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**NATIONAL STANDARD OF THE
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**Digital simulation test for household and similar electrical
appliances - Part 1: General requirements**

家用和类似用途电器数字化仿真试验 第1部分：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.

This document is Part 1 of GB/T 45990 "Digital simulation test methods for household and similar electrical appliances".

The following parts have been published.

- Part 1: General requirements.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Introduction

Digital simulation tests are widely used in all aspects of the life cycle of household and similar electrical appliances.

The simulation, prediction, optimization and control of the process can improve the test efficiency, enhance the design quality of the product, reduce the development cost and shorten the product development cycle.

At the same time, digital simulation test is also an important part of digital twin. Digital twin is a specific target with data connection. The digital expression of the entity, the data connection can ensure the synchronization between the physical state and the virtual state at an appropriate rate and accuracy, in the home appliance industry. The industry will have broad application prospects. Digital simulation provides data support for digital twins and is the foundation and key technology for realizing digital twins.

In the face of the widespread application and technical support needs of digital simulation testing in the home appliance industry, the digital simulation standardization work is particularly important to do.

GB/T 45990 "Digital Simulation Test for Household and Similar Electrical Appliances" aims to guide home appliance companies to build digital simulation test platforms.

The platform can be used to carry out digital simulation tests, thereby reducing the investment in physical prototypes, reducing R&D costs, and quickly evaluating the optimization space of product performance.

time, accelerate the iteration of the product's entire life cycle, and improve the company's market competitiveness.

GB/T 45990 "Digital simulation test for household and similar electrical appliances" is intended to consist of the following parts.

- Part 1: General requirements. The purpose is to describe the application classification of digital simulation test in the home appliance industry and propose software/hardware. It specifies the specific requirements for parts, personnel, test procedures, etc., and standardizes the classification and management of simulation test data. Base.
- Part 2: Temperature field simulation test. The purpose is to standardize the application of temperature simulation in the household appliance industry.
- Part 3: System simulation test. The purpose is to standardize the application of system

simulation in the household appliance industry.

- Part 4: Electromagnetic compatibility simulation test. The purpose is to standardize the application of electromagnetic compatibility simulation in the household appliance industry.
- Part 5: Packaging and transportation simulation test. The purpose is to standardize the application of packaging and transportation simulation in the household appliance industry.
- Part 6: Vibration and noise simulation test. The purpose is to standardize the application of noise simulation in the household appliance industry.

Digital simulation test for household and similar electrical appliances Part 1: General requirements

1 Scope

This document specifies the digital simulation test (hereinafter referred to as "simulation test") for household and similar electrical appliances (hereinafter referred to as "household appliances") It specifies the general requirements of data classification and management, and gives specific classifications.

This document is applicable to the development and application of household appliance simulation tests.

2 Normative references

GB/T 31054

3 Terms and Definitions

The terms and definitions defined in GB/T 31054 and the following apply to this document.

3.1 digital simulation

Use digital models to reproduce specific characteristics or processes in real systems, and study, analyze, and improve real systems through experiments on the models.

Systems that exist or are being designed.

3.2 The process of analysis, prediction and optimization

Use computer simulation to predict the performance of digital model objects or verify the results, so as to realize the model behavior or function.

3.3 confidence level

An indicator that measures the reliability and credibility of data or results, reflecting the

effectiveness of the object being evaluated.

4.1 Classification by subject

Household appliance simulation tests are divided into the following categories according to disciplines.

- Structural mechanics simulation test;
- Fluid mechanics simulation test;
- Kinematic simulation test;
- Thermodynamic simulation test;