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

GB/T 5080.1-2012

Replacing GB/T 5080.1-1986

**Reliability testing -- Part 1: Test conditions and statistical test
principles**

可靠性试验 第1部分：试验条件和统计检验原理

(English Translation)

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Foreword

GB/T 5080 "reliability test" is divided into six parts.

- Part 1. Test conditions and statistical test principles;
- Part 2. Design of test cycles;
- Part 4. point estimation of exponential distribution case, confidence intervals, prediction intervals and tolerance statistical methods;
- Part 5. test plans for success ratio;
- Part 6. constant failure rate assumption validation;
- Part 7. constant failure rate assumption and the average failure rate under No authentication protocol downtime.

NOTE: The above listed reason for the lack of Part 3, because corresponding to the respective portion of the IEC is the national standard GB/T 7288.1-1987 "reliability test equipment Recommended test test conditions indoor portable equipment simulation "and GB/T 7288.2-1987" Equipment reliability testing - Preferred test strip Member for stationary use in weather protected locations analog. " this section GB/T 5080 Part 1.

This section drafted in accordance with the rules of GB/T 1.1-2009 and GB/T 20000.2-2009 given.

This Part replaces GB/T 5080.1-1986 "Equipment reliability testing - General requirements." this portion of the GB/T 5080.1-1986 compared to the main changes are.

Related Content --- This section needs to be consistent with the IEC standard technical content, but yet there is no corresponding national standard and IEC standard Accurate, and therefore normative references in direct reference to IEC standards;

--- Standard structure of IEC 60300-3-5:2001 structure of GB/T 5080.1-1986 duplicate content integration;

--- Increase the reliability of the contents of comparative tests (see 5.3);

--- Increased redundancy failure content products (see 7.2.2.3);

--- Increasing the test data of content (see Chapter 8);

--- Increasing the content of statistical tools and methods of analysis (see Chapter 9);

--- Increase the contents of two informative appendices (see Appendices A, B);

--- Delete the contents of GB/T 5080.1-1986 Chapter 13;

--- Delete the contents of GB/T 5080.1-1986 Appendix A.

This section uses the translation method is equivalent to using IEC 60300-3-5:2001 "Dependability management - Part 3-5. Application guide Reliability Test conditions and statistical test principles "(in English).

Consistency correspondence with international standards in this section of the referenced our national standards are as follows.

--- GB/T 5080.5-200 x reliability test plans for success ratio test (IEC 61123:1991, IDT)

--- GB/T 5080.7-200 x reliability tests for constant failure rate and constant failure intensity verification test (IEC 61124.

1997, IDT)

--- GB/T 5081-200 x credibility field data collection (IEC 60300-3-2:1993, IDT)

--- GB/T 7829-200 x Fault Tree Analysis (FTA) programs (IEC 61025:1990, IDT) Above the national standard it has been in revision.

This part of IEC 60300-3-5:2001 compared to the presence of differences are as follows.

--- Increase in the normative references in GB/T 7288 (all parts) references.

--- This section 3.1 "Terms and Definitions" Article ID editorial changes were made that since the IEC 60300-3-5:2001 3.1.6 determination test and 3.1.8 estimation test two terms in

Chinese is a term "Test" and set Meaning is the same, therefore 3.1.6 Test determination test merge them part of the cost/estimation test. This section 3.1 "Terms and Definitions" Article number 3.1.8 - 3.1.41 correspond to IEC 60300-3-5:2001 3.1 Terms and definitions Article number 3.1.9 - 3.1.42.

--- Increasing the GB/T 9414 (all parts), GB/T 15174-1994 and IEC 61704 in the standard literature references.

This part is proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This part of the National Electrical Electronic Product Reliability and Maintainability Standardization Technical Committee (SAC/TC24) centralized.

This section drafted by. Ministry of Information Industry Institute of Electronics V and, Beijing Aeronautical Technology Research Center.

Introduction

This section GB/T 5080 is related to the reliability of the test conditions, as well as data for the product to be repaired or not repaired product reliability test points Statistical analysis tools Guidelines for the application.

This section is an appropriate choice of test conditions and statistical analysis applicable standards guidelines. This section also test the reliability of the design, implementation General guidelines and data processing. The use of this section, the user can design a specific reliability testing, implementation and data analysis option Choose appropriate and necessary for a variety of other criteria.

Therefore, this section relates to the processing constant and non-constant failure intensity and failure rates, as well as others such as success/failure rate measured statistics tool.

This section applies to some environmental conditions, working conditions and use with standard statistical methods.

Reliability Test

Part 1. The test conditions and statistical test principles

1 Scope

Analysis of experimental data provide guidelines GB/T 5080 This section of the reliability test design, implementation and use of statistical methods.

This section explains the testing involves the repair of products and do not repair the product, and test whether the product has a failure rate or constant failure intensity.

This section applies to.

- When reliability test according to the requirements of the contract, express or implied;
- When designing reliability test;
- Reliability test period;
- When reliability test data analysis and preparation of reliability test report.

When the contract or the protocol specifies the use of statistical methods in the national standard, but does not specify a particular reference standards, this section also apply.

In the development of design verification, during a new product, design finalized, the need for different tests. The purpose of these tests is to find products in the design flaws and eliminate these defects, thereby improving product performance, quality, security, robustness, reliability, availability, While reducing costs. Guide Although the test conditions, test design and test documentation, etc. are applicable to most of the tests, but this is only part the method involves the use of statistical analysis of the content of the test data.

Although this section of usability testing, maintainability testing and reliability growth testing is discussed, but because they are a very important theory Title, so they have a more detailed description in the respective standard. Usability test (see GB/T 15647-1995), maintainability test (see GB/T 9414 (all parts)), reliability growth testing (see GB/T 15174-1994, IEC 61164:1995).

This section does not include software testing (see IEC 61704), but this section applies contains hardware and software products. Therefore, this section Suitable for a very wide range of products, which includes civilian, industrial, military and aerospace products. This section contains a validated assay, than and comparing the success rate/failure rate assessment analysis, and gives a reliability test data statistical processing flow guide in Chapter 9 Chart.

While not part of the environmental testing, accelerated step stress test and stress test had been described in detail, but some of the practices and statistics Tools can be used for these tests.

2 Normative references

The following documents for the application of this document is essential. Where dated references, only the dated edition applies to this document.

Who does not note date reference documents, the latest edition (including any amendments) applies to this document.

GB/T 2421 ~ 2424 (all parts), electric and electronic products environmental testing (IEC 60068 (all parts)) GB/T 2900.13-2008 Electrotechnical terminology credibility and quality of service (IEC 60050 (191).1990, IDT) GB/T 5080.2-2012 reliability testing - Part 2. Test cycle design (IEC 605-2:1994, IDT) Point and interval estimation method GB/T 5080.4-1985