ISO 9335:2025-02 (E)

Optics and photonics - Optical transfer function - Principles and procedures of measurement

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Measuring equipment and environment 1
4.1 General aspects 1
4.1.1 Measuring conditions 1
4.1.2 Uncertainty of measurement 1
4.2 Environment 2
4.2.1 General 2
4.2.2 Temperature and humidity control 2
4.2.3 Vibration 2
4.2.4 Electromagnetic disturbances 2
4.3 Measuring equipment 2
4.3.1 Optical mounts 2
4.3.2 Defocusing tolerance 3
4.3.3 Provision of measuring scales 3
4.4 System components 3
4.4.1 General 3
4.4.2 Optical benches 3
4.4.3 Test target unit 4
4.4.4 Mounting of the test specimen 9
4.4.5 Image evaluation system 9
4.4.6 Auxiliary imaging systems 10

5 Measurement procedures 10
5.1 General 10
5.2 Setting the measuring conditions 10
5.2.1 General 10
5.2.2 Environmental conditions 10
5.2.3 Spectral characteristics 11
5.2.4 Angular distribution and aperture considerations 11
5.2.5 Image scale and magnification 11
5.2.6 Focusing 11
5.3 Additional considerations of measurement 12
5.3.1 General 12
5.3.2 Linear range of test specimen 12
5.3.3 Isoplanatic region 12
5.3.4 Fixed pattern noise 12
5.3.5 Analysed area 12
5.3.6 Background radiation 12
5.3.7 Veiling glare 13
5.3.8 Parallelism of image and analysing element 13
5.3.9 Signal-to-noise ratio 13
5.4 Particular measuring conditions 14

5.4.1 Azimuths 14
5.4.2 Selection of image heights or field angles 14
5.4.3 Reference angles of the test specimen 14

6 Corrections to measured data 14
6.1 Normalization 14
6.2 Correction of the frequency scale 14
6.3 Correction of the measured modulation 15
6.4 Auxiliary imaging systems 15

7 Presentation of OTF data 15

7.1 General 15
7.2 Statement of identification and measuring conditions 15
7.3 Graphical presentation of OTF data 16
7.4 Numerical presentation 17

8 Uncertainty checks 17

Annex A (informative) Examples of the presentation of OTF data 19

Bibliography 24