

DIN 5031-11:2011-04 (E)

Optical radiation physics and illuminating engineering - Part 11: Radiometer for measuring actinic radiant quantities - Terms, characteristics and their classification

Contents	Page
Foreword	4
1 Scope	5
2 Normative references	5
3 Terms and definitions.....	5
4 Characteristics and properties	8
4.1 General	8
4.2 Measurands and action spectra	8
4.3 Characteristic of the calibration uncertainty f_{kal}	8
4.4 Lower and upper limits of the measuring range.....	8
4.5 Operating conditions	8
4.6 Uncertainties of measurement	9
4.7 System response to radiation outside the spectral range of the action spectrum.....	9
4.7.1 General	9
4.7.2 Characteristics f_u and f_0 for the response to radiation below or above the action range	9
4.8 Characteristic of the spectral adaptation f_1	10
4.9 Characteristics of the direction-dependent evaluation.....	11
4.9.1 General	11
4.9.2 Characteristic for the irradiance f_2	11
4.9.3 Characteristic for the spatial irradiance $f_{2,0}$	12
4.9.4 Characteristic for the radiance $f_{2,L}^*(\varepsilon, \varphi)$	12
4.10 Characteristic of non-linearity f_3	12
4.10.1 General	12
4.10.2 Measurement.....	12
4.10.3 Identification	13
4.11 Characteristic of the display device f_4	13
4.12 Characteristic of fatigue f_5	14
4.13 Characteristic of temperature dependency f_6	15
4.14 Characteristic for the influence of the radiation modulation f_7	16
4.15 Characteristic for the influence of polarised radiation f_8	16
4.16 Characteristic of unequal local sensitivity f_9	16
4.17 Characteristic of measuring range changeover f_{11}	17
5 Broadband radiometer.....	17
5.1 Structure of a broadband radiometer	17
5.2 Requirements for broadband radiometers	17
5.3 Calibration.....	18
6 Spectral-measuring radiometer (spectroradiometer)	18
6.1 Structure of a spectroradiometer	18
6.2 Characteristics of spectroradiometers.....	18
6.2.1 Useful spectral range	18
6.2.2 Optical characteristics of the spectral apparatus	18
6.2.3 Minimum required measuring time.....	19

6.3	Calculation of the actinic effective radiant quantity X_{act}	19
6.4	Calibration	19
6.5	Requirements for spectroradiometers	19
7	Dosimeter	19
7.1	General	19
7.2	Instrumental dosimeter	20
7.3	Chemical dosimeter	20
7.4	Biological dosimeter	20
7.5	Calibration	21
7.6	Particularities when indicating the characteristics according to Clause 4 for chemical and biological dosimeters	21
8	Classification	22
Annex A (informative)	Determination of the erroneous radiation response	24
Annex B (normative)	Reference spectra	25
Annex C (informative)	Performing integral measurements	67
Annex D (informative)	Performing spectral measurements	68
Bibliography		69