

Specification for

**Capability approval of
manufacturers of
passive radio
interference
suppression filter units
of assessed quality
generic data**

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Committees responsible for this British Standard

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- British Telecommunications plc
- Electronic Components Industry Federation
- Electronic Engineering Association
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Ltd.
- Telecommunication Engineering and Manufacturing Association (TEMA)

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Business Equipment and Information Technology Association
- Department of Trade and Industry (Radiocommunications Division)
- Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
- Home Office

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Contents

	Page
Committees responsible	Inside front cover
Foreword	iii
Section 1. Principles and mandatory procedures	
1.1 General matters	1
1.1.1 Scope	1
1.1.2 Related documents	1
1.1.3 Terminology	1
1.1.4 Letter symbols, signs and abbreviations	1
1.1.5 Graphical symbols	1
1.1.6 Subcontracting	1
1.1.7 Incorporation of added components	1
1.1.8 Re-verification period for maintenance of capability approval	1
1.1.9 Rework and repair work	1
1.2 Test procedures	2
1.2.1 Test methods	2
1.2.2 Test and measurement conditions	2
1.2.3 Visual inspection	2
1.2.4 Dimensions and gauging	2
1.2.5 Electrical test procedures	2
Section 2. Procedures for capability approval	
2.1 General requirements	3
2.2 Procedure	3
2.3 Capability qualifying components	3
2.4 Boundaries	3
2.5 Additional boundaries	4
2.6 CQC specifications	5
2.7 Demonstration of capability	5
2.8 Capability approval test report	5
2.9 Abstract of description of capability	5
2.10 Test schedules for capability approval	5
2.10.1 Schedule CA1	5
2.10.2 Schedule CA2	5
2.10.3 Schedule CA3	5
2.10.4 Schedule CA4	5
Section 3. Procedures for the maintenance of capability approval	
3.1 General	10
Section 4. Changes, suspension, restriction or withdrawal of capability approval	
4.1 General	11
Section 5. Quality conformance inspection	
5.1 General	12
5.2 Custom-built filter units	12
5.3 Standard catalogue items	12
5.4 Delayed delivery	12
5.5 Release for delivery	12
Section 6. Screening requirements	
6.1 General	13

	Page
Section 7. Statutory safety requirements	
7.1 General	14
Section 8. General rules for the preparation of customer detail specifications	
8.1 Basic information	15
8.2 Originator of the customer detail specification	15
8.3 Numbering of the detail specification	15
8.4 Description of the component and intended application	15
8.5 Outline drawing and dimensions	15
8.6 Ratings and characteristics	15
8.7 Related documents	16
8.8 Additional information (not for inspection purposes)	16
8.9 Ordering instructions	16
8.10 Inspection requirements to be listed in the detail specification	16
Appendix A Layout of an abstract of description of capability for inclusion in PD 9002	17
Appendix B Front page layout of a customer detail specification	18
Figure 1 — Curve A	4
Figure 2 — Curve B	4
Table 1 — Schedule CA1	6
Table 2 — Schedule CA2	7
Table 3 — Schedule CA3	8
Table 4 — Schedule CA4	9

Foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Committee. It implements the changes included in the revision of BS 9121.

It specifies the general procedures to be followed for the capability approval of manufacturers wishing to release filter units under provisions of clause 15 of BS 9000-1:1981, and BS 9005.

Capability approval covers the design, materials, processing, inspection and testing for the release of electronic components manufactured within a stated component technology.

Under capability approval, filter units are released to either customer detail specifications, see 15.10 of BS 9000-1:1981, or detail specifications for standard catalogue items, see 15.11 of BS 9000-1:1981.

In both cases the quality of manufacture is determined by regular assessment under the programme of maintenance of capability approval, and the function of the particular filter units. Additional testing and/or quality assessment procedures may be invoked by the detail specification.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. Principles and mandatory procedures

1.1 General matters

1.1.1 Scope

This British Standard specifies requirements for the approvals granted to manufacturers to release passive radio interference suppression filter units under the terms for capability approval given in BS 9000-1:1981.

The requirements of BS 9005:1985 are invoked as additionally applicable to approvals governed by this standard.

1.1.2 Related documents

BS 2011, *Basic environmental testing procedures*.

BS 3939, *Guide for graphical symbols for electrical power, telecommunication and electronics diagrams*.

BS 4727, *Glossary of electrotechnical, power, telecommunication, electronics, lighting and colour terms*.

BS 5775, *Specification for quantities, units and symbols*.

BS 6001, *Sampling procedures for inspection by attributes*.

BS 6299, *Methods of measurement of the suppression characteristics of passive radio interference filters and suppression components*.

BS 9000, *General requirements for a system for electronic components of assessed quality*.

BS 9005, *Specification for general procedures to be followed for the capability approval of electronic components covered by BS 9000-1*.

BS 9120, *Specification for radio interference suppression filters of assessed quality: Generic data and methods of test*.

BS 9121, *Blank detail specification for radio interference suppression filters of assessed quality. Basic assessment level*.

PD 9002, BS 9000, BS CECC and IECQ qualified products list.

Further documents which may be required are listed in BS 9120.

1.1.3 Terminology

For the purposes of this British Standard the general electrical and telecommunication terms and definitions given in the appropriate Part of BS 4727 and 1.1.3 of BS 9120:1988 apply.

In addition the following specific term and definition is applicable to components covered by this standard.

passive radio interference suppression filter unit

an essentially low-pass through line filter employing inductance capacitance and resistance to attenuate the transmission of radio frequency interference

NOTE This may therefore include the lead through type of suppression capacitor.

1.1.4 Letter symbols, signs and abbreviations

The letter symbols, signs and abbreviations employed in documents produced for the purposes of this standard shall comply with BS 5775 or be derived in accordance with the principles of BS 5775. Such additional letter symbols etc. as may be required shall be defined.

1.1.5 Graphical symbols

The graphical symbols employed in documents produced for the purposes of this standard shall comply with BS 3939 or be derived in accordance with the principles of BS 3939. Such additional graphical symbols as may be required shall be defined.

1.1.6 Subcontracting

Subcontracting is permitted in accordance with clause 3 of BS 9005:1985. However, the assembly of the piece parts and the inductive, capacitive and resistive elements of the filter shall not be subcontracted. Where the formation of the capacitive, inductive or resistive elements is an integral part of the assembly, the processes by which these elements are formed shall not be subcontracted.

1.1.7 Incorporation of added components

The procedures concerning the incorporation of added electronic components, be they approved or unapproved, finished or part finished shall be conducted in accordance with clause 4 of BS 9005:1985; see also clause 6 of BS 9005:1985.

1.1.8 Re-verification period for maintenance of capability approval

Capability approval is maintained, provided that all boundaries of the approval have been assessed to the satisfaction of the NSI, within a period not exceeding 3 years.

1.1.9 Rework and repair work

1.1.9.1 Rework

Rework is the rectification of processing errors and shall not be carried out if specifically prohibited by the relevant specification. The detail specification shall state if there is a restriction on the number of occasions that rework may take place on a specific component.

All rework shall be carried out prior to the formation of the inspection lot offered for inspection to the requirements of the detail specification.

Such rework procedures shall be fully described in the relevant documentation produced by the manufacturer, and shall be carried out under the direct control of the Chief Inspector. Subcontracting of rework is not permitted.

1.1.9.2 *Repair work*

Repair work is the correction of defects in a component after release to the customer.

The procedures for repair shall be described in the relevant documentation produced by the manufacturer. Components that have been repaired can no longer be considered as representative of the manufacturer's production, and may not be released under the BS 9000 system. When returning repaired components to the customer, reference shall be made to the original release certificate number and the following statement shall be issued by the approved Chief Inspector:

"The components contained herein have been repaired using processes and procedures covered by BSI Approval No. . .".

NOTE Rework should not be confused with repair. Repaired material is not eligible for BS 9000 release.

1.2 Test procedures

1.2.1 Test methods

For the purposes of this generic specification, 1.2 and the associated appendices of BS 9120:1988 shall apply.

1.2.2 Test and measurement conditions

1.2.2.1 *General*

All tests shall be carried out within the range of standard atmospheric conditions for testing specified in BS 2011-1.1:1983. If necessary for reference or referee purposes the further conditions associated with 20 °C shall apply, and measurements shall be carried out under conditions of thermal stability.

1.2.2.2 *Measurement uncertainty*

The limits given in detail specifications and this standard shall be absolute. The measurement uncertainty applying to the measurement system employed shall be taken into account when the measurements are assessed against the specification limits. Where tolerances in respect of set conditions or instrument error have been specified, these shall be regarded as minimum requirements additional to the foregoing.

1.2.2.3 *Alternative test methods*

The test and measurement methods given in the relevant specification shall not be regarded as the only methods to be used. However, the manufacturer shall satisfy the National Supervising Inspectorate (NSI) that any alternative methods to be used shall give results equivalent¹⁾ to those obtained by the methods specified. Alternative test methods shall not be shown in detail specifications.

1.2.3 Visual inspection

Visual inspection shall be performed under normal factory lighting conditions without visual aids. The condition, workmanship and finish shall be satisfactory. Particular attributes to be verified by examination shall be fully described in the relevant detail specification.

1.2.4 Dimensions and gauging

For the verification of capability qualifying components (CQCs) all drawn and toleranced dimensions applicable to the filter unit, its piece parts and the outline dimensions of included components shall be measured. For the assessment of filter units to be released, all toleranced dimensions shall be verified as complying with the relevant detail specification. For mains filter units the creepage distances and clearances between line parts and metal case shall not be less than the values given in Table 4 of BS 9120:1988.

1.2.5 Electrical test procedures

1.2.5.1 *Voltage proof*

The test method in Appendix B of BS 9120:1988 shall be employed.

1.2.5.2 *Electrical continuity*

The d.c. resistance existing between all terminals which, by reference to the filter unit circuit diagrams, are shown as providing mutual d.c. electrical continuity, shall be verified as being less than 1 Ω or as is specified in the relevant detail specification. The test voltage applied for the purpose of this verification shall be less than 10 V unless other voltage or current limitations are specified in the relevant detail specification.

In the case of filter units fitted with cords or connectors, this test shall include the verification of the correctness of identification of terminations in accordance with 1.1.6.3 of BS 9120:1988.

1.2.5.3 *Insulation resistance*

The test method shown in 1.2.5.3 of BS 9120:1988 shall be employed.

¹⁾ By "equivalent" it is meant that the value of characteristic established by such an alternative method, and acceptable in accordance with the limits described to that method, will fall within the specified limits when measured by the specified method.