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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42555-2023

General requirements for software controlled measuring instruments

计量器具控制软件的通用要求

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Standardization Technical Committee on Measuring Instrument Management (SAC/TC525): This document is drafted by: Beijing Institute of Metrology and Testing Sciences, China Metrology Association, Gold Card Intelligent Group Co:, Ltd:, Zhejiang Cang South Instrument Group Co:, Ltd:, Tianxin Instrument Group Co:, Ltd:, Chengdu Qinchuan Internet of Things Technology Co:, Ltd:, Chongqing Qianwei Watch Industry Co:, Ltd:, Liaoning Sky Technology Co:, Ltd:, Chengdu Andison Measurement Co:, Ltd:, Liaoning Hangyu Xingwulian Instrument Technology Co:, Ltd:, Xintian Technology Co:, Ltd:, Sun Yat-sen University, Hunan Institute of Metrology and Testing, Zhejiang Institute of Metrology, Anhui Institute of Metrology Research Institute, Guangzhou Dabang Intelligent Technology Co:, Ltd: The main drafters of this document: Yang Youtao, Zhang Liang, Ding Yuanming, Zhang Shengyi, Li Xiaoping, Quan Yaqiang, Zuo Minghong, Shi Jianjun, Zhong Xiao, Guan Hongjun, Fei Zhanbo, Wu Jun, Xiang Dehua, Hu Dixin, Li Lian, Liang Bin, Zhou Wandi: General requirements for measuring instrument control software

1 Scope

GB/T 42555-2023 addresses the fact that legal metrology now depends on software. A weighing instrument, a fuel dispenser, an electricity meter or a taximeter used in trade is verified and sealed so that neither party can alter it - but in a modern instrument the quantity displayed has passed through firmware, and the seal on the enclosure says

nothing about whether the code is the code that was approved. The risks are specific: software that can be updated in the field, calculation paths that can be influenced through a communication interface, stored measurement data that can be edited, and the difficulty of separating the legally relevant part of the software from the parts that are not. This document specifies the general requirements for measuring instrument control software and provides guidelines for verifying it - how the legally relevant software is identified, protected against unauthorised change, and checked during type approval and subsequent verification. Under ICS 17.040.30 and CCS A50;A64, it is written for instrument manufacturers, for the metrology institutes carrying out pattern approval and verification, and for the market regulators responsible for instruments used in trade.

This document specifies the general requirements for measuring instrument control software (hereinafter referred to as measuring software), and provides verification guidelines: This document applies to the general requirements for metrology software and the design and planning of the software evaluation process: Specific measuring instruments are based on this document Formulate corresponding measurement software requirements and testing requirements: This document applies only to control software for measuring instruments or their electronics: This document only It stipulates some information security requirements, and pay attention to the relevant national information security requirements when using it:

Note: This document does not completely contain all the technical requirements of some specific control software, these technical requirements have been given in the relevant national standards and technical specifications Out, such as scales, water meters, etc:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

JJF1001 General Metrology Terms and Definitions

3 Terms and Definitions

The following terms and definitions defined in JJF1001 apply to this document: 3:1 audittrail A continuous data file containing time-stamped, event information records:

Note: These events include parameter value changes of a certain device, software upgrades, or other events that may affect metrological characteristics and involve legal metrology management: Behavior: [Source: OIMLV1:2013,6:05] 3:

2 Authentication authentication The (process) activity of checking the disclosed or claimed

identity of a user, process or device:

Note: For example, check whether the downloaded software comes from the holder of the type approval certificate: 3:

3 Authentication resultauthenticity The result of the authentication process (pass or fail): 3:

4 Dedicated module built-for-purposedevice A unit capable of performing a specified metrological performance: 3:5 measuring instrument measuring instrument A device for making measurements, alone or in combination with one or more auxiliary equipment: