

TEST PROFICIENCY OF THE SSDL-ININ-MEXICO FOR THE CALIBRATION AND MEASUREMENT CAPABILITY (CMC) OF REFERENCE AIR KERMA RATE \dot{K}_{RR} IN ^{137}Cs

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Summary

The results of the bilateral comparison between the SSDL-ININ and the SSDL-CPHR (pilot laboratory) demonstrates the competence of the SSDL-ININ for the CMC of the \dot{K}_{RR} for ^{137}Cs . The comparison uses two SI-HDR 1000-Plus series A02423 and A963391 and one PTW 3304 series 154 as transfer chambers; and the LDR ^{137}Cs source, Amersham brand, model CDSM-4 series EB711 with an activity of 1850 MBq at 1996-03-12. The SSDL-CPHR has a field standard SI-HDR 1000-Plus chamber, serial A973052, calibrated at IAEA with traceability to the PTB and the SSDL-ININ has a field standard SI-1000-Plus serial A941755, calibrated at the University of Wisconsin (UW), traceable to the NIST. The \dot{K}_{RR} is determined with the code of practice IAEA TEC-DOC-1274, and its expanded uncertainty $UU(k=2)$ with the BIPM/ISO Guide; and the normalized error EE_{nm} from the ISO17043 that evaluates the proficiency test. The $\frac{RR_{IIIIIIIIII}/CCCCRRR}{RR_{IIIIIIIIII}/CCCCRRR}$ ratio Berguie's average for the calibration coefficients is 1.0001 ± 0.0104 ; and for the three transfer well chambers, the $|EE_{nm}| < 1$ is fulfilled, which implies a satisfactory performance.

Summary of the results for the bilateral comparison ININ-CPHR for \dot{K}_{RR} in ^{137}Cs

We Il Chamber	$\dot{K}_{RR} \pm UU(k=2)$ (Gy/Ah) x 10 ⁵		\dot{K}_{RR}^1 (mGy/h) ± U% (k=2)		$\frac{\Delta}{\%}$ 2	R	E n 4
	ININ	CPHR	ININ (UW/ NIST)	CPHR (IAEA/ PTB)			
A002423	5.078±2 .6%	5.074±2 .6%	96.16± 2.5%	96.08± 2.5%	0 .0 8	1.0 008	0. 02 4
A963391	5.010±2 .6%	5.008±2 .6%	96.16± 2.5%	96.08± 2.5%	0 .0 4	1.0 018	0. 01 5
PTW154	10.435± 2.6%	10.427± 2.6%	96.16± 2.5%	96.08± 2.5%	0 .0 8	1.0 008	0. 02 2
						1.0001±0. 0104	

¹ corrected at 2016 08 15.

² $\Delta\% = (N_{KKRR,IIINNN} / N_{KKRR,CCCCRR}) \cdot 100$