

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV

Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH attests that the calibration laboratory

PTW-Freiburg

**Physikalisch-Technische Werkstätten Dr. Pychlau GmbH
Lörracher Straße 7, 79115 Freiburg**

is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out calibrations in the following fields:

High frequency and radiation quantities

Ionizing radiation and radioactivity

- Dosimetry
- Radiation protection


The accreditation certificate shall only apply in connection with the notice of accreditation of 27.09.2021 with the accreditation number D-K-15059-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 3 pages.

Registration number of the certificate: **D-K -15059-01-00**

Berlin,
27.09.2021

Dr. Heike Manke
Head of Division

Translation issued:
27.09.2021


Head of Division

The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.

<https://www.dakks.de/en/content/accredited-bodies-dakks>

This document is a translation. The definitive version is the original German accreditation certificate.

See notes overleaf.

Deutsche Akkreditierungsstelle GmbH

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The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:

EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.nu

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-15059-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 27.09.2021

Date of issue: 27.09.2021

Holder of certificate:

PTW - Freiburg

**Physikalisch-Technische Werkstätten Dr. Pyslau GmbH
Lörracher Straße 7. 79115 Freiburg im Breisgau**

Calibration in the fields:

High frequency and radiation quantities

Ionizing radiation and radioactivity

- Dosimetry
- Radiation protection

The management system requirements in DIN EN ISO/IEC 17025 are written in language relevant to operations of calibration laboratories and operate generally in accordance with the principles of DIN EN ISO 9001.

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<https://www.dakks.de/en/content/accredited-bodies-dakks>*

Abbreviations used: see last page

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
Dosimetry Air kerma		X-ray tube voltage, radionuclide resp. radiation quality		During gamma radiation indicated dose rates are indications for July 1987, May 2008 and/or April 2014 according to the assigned sources. These are reduced in consequence of the source strength decrease with the appropriate radioactive half- lives and increased if necessary with source change. z ₀ : Phantom surface z ₅ : Phantom depth 5 cm
	5 mGy to 10 Gy	15 kV to 70 kV	2.1 %	
	2 mGy to 10 Gy	70 kV to 280 kV	1.9 %	
	100 µGy to 10 mGy	20 kV to 50 kV (Mammography)	2.5 %	
	100 µGy to 100 mGy	40 kV to 150 kV (RAD)	2.5 %	
	1 µGy to 3 Gy 2 µGy to 5 Gy	¹³⁷ Cs ⁶⁰ Co	1.9 % 1.2 %	
Air kerma rate	50 mGy/min to 500 mGy/min	15 kV to 70 kV	2.1 %	
	20 mGy/min to 500 mGy/min	70 kV to 280 kV	1.9 %	
	200 µGy/s to 50 mGy/s	20 kV to 50 kV (Mammography)	2.5 %	
	5 µGy/s to 50 mGy/s	40 kV to 150 kV (RAD)	2.5 %	
	500 µGy/h to 250 mGy/min	¹³⁷ Cs	1.9 %	
	1 mGy/h to 500 mGy/min	⁶⁰ Co	1.2 %	
Ambient equivalent dose	10 µSv to 2 mSv	30 kV to 300 kV	3.6 %	
	3 mSv to 3 Sv	¹³⁷ Cs	4.6 %	
	2 µSv to 5 Sv	⁶⁰ Co	4.4 %	
Ambient equivalent dose rate	1 mSv/h to 400 mSv/h	30 kV to 300 kV	3.6 %	
	25 mSv/h to 400 mSv/h	¹³⁷ Cs	4.6 %	
	350 µSv/h to 5 mSv/h	¹³⁷ Cs	5.3 %	
	0.5 µSv/h to 10 µSv/h	¹³⁷ Cs	7.5 %	
	500 µSv/h to 12 mSv/h	⁶⁰ Co	4.4 %	
Air kerma length product	700 µGy · cm to 700 mGy · cm	70 kV to 150 kV	2.7%	
Air kerma length product rate	35 µGy · cm/s to 350 mGy · cm/s	70 kV to 150 kV	2.7%	
Absorbed dose to water	10 mGy to 10 Gy	10 kV to 100 kV. z ₀	3.4 %	
	10 mGy to 10 Gy	100 kV to 280 kV. z ₅	2.9 %	
	50 mGy to 5 Gy	⁶⁰ Co. z ₅	1.1 %	
Absorbed dose rate to water	50 mGy/min to 300 mGy/min	10 kV to 100 kV. z ₀	3.4 %	
	50 mGy/min to 300 mGy/min	100 kV to 280 kV. z ₅	2.9 %	
	50 mGy/min to 300 mGy/min	⁶⁰ Co. z ₅	1.1 %	
	> 40 kV to 150 kV		1.2 %	

¹⁾ The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
DC voltage	20 kV bis 40 kV	IEC 61676:2002	1.4 %	For invasive calibration of non-invasive measurement-gadgets
	>40 kV bis 150 kV		1.2 %	

Abbreviations used:

CMC Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)
IEC International Electrotechnical Commission

¹⁾ The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.