ISO 11554:2025-06 (E)

Optics and photonics - Lasers and laser-related equipment - Test methods for laser beam radiant power, radiant energy and temporal characteristics

Contents

Page

Foreword ... **iv**

Introduction ... **vi**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Symbols and units of measurement ... **2**

5 Measurement principles ... **3**

6 Measurement configuration, test equipment and auxiliary devices ... **3**

6.1 Preparation ... 3

6.1.1 Sources with small divergence angles ... 3

6.1.2 Sources with large divergence angles ... 3

6.1.3 RIN measurement ... 4

6.1.4 Measurement of small signal cut off frequency ... 5

6.2 Control of environmental impacts ... 6

6.3 Detectors ... 6

6.4 Beam-forming optics ... 7

6.5 Optical attenuators ... 7

7 Measurements ... **7**

7.1 General ... 7

7.2 Radiant power of cw lasers ... 7

7.3 Radiant power stability of cw lasers ... 8

7.4 Radiant pulse energy of pulsed lasers ... 8

7.5 Radiant energy stability of pulsed lasers ... 8

7.6 Temporal radiant pulse shape, radiant pulse duration, rise time, fall time and peak radiant power ... 8

7.7 Radiant pulse duration stability ... 8

7.8 Radiant pulse repetition rate ... 8

7.9 Relative intensity noise, RIN ... 9

7.10 Small signal cut-off frequency ... 9

8 Evaluation ... **9**

8.1 General ... 9

8.2 Radiant power of cw lasers ... 10

8.3 Radiant power stability of cw lasers ... 10

8.4 Radiant pulse energy of pulsed lasers ... 10

8.5 Radiant energy stability of pulsed lasers ... 11

8.6 Temporal radiant pulse shape, radiant pulse duration, rise time, fall time and peak radiant power ... 11

8.7 Radiant pulse duration stability ... 13

8.8 Radiant pulse repetition rate ... 13

8.9 Relative intensity noise, RIN ... 13

8.10 Small signal cut-off frequency ... 13

9 Test report ... **13**

Annex A (informative) **Relative intensity noise (RIN)** ... **17**

Bibliography ... **19**