

UV Calibration, UV Index

Calibration of UV Index sensors regarding their erythemal weighted sensitivity s_d in the sun

GENERAL INFORMATION

Calibration object: sglux UV Index sensors (UV-Cosine-UVI, UV-Surface-UVI, TOCON_E2), costs for other sensors depend on time and material requirement



Calibration references: spectroradiometer Gigahertz BTS2048-UV-S-F, traceable calibrated according to the calibration standard of the National Metrology Institute (PTB)

UV sources: sun, Berlin, Adlershof 52° 26' 16" N , 13° 32' 51" O:
clear sky May - September (UVI>4)
Calibration in winter is possible with additional costs at a measurement station in Malaga (Spain).

Measurement error: 10%

SERVICES

According to ISO 17166, the UV radiation is measured in UV Index values (1 UVI = 25 mW/m²). Those values are required by a convolution of the solar UV radiation ($E(\lambda)$), measured with a spectrometer from 280 nm to 400 nm) and the erythemal action spectrum ($s_{er}(\lambda)$), according to ISO 17166).

$$\text{UV-Index (UVI)} = k_{er} \cdot \int_{280 \text{ nm}}^{400 \text{ nm}} E(\lambda) \cdot s_{er}(\lambda) \cdot d\lambda$$

The calibration service is performed according to DAkkS-DKD-MB-3.

MEASUREMENT INSTRUMENTS

Spectroradiometer: Gigahertz BTS2048-UV-S-F

¹ The measurement error is determined according to „Guide of expression of uncertainty in measurement“ (GUM).