

ICS 17.040.40

CCS J 42



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 18779.2-2023

Replacing GB/T 18779.2-2004

**Geometrical product specifications (GPS) - Inspection by measurement of workpieces
and measuring equipment - Part 2: Guidance for the estimation of uncertainty in GPS
measurement, in calibration of measuring equipment and in product verification**

Issued on: March 17, 2023

Implemented on: October 1, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface	
Introduction	
1 Scope	1
2 Normative reference documents	1
3 Terms and Definitions	2
4 symbols	3

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is Part 2 of GB/T 18779 "Product Geometric Specification (GPS) Measurement and Inspection of Workpieces and Measuring Equipment".

GB/T 18779 has published the following parts.

- Part 1. Determination rules for passing or failing verification according to specifications;
- Part 2. Guidelines for the evaluation of measurement uncertainty in GPS measurements, measurement equipment calibration and product verification;
- Part 3. Guidelines for reaching consensus on the statement of measurement uncertainty;
- Part 4. Basis for determining functional limits and normative limits in rules;
- Part 5. Inspection uncertainty of indicating measuring instruments;
- Part 6. General rules for acceptance/rejection of instruments and workpieces.

This document replaces GB/T 18779.2-2004 "Technical Specifications for Product Geometric Quantities (GPS) Measurement and Inspection of Workpieces and Measuring Equipment"

Part 2. Guidelines for Uncertainty Assessment of GPS Measurements in Measuring Equipment Calibration and Product Inspection, compared with GB/T 18779.2-2004, except

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) Terms deleted. basic measurement task, expanded uncertainty (of measurement), true

uncertainty (of measurement), conventional true uncertainty (of measurement)

Degree of certainty, approximate uncertainty (of measurement) (see 3.4, 3.6~3.9 of the.2004 edition);

b) Added the term. intermediate measurement task (see 3.5);

Chapter), "evaluation" (estimation) is changed to "evaluation", "measurement results" (see Chapter 1 of the.2004 edition) is changed to "measured results"

(See Chapter 1, consistent with VIM, the original ISO concept is wrong);

d) Added the symbol t and its corresponding description (see Table 1);

e) The safety factor and related parts of the sample standard deviation s_x in Table 2 are deleted (see Table 2 of.2004 version 8.2.2);

f) Changed some descriptions in the main text and appendices.

This document is equivalent to ISO 14253-2:2011 "Product Geometric Specification (GPS) Measurement and Inspection of Workpieces and Measuring Equipment"

Part 2.Guidelines for the evaluation of measurement uncertainty in GPS measurements, measurement equipment calibration and product validation.

This document has made the following minimal editorial changes.

---Incorporated the errata content of ISO 14253-2:2011/Cor.1:2013, the outer margins of the clauses involved are marked with vertical

Straight double lines (||) are marked.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

In order to reduce disputes between suppliers and customers during the acceptance process of workpieces and measuring equipment, reduce the cost of acceptance, and improve the economic efficiency of products

In order to better integrate with international trade rules, my country's acceptance strategies for workpieces and measuring equipment and the rules for determining whether they are qualified or not need to be studied urgently.

formulated.

In order to adapt to my country's reform and opening up situation and meet the needs of international trade, technology and economic exchanges, GB/T 18779 is adopted.

ISO 14253.

GB/T 18779 is a general standard for product geometric specifications (GPS) (see GB/T 20308), which affects the GPS standard matrix model chain link

The 4 links of conformity and non-conformity, measurement, measuring equipment and calibration.

GB/T 18779 applies the basic GPS rules given in GB/T 4249; unless otherwise stated, the default determination rules given in this document

then applies to all GPS files.

GB/T 18779 mainly describes the acceptance strategy and qualification of workpieces and measuring equipment taking into account measurement uncertainty.

For the convenience of readers, GB/T 18779 is divided into six parts. These six parts are both interrelated and related.

They are independent of each other and together constitute the content of the acceptance strategy and qualification determination rules for workpieces and measuring equipment.

---Part 1.Determination rules for verification of qualification or failure according to specifications. Strategies for qualification verification of workpieces or measuring equipment are given; regulations

Default decision rules for verifying compliance according to the GPS specification of the workpiece or measuring equipment taking into account the measurement uncertainty of the measured value.

Then; according to the GPS specification verification, there may be handling situations that can neither be judged as qualified nor judged as unqualified.

---Part 2.Guidelines for the evaluation of measurement uncertainty in GPS measurements, measurement equipment calibration and product verification. it is based on measurement

Guidelines for Uncertainty Expression (GUM) Guidance on the assessment of measurement uncertainty in the GPS field; provides uncertainty management procedures

(PUMA) and a practical iterative approach to measurement uncertainty assessment, as well as meeting specified targets based on measurement uncertainty UE

Certainty UT requirements (i.e. $UE < UT$), evaluate measurement uncertainty, develop or verify (or both) measurement procedures (including measurement strips)

files) and other contents.

---Part 3.Guidelines for reaching consensus on the statement of measurement uncertainty. Specifies customer and supplier resolution of measurement uncertainty tables

It provides a way to resolve existing disputes and reach amicable consensus, and provides a way to resolve disputes regarding the expression of measurement uncertainty and reach

amicable consensus.

Consensus methods and specific operating procedures.

---Part 4.Basis for determining functional limits and normative limits in rules. The main assumptions of the decision rules in Part 1 are outlined and discussed

The reasons why these decision rules should be the default rules are explained, as well as the factors that should be considered before applying different decision rules.

---Part 5.Inspection uncertainty of indicating measuring instruments. Specifies the concepts and terminology for evaluating the uncertainty of test values, providing

A method for evaluating the uncertainty of values detected by indicating measuring instruments.

---Part 6.General rules for acceptance/rejection of instruments and workpieces. It is given that when the default decision rule of Part 1 is in economic terms

This is not the best case decision rule.

Product Geometric Specification (GPS)

Measurement inspection of workpieces and measuring equipment Part 2.

in GPS surveying, measuring equipment calibration and product verification

Guidelines for Estimating Measurement Uncertainty

1 Scope

The "Guidelines for the Expression of Uncertainty in Measurement" (hereinafter referred to as GUM) concept implementation guidelines proposed in this document are applicable to the industry's understanding of the GPS field.

Calibration of measuring standards and measuring equipment within the domain and measurement of GPS characteristics of workpieces. Its purpose is to provide the information needed to complete an uncertainty report

All information, and provide a basis for comparison of measured results and their uncertainties (the relationship between customers and suppliers).

The purpose of this document is to support ISO 14253-1.This document, along with ISO 14253-1, benefits all technical functions within a company

Interpretation of GPS specifications (i.e. tolerances on workpiece properties and maximum permissible errors (MPEs) on metrological properties of measuring equipment).

Based on GUM, a practical iterative procedure for evaluating measurement uncertainty without changing the basic concepts of GUM. Usually in the following situation