

ICS 17.220.20
CCS N 22



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

GB/T 17215.9311-2017

**Electricity metering equipment -- Dependability -- Part 311:
Accelerated reliability testing -- Elevated temperature and
humidity**

(English Translation)

Issued on: December 29, 2017

Implemented on: July 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

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Foreword

GB/T 17215 consists of several parts, of which GB/T 17215.9 "The credibility of electrical measuring equipment" consists of the following components.

- Part 11. General Concepts (GB/T 17215.911);
- Part 21. Collection of on-site instrument credibility data (GB/T 17215.921);
- Part 311. Accelerated reliability test for temperature and humidity (GB/T 17215.9311);

--- Part 321. Durability accelerated test (GB/T 17215.9321);

--- Part 41. Reliability Prediction (GB/T 17215.941);

--- Part 51. Software Trust (GB/T 17215.951).

This part is part 311 of GB/T 17215.9.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the translation method identical to the use of IEC/T R62059-31-1.2008 "Electrical Measurement Equipment Credibility Part 31-1. Temperature and humidity accelerated reliability test." this section made the following editorial changes.

--- Change the standard name to "Electrical Measurement Equipment Reliability Part 311. Accelerated Reliability Test for Temperature and Humidity".

Introduction

The design of electrical measuring equipment requires high reliability and long service life under normal operating conditions and can be performed unattended Work continuously without interruption. Therefore, in order to effectively manage measurement equipment, appropriate methods are used to predict and estimate different types of lifespans.

The levy becomes very important.

GB/T 17215.941 provides a method for predicting the failure rate (assuming a constant) of a metering device based on the component stress method.

This section provides another way to estimate life characteristics by accelerating reliability tests.

In practice, it is not possible to obtain data on the life characteristics by conducting tests under normal operating conditions. Therefore, it should be used Speed reliability test method.

In accelerated reliability testing, samples obtained from a defined population run outside their normal operating conditions by providing Stress is used to shorten the time before failure, but new failure mechanisms cannot be introduced.

The estimation is performed by the following method. by recording and analyzing the product failure under accelerated test conditions, the loss under test conditions is established.

The effect distribution, and the life-stress model, predicts the failure distribution under accelerated test conditions to normal use conditions.

This method provides quantitative results and can be applied to products from different suppliers or the same supplier but different batches Comparison of life characteristics

above.

Electrical measurement equipment credibility Part 311. Accelerated Reliability Tests for Temperature and Humidity

1 Scope

This part of GB/T 17215 provides a method for estimating product life characteristics by accelerating reliability tests.

Acceleration is achieved through increased constant temperature and humidity stress. This method also takes into account the effects of voltage and current changes. others Factors like temperature changes, vibrations, dust, voltage dips and short interruptions, electrostatic discharges, fast transient bursts, surges, etc., although they can affect the life characteristics of the instrument, but did not take into account.

This section applies to all types of electrical energy metering and load control devices in the SAC/TC104 range. This section gives the method can be used to estimate (with a certain degree of confidence) the lifetime characteristics of such equipment before mass production and in batch production. This method is also can be used to compare different design options.

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 version (including all amendments) applies to this document.

GB/T 5080.1-2012 reliability test part 1. test conditions and principles of statistical inspection (IEC 60300-3-5:2001, IDT) GB/T 17215.911-2011 Reliability of electrical measurement equipment Part 11. General concepts (IEC 62059-11:2002, IDT) GB/T 17215.921-2012 Reliability of electrical measurement equipment Part 21. Collection of on-site credibility data (IEC 62059-21:2002, IDT) GB/T 17215.941-2012 Reliability of electrical measurement equipment Part 41. Reliability prediction (IEC 62059-41:2006, IDT) IEC 60050-191:1990 International Electrotechnical Vocabulary, Chapter 191. Credibility and Quality of Service (International Electrotechnical Vocabulary (IEV)-Chapter 191. Dependability and quality of service) IEC 61649:2008 Goodness-of-fit tests of goodness-of-fit tests, confidence intervals, and confidence limits for Weibull distribution data confidenceintervalsandlowerconfidencelimitsforWeibulldistributeddata) IEC 61703:2001 Mathematical expressions of the terms reliability, availability, maintainability and maintenance guarantee (Mathematical expressions Forreliability,availability,maintainabilityandmaintenancesupportterms) IEC 62308Ed.1.0.2006 Equipment reliability assessment method (Equipment reliability-Reliabilityas-Sessmentmethods)