ISO 13653:2019 (E)

Optics and photonics — General optical test methods — Measurement of relative irradiance in the image field

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Quantities, symbols and units

5 Designation

6 Description of measurement procedures

6.1 Factors influencing the relative irradiance
6.1.1 General
6.1.2 Natural fall-off in brightness, Fnat = cos4ωp (cos4 law)
6.1.3 Relative pupil surface, Fp(ωp)
6.1.4 Vignetting, Fvig(ωp)
6.1.5 Influence of the transmission, FT(ωp)
6.1.6 Change in size of the image surface element due to distortion
6.1.7 Resulting relative irradiance
6.2 Classification of the measurement procedures
6.3 Brief description of the irradiance measurement
6.4 Brief description of the radiant power measurement

7 Measurement of relative irradiance

7.1 Description of the measuring set-up
7.1.1 Source of radiation
7.1.2 Test specimen holder
7.1.3 Measuring system
7.1.3.1 General
7.1.3.2 Analysing aperture
7.1.3.3 Filter
7.1.3.4 Radiation detector
7.1.3.5 Auxiliary
7.2 Measurement
7.2.1 Adjustment of the measuring set-up
7.2.2 Spectral region
7.2.3 Determination of measurement value
7.2.4 Selection of image heights and image-space pupil field angles

8 Measurement of radiant power

8.1 Description of the measuring set-up
8.1.1 Source of radiation
8.1.2 Adjusting elements
8.1.3 Measuring system
8.1.3.1 Integrating sphere
8.1.3.2 Radiation detector
8.2 Measurement
8.2.1 Adjustment of the measuring set-up
8.2.1.1 Systems with finite image conjugates

8.2.1.2 Telescopic systems
8.2.2 Spectral region
8.2.3 Determination of the measurement value
8.2.4 Selection of the object-space pupil field angles

9 Presentation of results

9.1 Tabular form
9.2 Graphical representation
9.2.1 Curves of measured values
9.2.2 Curves of equal relative irradiance

10 Test report

11 Examples

11.1 Measurement of relative irradiance by procedure A1 (see Figure 4, Table 4)
11.2 Example of the representation of curves of equal relative irradiance against the image field (see Figure 5)

Page count: 14