

# ISO 17123-9:2018 (E)

## Optics and optical instruments — Field procedures for testing geodetic and surveying instruments — Part 9: Terrestrial laser scanners

---

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols and subscripts
4.1	Symbols
4.2	Subscripts
5	Requirements and recommendations
6	Test principle
6.1	General
6.2	Procedure 1: Simplified test procedure
6.3	Procedure 2: Full test procedure
7	Simplified test procedure
7.1	Configuration of the test field
7.2	Example 1: Target scan by full dome scan
7.3	Example 2: Two face target scan
7.4	Measurements
7.5	Calculation
7.6	Derivation of a reference quantity for computing permitted deviations
7.6.1	Introduction
7.6.2	Determination of measurement uncertainty of the target centers
7.6.3	Derivation of the permitted deviation for the simple test procedure
7.7	Quantification of measurement deviations and judgement of the instrument for the simple test procedure
7.7.1	Analysis of distance measurements
7.7.2	Remarks on the scale problem
7.7.3	Analysis of further distance differences
8	Full test procedure
8.1	Configuration of the test field
8.2	Measurements
8.3	Calculation
8.4	Statistical tests
8.4.1	General description
8.4.2	Question a)
8.4.3	Question b)
8.5	Derivation of a reference quantity for computing permitted deviation
8.5.1	Determination of measurement uncertainty of the target centre
8.5.2	Derivation of the permitted deviation for the full test procedure
8.6	Quantification of measurement deviations and judgement of the instrument for the full test procedure
Annex A	(informative) Example for the simplified test procedure
A.1	Measurements

- A.2** Calculation
- A.3** Derivation of a reference quantity for computing permitted deviation
- A.4** Quantification of measurement deviations and judgement of the instrument for the simple test procedure

**Annex B (informative) Example for the full test procedure**

- B.1** Measurements
- B.2** Calculation
- B.3** Statistical tests
- B.4** Determination of measurement uncertainty of the target centre
- B.5** Derivation of the permitted deviation for the full test procedure
- B.6** Quantification of measurement deviations and judgement of the instrument for the full test procedure

**Annex C (normative) Example for the calculation of an uncertainty budget of Type B**

- C.1** General idea
- C.2** Procedure for evaluating the uncertainty of a 3D point
- C.3** Example

**Page count: 43**