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Draft IS/IEC 61124: 2023
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BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

मसौदा भारतीय मानक
विश्वसनीयता परीक्षण – स्थिर विफलता दर और स्थिर विफलता तीव्रता के लिए अनुपालन परीक्षण
(पहला पुनरीक्षण)

Draft Indian Standard
Reliability Testing – Compliance Tests for Constant Failure Rate and Constant Failure Intensity
(First Revision)

ICS: 03.120.30;19.020;21.020

LITD 02 Dependability of Electronic, Electrical Components, Equipment and Systems Sectional Committee	**Last Date for Comments: 21 June 2025**

NATIONAL FOREWORD

(Formal clauses will be added later)

This draft Indian Standard which is identical to 'IEC 61124: 2023 Reliability testing - Compliance tests for constant failure rate and constant failure intensity' issued by the International Electrotechnical Commission (IEC) will be adopted by the Bureau of Indian Standards (BIS) on the recommendations of Dependability of Electronic, Electrical Components, Equipment and

Systems Sectional Committee and approval of the Electronics and Information Technology Division Council.

This Standard was originally published in 2019 and was identical with IEC 61124: 2013. The first revision of this standard has been undertaken to align it with the latest version of IEC 61124: 2023.

This edition includes the following significant technical changes with respect to the previous edition:

a) The truncated sequential probability ratio test (SPRT) [1], [2], [3]1 has been significantly developed in recent years [4], [5], [6]. In this edition, type A test plans (optimally truncated SPRT) have been significantly changed, as follows:

   - the tests are significantly truncated (the maximal test time is low) without substantially increasing the expected accumulated test time to decision (ETT);
   - the true producer's and consumer's risks (α', β') are given and are very close to the nominal values;
   - the range of the test parameters is wide (risks and discrimination ratio);
   - the test plans include various risk ratios (not restricted to equal risks only);
   - the values of the ETT are accurate and given in the relevant region (for practical use);
   - guidelines for extension of the tests set (using accurate interpolation) are included.

b) Other ready-to-use test plans (types B, C, D) are not changed, only the form of presentation of the data on their border lines and the characteristics has been changed. This form is made unified for all types of test plans, which helps the comparison of different plans and, accordingly, to facilitate the selection of the most appropriate.

c) FTFT design procedures, to extend the set of test plans B, are significantly changed and make the design accurate and simple. The implementation of this design is given on a spreadsheet program. A unified approach to the calculation of the operational characteristics of all types of test plans is introduced.

The text of ISO/IEC Standard may be approved as suitable for publication as an Indian Standard without deviations. Certain conventions and terminologies are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

   a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’, and

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted draft standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

International Standards	Corresponding Indian Standard	Degree of Equivalence
IEC 60300-3-5: 2001, Dependability management – Part 3-5: Application guide – Reliability test conditions and statistical test principles	IS 15474 (Part 3/Sec 5) : 2018	Identical
IEC 60605-4:2001, Equipment reliability testing – Part 4: Statistical procedures for exponential distribution – Point estimates, confidence intervals, prediction intervals and tolerance intervals	IS 8161 (Part 4) : 2018	Identical
IEC 61123:2019, Reliability testing – Compliance test plans for success ratio	IS/IEC 61123 : 2019	Identical

The technical committee has reviewed the provisions of the following International Standard referred to in this adopted draft standard and has decided that it is acceptable for use in conjunction with this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

International Standard	Title
IEC 60050-192	International Electrotechnical Vocabulary (IEV) – Part 192: Dependability
IEC 60605-2	Equipment reliability testing – Part 2: Design of test cycles
IEC 60605-6	Equipment reliability testing – Part 6: Tests for the validity and estimation of the constant failure rate and constant failure intensity

Scope of IEC 61124: 2023 is as follows:

"This document gives a number of optimized test plans, the corresponding border lines and characteristics. In addition, the algorithms for designing test plans using a spreadsheet program are also given, together with guidance on how to choose test plans.

This document specifies procedures to test whether an observed value of
– failure rate,
– failure intensity,
– mean operating time to failure (MTTF),
– mean operating time between failures (MTBF),
conforms to a given requirement.

It is assumed, except where otherwise stated, that during the accumulated test time, the times to failure or the operating times between failures are independent and identically exponentially distributed. This assumption implies that the failure rate or failure intensity is assumed to be constant.

Four types of test plans are described as follows:
– truncated sequential probability ratio test (SPRT);
– fixed time/failure terminated test (FTFT);
– fixed calendar time terminated test without replacement;
– combined test.

This document does not cover guidance on how to plan, perform, analyse and report a test.
This information can be found in IEC 60300-3-5."

Note: - The Technical content of this document has not been enclosed as these are identical with the corresponding ISO/IEC Standard. For details please refer to IEC 60300-1:2024 or kindly contact.

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