

## 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

**Gigahertz-Optik GmbH**  
**An der Kälberweide 12**  
**82299 Türkenfeld**

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out calibrations in the following fields:

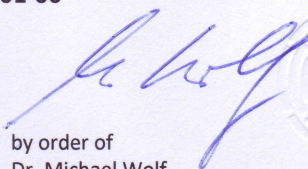
### Optical Quantities

- Radiometry

The accreditation certificate shall only apply in connection with the notice of accreditation of 2010-10-11 with the accreditation number D-K-15047-01 and is valid until 2013-02-28. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 2 pages.

Registration number of the certificate: **D-K-15047-01-00**

Braunschweig, 2010-10-11

  
by order of  
Dr. Michael Wolf  
Head of Division 5





# Deutsche Akkreditierungsstelle GmbH

Office Berlin  
Spittelmarkt 10  
10117 Berlin

Office Frankfurt am Main  
Gartenstraße 6  
60594 Frankfurt am Main

Office Braunschweig  
Bundesallee 100  
38116 Braunschweig

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](http://www.european-accreditation.org)

ILAC: [www.ilac.org](http://www.ilac.org)

IAF: [www.iaf.nu](http://www.iaf.nu)





## Deutsche Akkreditierungsstelle GmbH

### Annex to the Accreditation Certificate D- K-15047-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 2010-10-11 to 2013-02-28

Holder of certificate:

Gigahertz-Optik GmbH  
An der Kälberweide 12  
82299 Türkenfeld

Head: Dipl.-Ing. (FH) Anton Gugg-Helminger

Deputy: Dipl.-Ing. (FH) Stephan Fenk

Accredited since: 1993-06-22

Calibrations in the fields:

**Optical Quantities**

- **Radiometry**



Annex to the accreditation certificate D-K-15047-01-00

Permanent Laboratory

| Measured quantity / Calibration item                  | Range   | Measurement conditions / procedure  | Best measurement capability <sup>1)</sup> | Remarks  |
|---|---|---|---|--|
| Spectral responsivity of photodiodes                  | Wavelength<br>248.3 nm; 265.3 nm;<br>280.4 nm; 289.4 nm;<br>302.2 nm; 313 nm;<br>334.2 nm; 366 nm | $1 \text{ nW/cm}^2 \leq E \leq 10 \text{ }\mu\text{W/cm}^2$<br>$18 \text{ }^\circ\text{C} \leq t \leq 28 \text{ }^\circ\text{C}$<br>$1 \text{ nm} \leq \Delta\lambda \leq 11 \text{ nm}$    | 3 %                                       | Measurement of photocurrent by means of a trans-impedance amplifier with the terminal voltage of the photodiode $U \leq 50 \text{ }\mu\text{V}$ .<br>$E$ = irradiance at the area of the detector<br>$t$ = ambient temperature of the calibration item<br>$\Delta\lambda$ = full width at half maximum       |
| Spectral responsivity as a function of the wavelength | 380 nm to 900 nm<br>steps of 20 nm  | $100 \text{ nW/cm}^2 \leq E \leq 100 \text{ }\mu\text{W/cm}^2$<br>$18 \text{ }^\circ\text{C} \leq t \leq 28 \text{ }^\circ\text{C}$<br>$1 \text{ nm} \leq \Delta\lambda \leq 11 \text{ nm}$ | 2 %                                       |  |
|   | 900 nm to 1040 nm<br>steps of 20 nm   |   | 2.5 %                                     |  |
|   | 1060 nm; 1080 nm;<br>1100 nm  |   | 3 %                                       |  |
|   | 1120 nm; 1140 nm;<br>1160 nm  |   | 4 %                                       |  |
| Spectral irradiance of lamps (thermal radiators)      | $500 \text{ W} \leq P \leq 2000 \text{ W}$  | Wavelength $\lambda$ :  |   | $P$ = electrical power<br>Calibration with source standards traceable to PTB standards at wave lengths equal to those used for the calibration of these standards.<br><br>Calibration with internally calibrated working standards at wavelength equal to those used for the calibration of these standards. |
|   |   | 250 nm  | 10 %                                      |  |
|   |   | 260 nm  | 7 %                                       |  |
|   |   | $270 \text{ nm} \leq \lambda < 400 \text{ nm}$  | 4 %                                       |  |
|   |   | $400 \text{ nm} \leq \lambda < 800 \text{ nm}$  | 3 %                                       |  |
|   |   | $800 \text{ nm} \leq \lambda < 2000 \text{ nm}$   | 4.5 %                                     |  |
|   |   | $2000 \text{ nm} \leq \lambda \leq 2500 \text{ nm}$   | 7 %                                       |  |
|   |   | 250 nm  | 12 %                                      |  |
|   |   | 260 nm  | 8 %                                       |  |
|   |   | $270 \text{ nm} \leq \lambda < 400 \text{ nm}$  | 4.5 %                                     |  |
|   |   | $400 \text{ nm} \leq \lambda < 800 \text{ nm}$  | 3.5 %                                     |  |
|   |   | $800 \text{ nm} \leq \lambda < 2000 \text{ nm}$   | 5.5 %                                     |  |
| $2000 \text{ nm} \leq \lambda \leq 2500 \text{ nm}$   | 8.5 %   |   |   |  |

<sup>1)</sup> The table shows the best measurement capabilities expressed as expanded uncertainties of measurement according to DAKKS-DKD-3 (EA-4/02). The expanded uncertainties of measurement correspond to a coverage probability of 95% and have a coverage factor of  $k = 2$  unless stated otherwise. Uncertainties without unit are relative uncertainties unless stated otherwise.