM will arrange and pay for the customs clearance of the standard on the territory of Russia, delivery of the standard from the airport Pulkovo to the VNIIM.

Participants

List of participants:

N	Country	NMI	Address	Contact person	Contact
1	Russia	D.I. Mendeleyev Institute for Metrology (VNIIM)	190005, Russia, St.Petersburg Moskovsky pr., 19	Grigoriy Zhukov	g.v.zhukov@vniim.ru Office: +7 812 323 96 17 Mob: +7 911 217 1649
2	Belarus	The Belarusian State Institute of Metrology (BelGIM)	220053 Republic of Belarus, Minsk, 93 Starovilensky tract	Yuliya Siutsevich	Siutsevich@belgim.by +375 17 363 50 83
3	Cuba	CENTIS/ The Center of Isotopes	Republic of Cuba, CP 32700, San Jose de las Lajas, Mayabeque, Ave. Monumental y Carretera La Rada, Km 3 1/2	Dr. Pilar Oropesa Verdecia	poropesa@centis.edu.cu Office: +537 682 95 63 Mob: +535 253 84 68
4	Uzbekistan	UzNIM	333 A, Farobiy street, Almarae district, 100174, Tashkent, Republic of Uzbekistan	Azamat Taubaldiev	t.azamat@nim.uz +99893 004-74-81

5	Tajikistan	CBRN SSA (Chemical, biological, radiological and nuclear safety and security)	299/3 Ayni street, 734063, Dushanbe, Tajikistan.	Mr. Bakhtiyor Barotov	b.barotov@cbrn.tj +992372258006 +992937766636
6	Azerbaijan	AzMI (Azerbaijan Institute of Metrlogy)	7th Kondalan str, Elchin Isagzadeh settl, Baku, AZ1029, Republic of Azerbaijan	Shahla Musayeva, Elmar Shahverdiyev	shehla.musayeva@metrology.gov.az Office: +994 12 514 96 05 (140) Mob: +994 51 503 07 79 elmar.shahverdiyev@metrology.gov.az Office: +994 12 514 96 05 (139) Mob: +994 50 313 28 90

Transportation

Participants	Country	Approximate date of shipment to the next participant
1st round		
VNIIM	Russia	October 2023
BelGIM	Belarus	November 2023
VNIIM	Russia	January 2024
2st round		
VNIIM	Russia	March 2024
CBRN SSA	Tajikistan	April 2024
VNIIM	Russia	June 2024
3st round		
VNIIM	Russia	August 2024
AzMI	Azerbaijan	September 2024
VNIIM	Russia	November 2024
4st round		
VNIIM	Russia	January 2025
UzNIM	Uzbekistan	February 2025
VNIIM	Russia	April 2025
5th round		
VNIIM	Russia	June 2025
CENTIS	Cuba	August 2025
VNIIM	Russia	September 2025