ICS 03.120.30
CCS A 41

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33260.4-2018

Capability of detection -- Part 4: Methodology for comparing the minimum detectable value with a given value

Issued on: June 7, 2018 **Implemented on: January 1, 2019**

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

Table of Contents

Foreword

GB/T 33260 "Detection Capability" is currently divided into the following sections.

--- Part 1. Terminology and definitions;

--- Part 2. Determination of the detection limit of linear calibration cases;

--- Part 3. Method for determining the critical value of the response variable without calibration data;

--- Part 4. Comparison of the minimum detectable value and the given value;

--- Part 5. Determination of the detection limit of nonlinear calibration cases.

This part is the fourth part of GB/T 33260.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the redrafting method to modify the use of ISO 11843-4.2003 "Detection Capability Part 4. Minimum detectable value and given

Comparison method of values. Compared with ISO 11843-4.2003, the main technical changes are as follows.

---About the normative reference documents, this part has made technical adjustments to apply to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory References", and the specific adjustments are as follows.

* Replace ISO 3534-1 with GB/T 3358.1-2009 equivalent to international documents;

* Replace ISO 3534-2.1993 with GB/T 3358.2-2009 equivalent to international documents;

* Replaced ISO 11095.1996 with GB/T 22554-2010 modified with international documents;

* Replaced ISO 11843-1.1997 with GB/T 33260.1-2016 modified with international documents;

* Replace ISO Guide 30.1992 with GB/T 15000.2-1994, which is non-equivalent to the international document.

This part is proposed and managed by the National Statistical Method Application Standardization Technical Committee (SAC/TC21).

This section was drafted by. Beijing University of Technology, China National Institute of Standardization, Hefei Hepu Information Technology Co., Ltd., Xiamen Optimization Technology

Limited company, Qingdao University, Central University of Finance and Economics, Tsinghua University, Hefei Teachers College, Tianjin University, CITIC Daika Co., Ltd.

Drafters of this section, Xie Tianfa, Zhao Jing, Zhang Fan, Li Lili, Wang Chengzhang, Ding Wenxing, Zhao Chao, Wu Gang, Sun Jing, Chen Weili, Shi Liangxing,

Hu Guozhi, Huang Liang, Yan Jianjun.

Introduction

The ideal requirement for the detection capability of a selected state variable is that the actual state of the observing system can be accurately distinguished into the basis.

State or non-base state. However, due to the effects of systematic and random variations, this ideal requirement cannot be met because.

a) In fact, the value of the state variable for all reference states, including the base state, is unknown. Therefore, all states can only

Exactly described by the difference from the underlying state, ie the net state variable.

b) In order to prevent erroneous decisions, it is generally recommended to report only the difference from the underlying state, ie the value of the net state variable.

Note. In GB/T 15000.2-1994 and GB/T 22554-2010, there is no difference between state variables and net state variables. Therefore, neither of these two standards

It is expressly assumed that the state variable of the reference state is known.

c) Calibration and sampling and sample preparation processes to increase the random error of the measurement results.

In this section.

--- When the system is in the basic state, (falsely) the probability that the system is not in

the basic state is alpha;

---When the value of the net state variable is equal to the minimum detectable value xd, (incorrectly) the probability that the system is not in the underlying state is not detected

Is beta.

Detection capability part 4.

Comparison method of minimum detectable value and given value

1 Scope

This part of GB/T 33260 gives no linear calibration curve and residual standard deviation and net in GB/T 33260.2-2018.

An assessment method for the ability to measure the detection ability of a measurement method under the assumption of a specific relationship.

Note. The above assumptions are generally questionable when the value of the net state variable is close to zero.

This section does not estimate the minimum detectable value, but gives.

--- A criterion for determining whether the minimum detectable value is less than a given level of net state variable;

--- Basic experimental design used to verify that the above criteria are met.

For the assessment of the detection capability, it is usually only necessary to confirm that the minimum detectable value of the measurement method is less than the given value. For example, the ability to detect

As part of the verification of the measurement method.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3358.1-2009 Statistical vocabulary and symbols - Part 1. General statistical terms and terms for probabilities

(ISO 3534-1.2006, IDT)

GB/T 3358.2-2009 Statistical vocabulary and symbols - Part 2. Application statistics (ISO 3534-2.2006, IDT)

GB/T 3358.3-2009 Statistical vocabulary and symbols - Part 3. Experimental design (ISO 3534-3..1999, IDT)

GB/T 4882-2001 Statistical processing of data and interpretation of normality test (ISO 5479.1997, IDT)

GB/T 6379.2-2004 Accuracy of measurement methods and results (accuracy and precision) Part 2. Determination of standard measurement

Basic method of repeatability and reproducibility (ISO 5725-2.1994, IDT)

GB/T 15000.2-1994 standard sample working guidelines (2) standard samples commonly used terms and definitions (ISO Guide 30..1992,

NEQ)

GB/T 22554-2010 Linear calibration based on standard samples (ISO 11095.1996, MOD)

GB/T 33260.1-2016 Detection capability Part 1. Terms and definitions (ISO 11843-1.1997, MOD)

3 Terms and definitions

GB/T 3358.1-2009, GB/T 3358.2-2009, GB/T 3358.3-2009, GB/T 4882-2001, GB/T 6379.2-

The terms and definitions defined in.2004, GB/T 22554-2010, GB/T 33260.1-2016 and GB/T 15000.2-1994 apply to this

file.

4.1 Overview

It is assumed that the measurement method is standardized. Regardless of the reference state or the actual state (test sample), all measurements should be used up