

Reliability of systems, equipment and components —

Part 13: Reliability test conditions for consumer equipment —

Section 13.4 Conditions providing a low degree of simulation for equipment for portable and non-stationary use

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Quality, Management and Statistics Standards Policy Committee (QMS/-) to Technical Committee QMS/23, upon which the following bodies were represented:

- AEA Technology
- Association of Consulting Engineers
- Association of Project Managers
- British Gas plc
- British Railways Board
- British Telecommunications plc
- City University
- Civil Aviation Authority
- Consumers' Association
- Cranfield Institute of Technology
- Department of Trade and Industry (Standards Policy Unit Design Council)
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- Electricity Association
- Electronic Components Industry Federation
- Federation of Small Businesses
- GAMBICA (BEAMA Ltd.)
- Institute of Quality Assurance
- Institute of Risk Management
- Institution of Electrical Engineers
- Institution of Mechanical Engineers
- Institution of Plant Engineers
- Mercury Communications Limited
- Ministry of Defence
- National Computing Centre Ltd.
- Railway Industry Association of Great Britain
- Royal Institution of Chartered Surveyors
- Safety and Reliability Society
- Society of British Aerospace Companies Limited
- Society of Environmental Engineers
- Society of Motor Manufacturers and Traders Limited
- University of Technology, Loughborough

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Introduction	1
1 Scope	1
2 Normative references	2
3 Definitions	2
4 Applicability	2
5 Basic assumptions underlying the severities	3
6 Pre-exposure tests	4
7 Description of the test cycle	4
8 Relevant test time	6
Figure 1 — Test cycle	7
Figure 2 — Functional cycle, alternative B	8
Figure 3 — Functional cycle, alternative C	8
Table 1 — Switching of functional modes	4
Table 2 — Variation of climatic conditions	6
List of references	Inside back cover

National foreword

This Section of BS 5760 has been prepared under the direction of the Quality, Management and Statistics Standards Policy Committee. It is identical with IEC 605-3-4:1992 *Equipment reliability testing — Part 3: Preferred test conditions. Section 4: Test cycle 4: Equipment for portable and non-stationary use — Low degree of simulation*, published by the International Electrotechnical Commission (IEC).

This Part describes sequences of operating and environmental conditions that may be applied when testing the reliability of consumer products. The conditions of use of many products are very varied and it may not be possible or desirable to create simplified conditions for the purposes of reliability testing. For some limited applications however it can be justifiable to define preferred test conditions in which simplified environmental and operating conditions are applied. Such preferred test conditions can be of particular interest to smaller companies.

The Sections of this Part describe preferred test conditions for various types of equipment.

BS 5760 provides comprehensive guidance on many aspects of reliability management. Thirteen Parts of this standard have been published and these may be summarized as follows:

Part 0: Introductory guide to reliability. This Part provides guidance for senior management and non-specialists on the importance of reliability and explains how measures to achieve reliability should be integrated with other aspects of project management.

Part 1: Guide to reliability and maintainability programme management. This Part discusses the essential features of a comprehensive reliability and maintainability programme to produce reliable and maintainable products.

Part 2: Guide to the assessment of reliability. This Part contains guidance on quantitative and statistical aspects of reliability, including reliability modelling, the provision of data, and the concepts of redundancy and simulation.

Part 3: Guide to reliability practices: examples. This Part contains authentic practical examples illustrating the principles established in Parts 1 and 2 of BS 5760.

Part 4: Guide to specification clauses relating to the achievement and development of reliability in new and existing items. This Part provides detailed guidance on the specification of reliability.

Part 5: Guide to failure modes, effects and criticality analysis (FMEA) and (FMECA). This Part gives guidance on the application of these techniques.

Part 6: Guide to programmes for reliability growth. This Part describes procedures to expose and remove weaknesses in hardware and software items in order to achieve acceptable reliability in a product. It explains basic concepts, management and test procedures and describes techniques for analysis and correction of failures.

Part 7: Guide to fault tree analysis. This Part gives guidance on the application of fault tree analysis which may be used to identify factors affecting the reliability, performance and safety characteristics of a system.

Part 9: Guide to the block diagram technique. This Part describes the use of the block diagram technique for modelling and evaluating the reliability of both elementary and more complex systems. The extension of the method to calculate availability is also outlined.

Part 10: Guide to reliability testing.

Section 10.1: General requirements. This Section provides guidance on general principles, procedures and considerations for reliability testing in the laboratory and in the field.

Section 10.3: Compliance test procedures for steady-state availability. This Section provides guidance on techniques for testing the availability performance of frequently maintained items under defined conditions.

Section 10.5: Compliance test plans for success ratio. This Section gives procedures for preparing and applying compliance test plans for success ratio or failure ratio. Plans are provided for three main types of test

NOTE Further Sections of Part 10 based on other Parts of IEC 605 and related IEC standards are also planned.

Part 12: Guide to the presentation of reliability, maintainability and availability predictions. This Part gives guidance on the presentation of quantitative predictions of reliability, maintainability and availability. The items to be included when presenting prediction information are listed and explained with the object of facilitating comparisons between projects and reports.

Part 13: Guide to reliability test conditions for consumer equipment.

Section 13.1: Conditions providing a low degree of simulation for indoor portable equipment.

Section 13.2: Conditions providing a high degree of simulation for equipment for stationary use in weatherprotected locations.

Section 13.3: Conditions providing a low degree of simulation for equipment for stationary use in partially weatherprotected locations.

Section 13.4: Conditions providing a low degree of simulation for equipment for portable and non-stationary use.

Part 14: Guide to formal design review. This Part provides guidelines for planning and conducting design reviews. Much of the guidance given is widely applicable and is relevant to the general conduct of design reviews but it also includes details of the specific contributions to be made by various specialists. Further Parts of BS 5760 are envisaged in order to provide guidance on other techniques of reliability management. At present two further Parts are in the process of being drafted, and these are as follows.

Part 8¹⁾: Guide to the assessment of reliability of systems containing software. This Part will provide guidance on the assessment of reliability of systems containing software

Part 11: Guide to the collection of reliability, maintainability, availability and maintenance support data from the field.

Guidance on specific aspects of maintainability is provided in the various Parts of BS 6548 *Maintainability of equipment*.

Cross-references

International standard	Corresponding British Standard
IEC 50 (191):1990	BS 4778 <i>Quality Vocabulary</i> Part 3 <i>Availability, reliability and maintainability terms</i> Section 3.2:1991 <i>Glossary of international terms</i> (Identical) BS 2011 <i>Environmental testing</i>
IEC 68-1:1988	Part 1.1:1989 <i>General and guidance</i> (Identical)
IEC 68-2-1:1990	Part 2.1A:1990 <i>Tests A. Cold</i> (Identical)

¹⁾ Currently published as a Draft for Development, DD 198:1991.