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

GB/T 15174-2017

Replacing GB/T 15174-1994

Programmes for reliability growth

可靠性增长大纲

(English Translation)

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Foreword

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

This standard replaces GB/T 15174-1994 "reliability growth program." Compared with GB/T 15174-1994, the main technical changes are as follows.

--- Added some terms and definitions (see Chapter 3);

--- Increasing the product development phase, the experimental phase, the reliability of the

design phase of the basic concepts of growth (see Chapter 4);

--- Increased the design phase of the procedures and processes, labor and expenses part of the content (see Chapter 5);

--- Increased reliability and reliability of the concept of synthesis and review of the design phase of the reliability of growth activities to confirm the reliability of the experimental phase of growth the contents of the chapter of the activity, and the contents of chapters 7, 8, 9 and 10 of the 1994 edition are given in chapter 6 for more detail (see Chapter 6);

--- Part 6 of Chapter 7 of the 1994 version will be added to Chapter 6, an increase of field reliability growth part of the content (see Chapter 6);

--- Removed Appendix A (see the 1994 edition of Appendix A).

This standard uses the translation method identical with IEC 61014:2003 "reliability growth program." the documents of our country that are consistent with the corresponding international documents that are normative references in this standard are as follows.

--- GB/T 5080.2-2012 Reliability testing Part 2 Design of test cycles (IEC 60605-2:1994, IDT);

Credibility management - Part 1. Credibility management (IEC 60300-1:1993, IDT);

--- GB/T 7288 (all parts) Equipment reliability test Recommended test conditions [IEC 60605-3 (all parts)];

System Reliability Analysis Techniques Failure Modes and Effects Analysis (FMEA) Procedures (IEC 60812-1).

2006, IDT);

--- GB/T 7828-1987 Design Review (IEC 61160:2005, NEQ);

GB/T 7829-1987 Fault Tree Analysis Program (IEC 61025:2006, NEQ).

This standard compared with IEC 61014:2003, made the following editorial changes.

--- 6.4.3 The last paragraph quoted Weibull analysis standard IEC 60605-4, there is a reference error, modified in this standard Weibull Analyze standard IEC 61649, meanwhile, add Weibull analysis standard IEC 61649 in normative references of this standard;

--- In Figure 8, in all conditions after the judgment box to add "yes" and "no" to determine the answer;

--- In Figure 10, with reference to GB/T 15174-1994, an increase of the legend in the title of the figure.

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

This standard by the National Electrical and Electronic Product Reliability and Maintenance of Standardization Technical Committee (SAC/TC24) centralized.

This standard was drafted Unit.Electronics Fifth Institute of Ministry of Industry and Information Technology, Beijing Aeronautical Engineering Technology Research Center, Wuhu Bao Information Industry Technology Research Institute Co., Ltd., Peking University.

1 Scope

This standard specifies the requirements and guidelines for exposure and exclusion of weak links in hardware and software products in order to achieve the purpose of increasing reliability.

This standard applies when the product specification requirements for equipment (electronic, mechanical, hardware and software) to increase the reliability of the outline or known design if it is impossible to meet the requirements without improvement.

The main contents of this standard include basic concepts, management, planning, testing (laboratory and field tests), failure analysis and improvement techniques. in order to After estimating the level of reliability achieved after growth, the mathematical model is also briefly outlined.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 5080.1-2012 reliability test Part 1. Test conditions and statistical test principle (IEC 60300-3-5:2001, IDT) IEC 60300-1 Credibility Management Part 1. Dependability management - Part 1.

Dependabilitymanagementsystems) IEC 60300-2, Credibility management - Part 2. Dependability management - Part 2.

Guidance fordependabilityprogrammemanagement) IEC 60300-3-1, Credibility Management, Part 3-1. Application Guidelines, Credibility Analysis Techniques, Methodology Guidance (Dependability) management-Part 3-1. Applicationguide-Analysistechniquesfordependability-Guidelinemethodology) IEC 60605-2 equipment reliability test period design (Equipmentreliabilitytesting-Part 2: Designof testcycles IEC 60605-3 (all parts) Equipment reliability test Recommended test conditions (Equipmentreliabilitytesting-Part

3 Preferred test conditions)

IEC 60812 System Reliability Analysis Technology Failure Mode and Effects Analysis (FMEA) procedures (Analysis techniques for system reliability-Procedure for failure mode and effects analysis (FMEA)) IEC 61025 Fault Tree Analysis Program [Fault tree analysis (FTA)] IEC 61160 Design Review (Formal design review) IEC 61164 reliability growth statistics test and estimation method (Reliability growth-Statistical test and estimation methods IEC 61649 Weibull analysis

3 Terms and definitions the following terms and definitions apply to this document.

Note 1: Some terms come from GB/T 2900.13-2008, and terms derived from this standard are in square brackets after the definition. GB/T 19000-2000 made Quotations for Quality Vocabulary.

Note 2: In the reliability growth test data analysis, a distinction is made between "failure strength" (for repairable products) and "failure rate" as defined in GB/T 2900.13-2008 or the term "instantaneous failure rate" (for non-repairable or single-use products) terms are very important.