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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 22553-2023

Replacing GB/Z 22553-2010

Guidance for the use of repeatability, reproducibility and trueness estimates in measurement uncertainty evaluation

利用重复性、再现性和正确度的估计值评定测量不确定度的指南

(English Translation)

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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 replaces GB/Z 22553-2010 "Guidelines for evaluating measurement uncertainty using estimates of repeatability, reproducibility and correctness" South", compared with GB/Z 22553-2010, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

--- Added methods and steps for evaluating uncertainty using intermediate precision (see Chapter 5, Chapter 7 and Appendix A):

This document is modified to adopt ISO 21748:2017 "Evaluation of measurement

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uncertainty using estimates of repeatability, reproducibility and correctness" guide":

Compared with ISO 21748:2017, this document has made the following structural adjustments:

---Added 5:5 "intermediate precision data":

The technical differences between this document and ISO 21748:2017 and their reasons are as follows:

---Replaced ISO 3354-2 (see Chapter 3) with normatively quoted GB/T 3358.2, and GB/T 6379.2 replaced ISO 5725-2 (See Chapter 1, 5:3:1, 8:1, 8:5:1), GB/T 6379.3 replaces ISO 5725-3 (see Chapter 1, 5:5:2, 8:1), GB/T 6379.6 replaces ISO 5725-6 (see 5.5:3), GB/T 15000.8 replaces ISO Guide 33 (see Chapter 3, 7:2:2:2), in order to adapt to my country's technical conditions and meet the requirements for the preparation of national standards;

---Deleted some terms;

---Added chi2 test description (see 7.3:1), which is a method to verify repeatability when the degree of freedom is unknown;

---Added formula (13) sR = a2 (bm)2 (see 8.5:1), which is the new model given in ISO 5725-2:2019, which provides better fitting and precision Degree change trend, subsequent formula numbers will be postponed;

---Change the content in the terms, changing "real differences in performance between laboratories" to "real differences in performance between laboratories or indoors" (see 14.3):

The following editorial changes have been made to this document:

---Replace ISO 3534-1 with the informative reference GB/T 3358.1, replace ISO 3534-3 with GB/T 3358.3, and replace GB/T 5009.5 Replace ISO 3534-3, GB/T 6379.4 to replace ISO 5725-4, GB/T 6379.5 to replace ISO 5725-5, GB/T 3358.1 Replace ISO 3534-1, GB/T 17989.2 replaces ISO 7870-2, and GB/T 22554 replaces ISO 11095:

---Added notes from GB/T 27025 in 5:1:2 to help understand the basic requirements for measurement uncertainty assessment:

--- Added "intermediate precision data" in the title of 5:2 because this article adds the content of using intermediate precision to evaluate uncertainty:

---Explanation of equation (2) in 5:3:2, correct "u(xi) is the standard uncertainty of x'i" given in the original text 5:3:2 to "u(x'i)---Standard uncertainty of x'i":

---Added the note in 7:2:2:2 "Note 2: Under intermediate precision conditions, represents the standard deviation of experimental conditions sI instead of in equation (5) sL,s2D=s2I s2W nl : "

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---Added the note in 7:2:2:3 "Note 2: Under intermediate precision conditions, represents the experimental condition standard deviation sI instead of sL, s2D=s2I s2 (deltay)/nl: "

--- Added GB/T 17989.2 in brackets 7:4: This standard gives application guidelines for conventional control chart methods:

---Formula (14) in 8:5:1, convert s'R=(a bm) given in the original text s2L s2l s2L s2w Corrected to s'R=(a bm) s2L s2l s2L s2r

---Added 10 comments "Under intermediate precision conditions, sdelta= s2I(TO)-(1-1/n)s2r p' , where p' is the experimental condition group Composite number: "

---A:2:1 adds "Under intermediate precision conditions, sR is regarded as sI(TO), that is, u2(y)=s2I(TO):"

---In A:2:1, "if it is assumed to be under reproducibility conditions" is changed to "if it is assumed to be under reproducibility or intermediate precision measurement conditions":

---In A:2:1, "the sR of the collaborative test is used as an effective basis for the assessment of measurement uncertainty" is changed to "the sR obtained by the collaborative test" and indoor sI(TO) are the effective basis for measurement uncertainty assessment:"

---In A:2:2, "under collaborative testing studies" is changed to "under collaborative testing or intermediate precision studies:"

---In A:2:2, a note was added "Under intermediate precision conditions, see Chapter 10 for the calculation of sdelta:"

---In A:2:3, "sR and u(delta) are under collaborative experimental research: Collaborative experimental research" is changed to "sR or due to synergistic testing or intermediate precision studies in sI(TO) and u(delta)":

---In A:2:3, "First, it is necessary to confirm synergistic testing", changed to "It is necessary to confirm synergistic testing or intermediate precision acquisition Quantitative data":

---In A:2:3, "Repeatability and reproducibility obtained by studying various parts of GB/T 6379" are changed to "Use the repeatability, reproducibility, and intermediate precision obtained by studying various parts of GB/T 6379:"

---In A:3, "Same, before reproducibility evaluation" is changed to "Same, before reproducibility and intermediate precision evaluation:"

---Added Appendix D (informative) "Alternative methods for intermediate precision estimation and examples of uncertainty assessment":

---Added some references:

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