

BS 9000 CECC & IECQ

UK ADMINISTRATIVE GUIDE



© British Standards Institution 1989
First edition 1978
Second edition 1986
Third edition 1989

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PREFACE

This Administrative Guide has been compiled for the benefit of manufacturers and users of electronic components in the UK. Its purpose is to *amplify* the detailed requirements of the BS 9000, CECC (European) and IECQ (international) systems and to provide guidance on their practical application in the UK. It *neither supersedes nor takes precedence* over those documents published on the authority of BSI, CENELEC or IEC, but should be read in conjunction with the relevant regulatory publications.

The harmonized BS 9000, CECC and IECQ systems provide a comprehensive structure for the assessment of manufacturers and the specification and approval of electronic components. The systems also provide for the assessment of the facilities of distributors, test laboratories and assessors of add-on components. BS 9000 : Part 1 and Part 2 are the basic documents for the implementation in the UK of the BS 9000 and the CECC systems. BS 9000 : Part 3 is the UK implementation document for the IECQ system.

PD 9004 is in two parts as follows:

PART 1 – GENERAL INFORMATION AND SPECIAL PROCEDURES

This part is divided into three sections as follows:

SECTION A – SYSTEM DESCRIPTION AND APPROVAL PROCEDURES

SECTION B – ORGANIZATION AND SPECIAL PROCEDURES

SECTION C – GENERAL INFORMATION

Each section is sub-divided into chapters which progressively explain the operation and management of the systems and provide implementation and guidance to both manufacturers and users.

PART 2 – CIRCULAR LETTERS

Circular letters are procedural documents which give instructions, guidance and information to facilitate the smooth running of the systems. They are issued from time to time to approved manufacturers, distributors, test laboratories and assessors of add-on components whenever a subject affects their interest. They are also of general interest to equipment manufacturers.

DISTRIBUTION

PD 9004 is issued to all electronic components manufacturers, distributors, test laboratories and assessors of add-on components on formal application to join the system. Amendments are published and distributed by BSI Quality Assurance and are forwarded automatically to all holders of the guide. Full details are also accessible on-line on the CODUS Databank (see Chapter A1, 7.6).

Orders for copies of PD 9004 (or related amendments) should be sent with payment to BSI Sales (see Chapter C3).

ENQUIRIES

These should be addressed to BSI Quality Assurance at Milton Keynes (see Chapter C3 for full address).

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PART 1

GENERAL INFORMATION AND SPECIAL PROCEDURES

PART 1

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CHAPTER A1

DESCRIPTION OF THE BS 9000, CECC AND IECQ SYSTEMS

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CHAPTER A1

DESCRIPTION OF THE BS 9000, CECC AND IECQ SYSTEMS

Issue 3

Reissued November 1989

(8 pages)

1. INTRODUCTION

The quality assessment systems of CECC and IECQ are based on BS 9000 and all three are broadly similar. BS 9000 is being replaced progressively by the harmonized European system of CECC, which it is hoped will eventually give way to the world wide system of IECQ. These changes can occur only gradually because of the usage of existing approvals and the time taken to obtain agreement to specifications at international level. Currently, approved electronic components are available under all three systems. Although the systems are the same in concept they differ in detail. They are applicable across the whole range of electronic component usage, from consumer equipment to space applications, and are entirely compatible with the Parts per Million (PPM) concept.

Formal details of the BS 9000 system are contained in BS 9000 : Part 1. The rules for the implementation of the CECC system in the UK are contained in BS 9000 : Part 2. The Rules of Procedure for CECC are detailed in CECC 00 101 to 00 113. The IECQ system Rules of Procedure are detailed in IEC documents QC 001001 and QC 001002 respectively. The rules for the implementation of the IECQ system in the UK are contained in BS 9000 : Part 3. These documents are available from BSI Sales (see Chapter C3).

The three systems are described in more detail in the following paragraphs.

2. PRINCIPLES OF THE BS 9000, CECC AND IECQ SYSTEMS

All three systems provide similar comprehensive arrangements for the specification, Qualification or Capability Approval, inspection and release of electronic components of assessed quality.

They have been established to meet the needs for electronic components of assessed quality and to give customers and equipment manufacturers a greater degree of confidence in product quality and reliability. They represent an assurance of quality and constitute an important marketing tool and a safeguard for buyers.

The production of a quality product is achieved by 'building in' quality requirements at each stage of design, development and manufacture, with validation by testing as an essential and related part of the process.

By providing a comprehensive scheme, which is more efficient than a multitude of individual standards and certification procedures, significant savings can be achieved with required control, throughout component manufacture, equipment development, production and logistic support. As an example, multiple vendor rating i.e. the constant appraisal of component manufacturers by their customers, and the need for component re-inspection at 'goods inwards', are either reduced or eliminated. (A comprehensive list of advantages of the systems is given in Chapter A1, Clause 5.)

By the application of statistical inspection procedures at prescribed confidence levels, the customer can be sure that he receives a product which conforms precisely to the requirements of the component detail specifications. The component manufacturer issues a Certificate of Conformity which formally confirms that the specified inspection requirements have been carried out on the released product, under NSI surveillance.

There is no provision for waivers; the product must meet that specification precisely. The user therefore knows exactly what component quality he will receive. If a customer is purchasing components from more than one source to a detail specification, he can be sure that the components he receives will meet the requirements of that specification, irrespective of the manufacturer. At specified intervals the National Supervising Inspectorate (NSI)* confirms to the National Authorized Institution (NAI)† that manufacturers, distributors and test laboratories continue to meet the requirements of the system.

*In the United Kingdom the NSI is the Defence Quality Assurance/Technical Support Components Division.

†The NAI in the United Kingdom is L/-, the British Electrotechnical Committee and the Electrotechnical Council of BSI.

If there is a failure to conform to the required standard, the system rules provide for various enforceable corrective actions with penalties ranging from the suspension of the right to release components, to the overall withdrawal of manufacturing approval. The user is thereby protected, and the conformance of the product to the specification is assured.

In summary, each system makes provision for the following basic requirements:

- (a) approval of the component manufacturer for a family range of components, as defined by a generic specification;
- (b) approval of a manufacturer for Capability Approval where relevant;
- (c) approval of individual components;
- (d) quality conformance inspection;
- (e) independent surveillance of the manufacturer by the NSI;
- (f) Certified Test Records of performance if requested by a customer;
- (g) the assessment of the facilities of distributors, test laboratories, assessors of add-on components and IC Design Houses.

3. THE NATIONAL SUPERVISING INSPECTORATE (NSI)

By arrangement between BSI and the Ministry of Defence, the Defence Quality Assurance/Technical Support Components Division is BSI's agent and acts as the UK NSI as appointed by the UK NAI. The 'National Statement of Surveillance Arrangements' is the authorizing document for the UK NSI which describes its scope and operation for CECC and IECQ. This statement is compatible with BS 9000.

The UK NSI is responsible for implementing the inspection procedures in BS 9000, CECC and IECQ within the UK, defined as England, Scotland, Wales, Northern Ireland, the Isle of Man and the Channel Islands. It undertakes its duties with companies impartially, and with strict commercial confidentiality.

3.1 Technological coverage

The NSI covers the full range of electronic components under the following generic

- (a) passive;
- (b) active, including monolithic integrated circuits;
- (c) hybrid integrated circuits;
- (d) electro-mechanical components;
- (e) electro-magnetic material;
- (f) electro-optic components.

3.2 Approval of manufacturer and other organizations

All appraisal, inspection and surveillance procedures concerning manufacturers, distributors, independent test laboratories and assessors of add-on components are conducted by the NSI. The necessary arrangements for meeting the requirements of the system are documented for each company in a Quality Manual. Approvals are authorized by BSI on the recommendation of the NSI. Surveillance of a company's approved arrangements are undertaken at regular intervals by an NSI Quality Assurance Representative (QAR) who has knowledge of the factories assigned to him. Mutual confidence between the QAR and the company's Approved Person is of the essence and, as far as possible, problems are resolved locally as they arise. Failure of an approved organization to continue to meet the requirements of the system may lead to suspension or withdrawal of approval.

3.3 Component approval

Subject to the verification of preliminary checks, documentation and test samples, the QAR permits tests to be started under NSI surveillance as a pre-requisite for component Qualification Approval (QA). Thereafter the NSI maintains surveillance of the certification of release of lots. Samples of components from every approved manufacturer are taken, from time to time, by the NSI and tested in its laboratories at Aquila to audit independently the effectiveness of the manufacturer's quality control, inspection and testing.

Maintenance of Capability Approval (CA) is carried out by regular testing of Capability Qualifying Components (CQCs) which are subjected to functional, endurance and environmental tests (see Chapter A3,

4. THE SYSTEMS

4.1 BS 9000 system

There are over 50 BSI committees involved in the BS 9000 system. These include the committees involved in the management, inspection and coordination aspects of the system, together with the Technical Committees which prepare specifications concerned with the many families and sub-families of components. All committees comprise representatives from the NSI, manufacturers and users of electronic components.

A component manufacturer who wishes to take part in the BS 9000 system must have his factory situated within the UK. Certain manufacturing processes are permitted to be undertaken outside the UK and the applicable rules are contained in BS 9000 : Parts 5 and 6.

4.1.1 BS 9000 SPECIFICATIONS

The BS 9000 system of specifications consists of:

- (a) basic specifications;
- (b) generic specifications, and sectional specifications where appropriate;
- (c) blank detail specifications;
- (d) detail specifications.

The BS 9000 system is common to all types of electronic components and is a procedural document of a fundamental nature which outlines the requirements of the system. Other specifications are also applicable, e.g. BS 2011 (IEC 68) Environmental testing; BS 6001 Sampling procedures and tables for inspection by attributes.

Generic specifications prescribe the mandatory requirements specific to a family of electronic components. They include definitions, a standard series of values and voltages, standard test procedures and other general data, together with sampling procedures where these can be prescribed for the whole family. They are kept in line with the relevant international recommendations. The BSI committees, which prepare these specifications, decide the extent of the families and sub-families in their field

to a sub-family of components e.g. diodes or fixed low power resistors. They are prepared when a substantial amount of information is peculiar to a particular sub-family.

Blank detail specifications are pro forma documents derived from the requirements of the generic and sectional specifications. When completed by the specification writer they become the detail specification for that component.

Detail specifications may be written either by a BSI Technical Committee which produces a national or 'N' series specification, or by the manufacturer himself, as an 'F' or 'G' series specification. Any detail specification must be written strictly in accordance with the generic specification and blank detail specification or rules document as appropriate.

4.2 CECC system – implementation in the UK

The declared object of the CECC system is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components and by the grant of an internationally recognized Mark and/or Certificate of Conformity. The components produced under this system are thereby accepted by all Member Countries without further testing.

The UK is a member of CECC which was set up under the authority of CENEL (now CENELEC) in 1970. In 1984 The Association for the Promotion of Electrotechnical Standardization (FEN), based in Frankfurt, was established under CENELEC as a new legal entity to take over the jurisdiction of CECC. Representatives on FEN, CECC Management Committee (CD) and CECC Working Groups are appointed by the UK NAI. The Electronic Components Quality Assurance Committee (ECQAC), which is independent of the CD, comprises representatives of NSIs. Specifications are prepared by Working Groups whose UK members are drawn from the appropriate E.C. Committee (see Chapter B1, Figure 1).

4.2.1 CECC SPECIFICATIONS

possible CECC makes use of IEC published specifications.

Specification system and procedures are in general similar to that outlined in Clause 4.1.1 except as follows:

- (a) blank detail specifications do not always include assessment levels;
- (b) National Committees and manufacturers may prepare detail specifications but in the latter case the specification must be approved by the UK NAI before it can be included in the CECC QPL;
- (c) 'N', 'F' and 'G' specification designations are not applicable;
- (d) French is the master language for the procedural documents of the system, but all CECC specifications, except detail specifications, are normally published in the three official languages of the system, French, English and German. Where national documents are produced from these, they are in the language of the originating country and shall also be in one of the other official languages.

4.2.2 SPECIFICATION NUMBERING

1. Excluding detail specifications

Specifications are identified by a five digit number, the first two digits indicating the component family concerned. The third digit indicates a sectional document applicable to a sub-family and the last two digits are reserved for the indication of blank detail specifications, e.g. CECC 40 000 is the generic specification for fixed resistors; CECC 40 100 is the sectional specification for fixed low power resistors and CECC 40 101 is the first blank detail specification for fixed low power non-wirewound resistors.

2. Detail specifications

When CECC Working Groups, National Committees or component manufacturers prepare a detail specification, it is registered with the CECC Secretariat which issues a three digit number which is added as a suffix to the number of the corresponding blank detail specification. These numbers are issued in chronological order and have no other significance, e.g. the fifth detail specification

fixed low power non-wirewound resistors to blank detail specification CECC 40 101 would bear the number CECC 40 101 005.

CECC 00 300 lists CECC publications and their related national specifications. It also lists national detail specifications including those in draft state.

CECC 00 400, the CECC administrative document, gives the method of preparing and presenting CECC specifications.

3. BS publications

Numbers in the BS E9000 series were used initially to denote UK CECC specifications, e.g. the generic specification for fixed resistors (CECC 40 000) was BS E9110. In March 1977 the numbering system of the BS publications changed to reflect more clearly the association of the UK with the European system. Thus the British Standard is now the CECC number preceded by the letters BS; e.g. the generic specification for integrated circuits (CECC 90 000) in the BS series is BS CECC 90 000. Both series of numbers will remain in use until the older BS E9000 numbered specifications are reprinted or revised, when they will be aligned with the later system.

4.3 IECQ system – implementation in the UK

The object of the IECQ system, operated in conformity with the Statutes and under the authority of IEC, is to facilitate international trade in electronic components of assessed quality, in accordance with the principle of reciprocity.

The UK is a member of IECQ which was authorized by IEC Council in 1976 and became operational in 1982. Representatives on the Certification Management Committee (CMC), its subordinate Inspectorate Coordination Committee (ICC) and IEC Component Technical Committees are appointed by the UK NAI. Specifications are prepared by Technical Committees whose UK delegates are drawn from the appropriate ECL/- Committee (see Chapter B.1, Figure 1).

It is a condition of membership that each NAI agrees to recognize, without discrimination, the approval of manufacturers, distributors

Conformity, granted under the authority of an approved national organization.

The reciprocal condition terms concerning the equality of NSI's states that:

'Electronic components which have been granted Qualification Approval (or Capability Approval) and which have been subjected to quality conformance inspection under the surveillance of an approved National Supervising Inspectorate in accordance with the rules of the system and subsequently released for delivery are equally acceptable within the participating countries of the system without discrimination.' (IECQ Basic Rules, QC 001001 (1986): Appendix C.)

The system is based on the use of IEC standards containing quality assessment requirements for electronic components. These are prepared by the usual IEC procedure, and the appropriate standards are formally adopted by the CMC for use within the system.

4.3.1 IECQ SPECIFICATIONS

The Rules of Procedure, QC 001002, are common to all components. The principles and requirements applicable to specifications are described in IEC Guide 102: 'Specification Structure for the Quality Assessment of Electronic Components'.

Specification system and procedures are in general similar to BS 9000 and CECC but include provision for Provisional Specifications (PQCs) which are submitted when a need arises for generic, sectional or blank detail specifications, or instructions for the preparation of detail specifications, which are not yet available via a Technical Committee. Provisional specifications may be submitted by an NAI and used provided that the procedures given in Clause 8.3 of QC 001002 are observed. 'N', 'F' and 'G' specification designations are not applicable.

4.3.2 SPECIFICATION NUMBERING

1. Excluding detail specifications

Specifications are identified by a six digit number, the first two digits indicating the component family concerned. The second two

reserved for the indication of blank detail specifications, e.g., QC 400000 is the generic specification for fixed resistors; QC 400100 is the sectional specification for fixed low power non-wirewound resistors, and QC 400101 is the first blank detail specification for fixed low power resistors.

(These documents will also bear the four digit IEC publication reference.)

2. Detail specifications

When an IEC Technical Committee prepares a detail specification it is registered by the CMC Secretariat in Geneva which allocates a three digit suffix, which is prefixed 'XX' to the corresponding blank detail specification. When National Committees or a component manufacturer prepare a detail specification a three digit suffix is allocated by BSI to the corresponding blank detail specification. However, in this instance the suffix is prefixed by a two letter ISO country code, e.g. QC 400000 GB 0001.

3. BS publications

The series BS 99xx contains IECQ specifications published in the UK, e.g., the correlation of IEC, QC and BS numbers for fixed resistors is as follows:

Generic (IEC 115-1)
QC 400000

Sectional (IEC 115-2)
QC 400100

BDS (IEC 115-2-1)
QC 400101

New IECQ specifications published in the UK are being numbered BS QC xxxxxx.

A list of all IECQ specifications is contained in publication QC 001004.

5. ADVANTAGES OF THE SYSTEMS

The principal advantages of the systems to the component purchaser and ultimately the equipment user can now be summarized as follows:

- internationally recognized certification systems;
- assurance of a product of known

- (c) defined specifications and test methods;
- (d) interchangeability of suppliers and UK/international sourcing;
- (e) simplification of design, purchasing and contractual requirements;
- (f) reduced vendor appraisal costs;
- (g) certified release of each delivery leading to reduced goods inwards inspection costs;
- (h) confidence in suppliers and products;
- (i) Parts per Million (PPM) compatibility;
- (j) recognition by major purchasers;
- (k) improved reliability;
- (l) minimal cost of ownership;
- (m) supported by a comprehensive computer based information system.

6. QUALIFIED PRODUCTS LISTS (QPL) AND DATABANK FOR BS 9000, CECC AND IECQ

6.1 General

For users of electronic components qualified under the BS 9000, CECC and IECQ systems, it is essential to have comprehensive up-to-date information on approvals and specifications. The rules of these systems provide for the publication of Qualified Products Lists (QPL's), periodically updated, which list approved components.

We direct the attention of component manufacturers to the current issues of PD 9002, CECC 00 200 and QC 001 005. If there are any errors in their existing content, manufacturers should notify BSI, Milton Keynes, so that they may be corrected at the earliest opportunity.

6.2 PD 9002: BS 9000 and UK IECQ Qualified Products Lists

The BS 9000 QPL is published in loose-leaf format and is divided into seven parts as follows:

- Part 1: Qualified Products List
- Part 2: Capability Approvals
- Part 3: Index to Product Codes

Part 5: List of Approved Distributors

Part 6: List of Approved Test Laboratories

Part 7: List of Approved Assessors of Add-on Components

The above parts contain only limited technical information, but form between them a complete list of approvals of products and firms, together with an index which provides a method of easy cross reference between components and specifications.

PD 9002 is the only document which lists approvals under the BS 9000 system. The document also includes all approvals granted to UK firms in the IECQ system.

By using PD 9002 in conjunction with a complete reference library of BS 9000 and IECQ series specifications, it will be possible to narrow a potential choice to a few likely qualification approved devices. Similarly a comparison between Capability Approvals within the same technological area may be made from Part 2 of PD 9002.

The document is sold on the basis of an annual subscription. For details of subscription and payment, see Clause 6.5.

6.3 CECC 00 200: CECC Qualified Products List

The CECC QPL is published in loose-leaf format by the CECC General Secretariat and is available from the national authorities of all countries participating in the CECC scheme.

The publication contains six parts as follows:

Introductory Notes

Part 1: Qualified Products List

Part 2: Capability Approvals

Part 3: Index to Product Codes

Part 4: List of Approved Manufacturers

Part 5: List of Approved Distributors

Part 6: List of Approved Test Laboratories

CECC 00 200 is the European equivalent to PD 9002 and contains the same type of information but is related to approved companies and components throughout Europe (including UK).

Entries in Parts 4, 5 and 6 are grouped

The document is sold on the basis of an annual subscription. For details of subscription and payment, see clause 6.5.

Note: *Qualification or Capability Approval granted to UK manufacturers to BS CECC or other CECC detail specifications will be entered in CECC 00 200 by BSI, Milton Keynes.*

6.4 QC 001005: IECQ Qualified Products List

The IECQ QPL is published in loose-leaf format by the Central Office of the International Electrotechnical Commission, and is available from national authorities participating in the IECQ system.

The publication contains four parts:

- Part 1: Approved Components
- Part 2: A List of Approved Manufacturers
- Part 3: A List of Approved Distributors
- Part 4: A List of Approved Independent Test Laboratories

Manufacturers are required to submit information for the IECQ Qualified Products List (QC 001005) in respect of submissions under the IECQ harmonized system for detail specifications. BSI will reserve the right to withhold Qualification and/or Capability Approval if this requirement is not met.

Thus any Qualification/Capability Approval granted in future under IECQ harmonized system (or any technical alteration to an existing Qualification/Capability Approval) will be entered in QC 001005 according to information provided by the manufacturer, who will be responsible for its accuracy. The manufacturer may submit this information to BSI, Milton Keynes at any stage up to the submission of the associated test report and draft certificate but not later. The information shall be presented strictly in accordance with the format illustrated in the Appendix to this section. Only legible copy will be accepted. Typed copy is preferred. To achieve this an A3 sample layout is provided which will be reduced to A4 on publication. Failure to submit this information may result in a delay

of a Qualification or Capability Approval Certificate.

The document is sold on the basis of an annual subscription. For details of subscription and payment, see Clause 6.5.

6.5 Subscription and payment for QPL's

PD 9002, CECC 00 200 and QC 001005 are available from BSI Sales (see Chapter C3). They are available on prepayment only, and enquiries should be made to BSI Sales for information on the current price and amendment status.

A discount of 10% will be given to purchasers ordering all annual issues of the three documents.

6.6 CODUS Databank

CODUS Ltd operates a computer based databank which holds technical information on all BS 9000, CECC and IECQ approved electronic components (in the case of CECC for all European approvals). All qualification approval information and specifications are sent to CODUS Ltd at regular intervals and the relevant information is extracted from the specifications as they are published and incorporated into the databank files.

Further information on the CODUS databank is obtainable from CODUS Ltd (see Chapter C3 for address).

7. TECHNICAL INDEXES LTD

By arrangement with BSI, Technical Indexes Ltd provides a comprehensive service of information covering BS 9000, CECC and IECQ documentation in microfilm and microfiche format. Information on rules documents, generic, sectional and blank detail specifications, including most detail specifications, can be obtained in this service. The service includes frequent updating of information with printed indexes automatically supplied.

Further information can be obtained from the Marketing Department of Technical Indexes

8. SOURCE OF SUPPLY OF BSI PUBLICATIONS FOR THE BS 9000, CECC AND IECQ SYSTEMS

8.1 BS 9000 system

- (a) BS 9000 (all parts)
Generic and sectional specifications in the BS 9000 series.

Detail specifications in the BS 9000 series listed in the BSI Catalogue (i.e. produced by a BSI Technical Committee).

Blank detail specifications/rules documents in the BS 9000 series.

Other British Standards.

Available from BSI Sales
(see Chapter C3).

- (b) PD 9002 available from BSI Sales
(see Chapter C3).

- (c) Manufacturer prepared detail specifications (BS 9000 F or G series).

Available from component manufacturer, from the address given in PD 9002.

8.2 CECC system

- (a) CECC Rules of Procedure, FEN Internal Regulations, generic, sectional, blank detail specifications and Working Group detail specifications including CECC 00 200 (QPL) and ECQAC permanent documents.

BS CECC generic, sectional and detail specifications.

Available from BSI Sales
(see Chapter C3).

- (b) Manufacturer prepared detail specifications.

Available from the component manufacturer from the address given in the Qualified Products List CECC 00 200.

8.3 IECQ system

- (a) IECQ Basic Rules, Rules of Procedure, generic, sectional, blank detail specifications, IEC Technical Committee detail specifications, GB provisional specifications and QC 001005 (QPL).

Available from BSI Sales
(see Chapter C3).

- (b) Manufacturer prepared detail specifications.

Available from the component manufacturer from the address given in the Qualified Products Lists PD 9002 or QC 001005.

- (c) Non-GB provisional specifications.

Available from the appropriate NAI.

CHAPTER A2

OPTIONS FOR SPECIFYING ELECTRONIC COMPONENTS

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CHAPTER A2

OPTIONS FOR SPECIFYING ELECTRONIC COMPONENTS

Issue 2

Reissued November 1989

(5 pages)

1. INTRODUCTION

Enquiries received from time to time, by BSI and the NSI, indicate that both manufacturing and user industries may be unaware of the wide variety of options open to them in specifying an electronic component within the available systems. This section is intended to provide guidance to all concerned in determining the appropriate avenue to explore in attempting to solve their specification problem.

Since the BS 9000 system has developed further in certain areas than CECC, the systems options are dealt with separately in the following clauses. IECQ is dealt with in Clause 4.

2. BS 9000 SYSTEM

The specification writer and/or user's component engineer must first determine whether the type of component he wishes to specify is appropriate for Qualification Approval or is obtainable under a Capability Approval. In broad terms those large scale production components produced to widely publicised standard characteristic requirements are subjects for Qualification Approval (e.g. fixed resistors and capacitors, semiconductor diodes and transistors, and standard IC families) whereas components which are designed and produced to meet customer's specific requirements are appropriate for Capability Approval (e.g. printed wiring boards, transformers and inductors, and hybrid film circuits).

2.1 Qualification Approval

The fundamental requirements for Qualification Approval are detailed in BS 9000 : Part 5. Associated procedural matters are covered in Chapter A8.

Notwithstanding the variations in specification content which are outlined in the remainder of this chapter, it is imperative that all detail specifications, associated appendices, control drawings and any amendments thereto are written and accepted for use and publication under the procedures detailed in BS 9000 :

2.1.1 ASSESSMENT LEVELS (GENERAL)

There are three assessment levels which are applicable in all component areas covered by the system. These are 'Full', 'Basic' and 'Additional' assessment. Thus in ascending order of severity, detail specifications may be written to satisfy the following levels of assessment:

Basic (B)

Basic plus additional (B+)

Full (F)

Full plus additional (F+)

In all cases, the generic specification and its subsidiary documents (rules, sectional or blank detail specification) must be available to define the minimum mandatory tests applicable to the component family or sub-family at the 'Basic' or 'Full' level, as appropriate.

This arrangement allows a detail specification to be written at any assessment level in a continuous spectrum starting as 'Basic', up to the ultimate stressing, etc. that the component can survive, identified as a 'Full plus additional' level. Within this spectrum variations may be made in inspection levels, AQLs, stress levels, conditioning periods, frequency of tests and parametric performance, always provided that they do not fall below the minimum mandatory requirements. Thus, for example, a detail specification (either 'N', 'F' or 'G') satisfying the minimum requirements for Full assessment may be re-written, and submitted for acceptance as a new detail specification, in a number of different ways. The re-writing may be:

- (a) by downgrading or excluding one or more tests and/or conditioning requirements. This would re-classify the 'Full' level specification as 'Basic plus additional', provided that it still satisfied the minimum standards for Basic level.

- (b) by upgrading one or more tests and/or conditioning requirements, and/or including additional tests and/or conditioning requirements. This would re-classify the specification as 'Full plus

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- (c) by using a combination of the options at (a) and (b). As in (a) this would re-classify the specification as 'Basic plus additional', subject to the same proviso as in (a).

Any particular detail specification may be re-written, and submitted for acceptance as a new specification, as many times as the demand for variations of assessment may justify for the particular component covered.

2.1.2 APPLICATION CATEGORIES (SCREENING LEVELS) FOR INTEGRATED CIRCUITS UNDER BS 9000

Application categories S1, S2, S3 apply to integrated circuits intended for use under relatively severe environmental conditions as described below.

- Application category S1
For integrated circuits where reliability is imperative, maintenance is impossible or very difficult, or down-time must be minimal, e.g. space equipment, critical military applications, high revenue earning equipment used in an adverse environment (roughly equivalent to MIL-M-38510 class S).
- Application category S2
For integrated circuits where reliability is important, maintenance is difficult or down-time must be low, e.g. aircraft equipment, military applications, mobile communications equipment (roughly equivalent to MIL-M-38510 class B).
- Application category S3
For integrated circuits having similar environment requirements to those for application category S2, but where electrical assurance can be relaxed (roughly equivalent to MIL-M-38510 class C).
- Application category S4
For integrated circuits having similar requirements to those for application category S2 but where environmental performance is not assessed.

Application categories S11 and S12 are primarily intended for use where high reliability requirements are combined with an extended life in a more benign environment than in the integrated circuits of S1, S2, S3.

S3. The environment may be defined as protected, ground and static where ambient temperatures of 55°C and relative humidities of 70% are rarely exceeded.

- Application category S11
Where reliability must be excellent and down-time must be minimal for a required life of up to 40 years under the above environmental conditions in high revenue earning equipment, e.g. telecommunications equipment.
- Application category S12
The criteria are similar to those for application category S11 but reliability and down-time requirements are less critical.

2.1.3 OTHER DETAIL SPECIFICATION VARIATIONS

2.1.3.1 Electrical and mechanical variants

BS 9000 : Part 1, Clause 6.1 details methods which have been developed dealing, as simply and expeditiously as possible, with electrical and mechanical variants of a basic component, for which a detail specification exists or is being written. These variants are classified in two groups:

- (a) selections from existing, specified components by electrical parameter or other performance characteristics. This may usually be achieved by use of a 'single sheet' specification, applied to components already accepted under a wider detail specification (Ref. 6.2.1 of BS 9000 : Part 1);
- (b) mechanical variations in mounting methods, etc. These and other simple mechanical variants are assessed to additional requirements contained in an appendix to the detail specification for the basic component (Ref. 6.2.2 of BS 9000 : Part 1).

2.1.3.2 General category detail specifications

Appendix B of BS 9000 : Part 8.1 outlines the requirements for general category of detail specifications which permit a more direct alignment of quality assessment requirements

Irrespective of the component type concerned, detail specifications written in the General Category series shall be in accordance with the General Category blank detail specification.

2.1.3.3 Two-part detail specification

Clause 4.3 of Appendix A of BS 9000 : Part 8.1 provides an option to the existing format of detail specifications which effectively allows the 'Inspection Requirements' and test conditions part of the detail specification (as Part 2) to be published separately from the rest of the specification (Part 1).

This option provides the component manufacturer with a more flexible approach to the provision of specification information to his prospective customers, i.e. it enables him to provide details of the component's features and performance in Part 1, without confusing the customer with every detail of the quality conformance and periodic test requirements covered in Part 2. This provides him with a freestanding 'data sheet' for his BS 9000 qualified component for use by his sales force.

2.1.4 CHANGEOVER TO CECC

2.1.4.1 Deliveries to BS 9000 or CECC detail specifications

Chapter B3 of PD 9004 outlines the requirements which permit a degree of flexibility into the implementation of the BS 9000 to CECC systems, which assists in effecting a rapid and disciplined changeover from BS 9000 to CECC detail specifications, as the latter become available to component manufacturers.

The procedure detailed in Chapter B3 allows component manufacturers to release economically to either a BS 9000 or CECC detail specification, using a single schedule of tests for the particular product.

This procedure may be implemented only when the manufacturer has obtained Qualification Approval, to both a BS 9000 and a CECC detail specification, for a component produced on the same production

2.1.4.2 Implementation policy (BSI Circular Letter No. 25)

Notwithstanding the flexibility within the BS 9000 system described in this section, the policy of the Management Committee for the Systems for Electronic Components of Assessed Quality is to move as far and as fast as possible towards the full implementation of the CECC system, and eventually to the total replacement of BS 9000 by the CECC system. Readers' attention is drawn to Circular Letter 25 which describes in detail the implementation in the United Kingdom of this policy concerning the CECC system.

2.2 Capability Approval

The fundamental requirements for Capability Approval are detailed in BS 9000 : Part 6. Associated procedural matters are covered in Chapter A8.

In this case quality assessment of both the design and production capability is established and maintained, supported by formal testing of Capability Qualifying Components (CQC's) which defines the manufacturer's total capability. The testing is in accordance with an established schedule of tests generally defined by the generic specification. The schedule includes Group C and D tests which are synonymous with the tests in approval and maintenance schedules for similar components which are appropriate for the Qualification Approval route. This enables customers to specify their own particular requirements for the function and performance of their specific component, provided only that it is within the manufacturer's approved capability. Thus complete flexibility is available within the boundaries of the capability.

However, certain minimum standards are required, and these are given in the appropriate generic specification or associated sectional specifications or appendices (see Chapter C1).

3. CECC SYSTEM

3.1 General

The CECC system covers both Qualification



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concept authorized by Part 3 of the Rule of Procedure CECC 00 107 (Quality Assessment Procedures).

Note: CECC 00 107 is to be replaced by CECC 00 114.

3.2 Qualification Approval

The fundamental requirements for Qualification Approval are detailed in CECC 00 107, Part 1, Clause 7, and are virtually identical to those of the UK national system, BS 9000. The associated procedural matters in the UK are therefore covered in Chapter A8.

Similarly, it is essential that all detail specifications, etc., and amendments are written and processed strictly in accordance with the procedures in Chapter A7 and Circular Letter 15. (It must be remembered that registration with, and acceptance by the CECC Secretariat is involved here, in addition to the usual UK acceptance and registration. Adherence to these requirements will, however, ensure that detail specifications are acceptable to CECC.)

3.2.1 ASSESSMENT LEVELS (GENERAL)

At present there are no definitive statements in the CECC Rules of Procedure concerning assessment levels, except those regarding extension of the manufacturer's approval to cover components under the Procedure for Enhanced Assessment of Quality (see paragraph 3.2.3 below). Therefore, the implementation of assessment levels in specific generic areas, as outlined below, cannot be interpreted as offering direct comparisons between any similarly identified levels in different component areas. The precise significance of each assessment level can only be ascertained by consulting the relevant documents.

Neither is it possible to make a definite statement on direct comparability between BS 9000 and CECC assessment levels, as, for example, most CECC generic specifications have few, if any, Group D tests; and also international agreement has often resulted in some tests being up or down-graded between Groups B and C, as compared

However, as a rough guide, the BS 9000 'Full assessment' level is usually comparable with either:

- (a) the specified tests when only a single level of assessment is defined in the CECC generic, sectional and blank detail specification (BDS), or
- (b) the highest defined assessment level when the CECC generic, sectional and BDS state detailed requirements for two or more levels.

As in BS 9000 the CECC sectional specification and/or BDS state the minimum mandatory test/inspection requirements, with AQL's, stress levels, conditioning periods, test frequency and parametric performance (ref. CECC 00 111, Clause 5.2.10).

3.2.2 APPLICATION CATEGORIES (SCREENING LEVELS) FOR DISCRETE SEMICONDUCTORS UNDER CECC

The screening procedures which may be applied to discrete semiconductor devices are included in Appendix VI to CECC 50 000. Four screening classes are defined, identified by A, B, C and D which are broadly similar to the application categories S1, S2, S3 and S4 respectively as described in 2.1.2. The screening procedures which may be applied to monolithic integrated circuits are included in Clause 4.10 of CECC 90 000. Six screening classes are defined, identified as H, B, C, D, E and F. Classes H, B, C and D are broadly similar to the application categories S1, S2, S3 and S4 respectively as described in 2.1.2.

3.2.3 ENHANCED ASSESSMENT OF QUALITY

The 'Procedure for Enhanced Assessment of Quality' is detailed in Part II of CECC 00 107.

This part is intended to cover manufacturers wishing to obtain Qualification Approval of components required for incorporation in space vehicles, or in other comparable environments. The approval requirements are therefore additional to those detailed in CECC 00 107, Part I, and satisfaction of them is recognized by extension of the manufacturer's approval to cover 'Enhanced Assessment of

Overall the requirements are more rigorous and detailed than in Part 1. A number of additional mandatory items are introduced, including:

- (a) a comprehensive Quality Manual must be produced to the satisfaction of the NSI;
- (b) processes and their controls must be registered and detailed in a Process Identification Document (PID);
- (c) critical processes and inspection activities must be identified;
- (d) failure analysis and consequential reporting and corrective actions must be included in the manufacturer's system;
- (e) the period of validity for Qualification Approval is restricted and subject to review prior to extension.

The Rule of Procedure Part II also allows for intermediate levels which lie between the full procedures required by Part II of the RP and the general usage requirements in Part 1.

Assessment levels will be identified by 'SB' and 'SC', which are reserved to identify levels applicable to components for space applications.

3.3 Capability Approval

The principles of Capability Approval in the CECC system are covered by the Rules of Procedure, CECC 00 114, Part 3 (see Chapter C1).

Component areas covered at present include:

- CECC 23 000 – Custom built printed wiring boards
- CECC 26 000 – Custom built transformers and inductor cores
- CECC 41 000 – Potentiometers (in preparation)
- CECC 50 000 – Discrete semiconductor devices
- CECC 63 200 – Film and hybrid integrated circuits
- CECC 64 200 – Film resistor networks
- CECC 68 100 – Quartz crystal units (in preparation)

CHAPTER A3

GUIDE FOR THE APPRAISAL OF A MANUFACTURER IN THE BS 9000, CECC AND IECQ SYSTEMS

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CHAPTER A3

GUIDE FOR THE APPRAISAL OF A MANUFACTURER IN THE BS 9000, CECC AND IECQ SYSTEMS

Issue 2

Reissued November 1989

(5 pages)

1. INTRODUCTION

When a manufacturer wishes to become approved under the systems he shall submit an application to BSI in accordance with BS 9000 : Part 4, Appendix A. Application forms are available from BSI, Milton Keynes.

In the application, he shall indicate:

- (a) the generic or generic and sectional specifications against which he intends to manufacture components;
- (b) the location of the factory or part thereof for which approval is sought.

The manufacturer shall submit a separate application for each location for which approval is sought.

The manufacturer shall undertake to allow access by the representatives of the National Supervising Inspectorate to all parts of the factory relevant to quality assessment.

2. APPROVAL OF A MANUFACTURER

The manufacturer must demonstrate that his inspection and quality assurance departments satisfy the requirements laid down in the Rules of Procedure (see BS 9000 : Part 4, Clause 2) and various generic specifications, and that his manufacturing procedures are adequately documented and controlled. He must also demonstrate that he holds sufficient engineering capability to develop and/or maintain the technology for which he is seeking approval. An assessment will be performed by the NSI covering details such as inspection staff and facilities, test equipment and calibration procedures, test records and quarantine stores. If the manufacturer passes this assessment he then becomes an approved manufacturer but he then has to obtain Qualification Approval or Capability Approval for component or component range before he may release them within the rules of the systems. As manufacturers may not wish to perform all tests using their own facilities, it is accepted that there will be a number of approved independent test laboratories available

2.1 Appointment of an Approved Person

One of the requirements of all three systems is that manufacturers seeking approval must first appoint an Approved Person. The person fulfilling this role is required to set up and maintain a comprehensive quality control system in accordance with the requirements given in the relevant rules documents.

This position is an important post in a company's quality assurance system and the person concerned accepts full responsibility for all quality matters within the company. The Approved Person is defined in BS 9000 : Part 1, Clause 2.4.8.

The Approved Person, or any named deputy, shall be qualified both technically and administratively to control, to the satisfaction of the NSI, the inspection of components for which the manufacturer is seeking approval. He shall be the normal means of communication between the NSI and the manufacturer. He shall have adequate authority and resources, together with access to all documents necessary to enable him to exercise effective surveillance over the quality of incoming piece-parts and materials, the quality control during manufacture and the inspection of components to be released under the system.

The Approved Person reports to the senior management of the company or of the manufacturing unit, and in any case shall be independent of the manager who is responsible for the production of the relevant components. He shall, in particular:

- (a) maintain contact with the NSI;
- (b) assume responsibility for the quality of components released under the system;
- (c) ensure that the results of inspection measurements and tests are recorded and are available for review by the NSI;
- (d) assume responsibility for the application of the Mark and/or use of the Certificate of Conformity, for lots released for delivery;
- (e) assume responsibility for the accuracy of Certified Test Records;
- (f) assume responsibility for any necessary re-inspection of components subject to



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3. QUALITY MANUAL

The company's Approved Person is responsible for the production of a Quality Manual which should describe the organization and quality procedures within the company.

This document is usually compiled, with the advice of the NSI, during the appraisal process and prior to approval. If a company already has a Quality Manual, it may meet the system requirements after suitable adaptation. The Quality Manual is subject to approval by the NSI and is important for both the company and the NSI during subsequent supervision.

4. QUALIFICATION APPROVAL

Qualification Approval in the BS 9000, CECC and IECQ systems is the assessment of an individual component or range of components which meet the requirements of the specification(s).

Manufacturers seeking Qualification Approval for their products must first have received manufacturers' approval under the systems.

To obtain Qualification Approval (QA) for a component, an approved manufacturer must demonstrate that specimens taken from production meet the test requirements prescribed in the detail specification. Testing is under the surveillance of the NSI, either in the manufacturer's own laboratories or in an approved independent test laboratory.

When the testing is completed a test report is produced, detailing test procedures and results in accordance with the requirements given in BS 9000 : Part 5, Clause 3.4.2. This report is signed by the manufacturer's Approved Person and countersigned by the NSI representative, when all the requirements for Qualification Approval have been met.

On satisfactory completion of this procedure the manufacturer, in conjunction with the NSI prepares a draft certificate and submits this to BSI. The NSI at this stage recommends to BSI that Qualification Approval be granted. On receipt of the recommendation BSI issues a certificate. The approval is then listed in the

Electronic components to be delivered as conforming to the systems are continuously monitored by means of a three or four stage inspection programme, depending upon the system to which QA is sought. Samples are randomly selected from each inspection lot using the sampling procedures laid down in BS 6001 (the national equivalent of IEC 410), and subjected to testing. As an example, in the BS 9000 system this testing is divided into lot-by-lot and periodic testing.

The lot-by-lot inspection is completed before a given lot is released and it is sub-divided into:

- Group A Visual inspection and short duration electrical and mechanical tests which are normally non-destructive;
- Group B Electrical, mechanical, endurance and environmental tests which may take up to one week to complete. Some of these may be released to a customer.

The periodic inspection is normally sub-divided into:

- Group C Tests of longer duration than the lot-by-lot tests, such as mechanical and electrical endurance tests or environmental tests. These are usually at three monthly intervals. Specimens for the Group C tests may be collected from the lots which have passed Group A and B tests during the three month period or they may be taken from a lot which has passed Group A and B inspection at the end of the three month period. For these periodic tests fixed sample sizes are sometimes used instead of a sample size dictated by an inspection level and AQL;
- Group D Tests which need to be repeated only at long intervals of one, two or three years.

Each of the Groups A to D may be divided into sub-groups for convenience in arranging the tests and in sampling at the appropriate levels.

4.1 Quality conformance inspection

Qualification Approval is maintained by



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inspection requirements, including periodic tests, as stated in the detail specification.

If a component is subject to infrequent production or high failure rate, or its production is discontinued, the approval will require re-confirmation by the NSI.

The manufacturer releasing components to his customer makes a declaration that he has performed all the lot-by-lot inspections scheduled in the detail specification and that the components have fulfilled the performance requirements prescribed. He keeps records of his lot-by-lot and periodic inspections including the Certified Test Records to which reference has already been made.

5. CAPABILITY APPROVAL

5.1 Introduction

As an alternative method of achieving product approval Capability Approval is available under the BS 9000 and CECC systems (see BS 9000 : Part 6 and CECC 00 114; Part 3).

Its introduction into the IECQ system is progressing.

5.2 Concept for Capability Approval

Capability Approval offers advantages of improved flexibility in operation of the system to achieve the essential continuous quality assurance for the approved product. The emphasis is on control of each individual manufacturing process rather than reliance on testing of the final component.

Three mechanisms are required to provide for the assessment of product approved by this method:

- (a) a procedure which embraces all the variants that a manufacturer produces from a basic technology, so that a single full scale approval exercise will suffice for all designs;
- (b) a means of maintaining such an approval;
- (c) a detail specification system which is simple for the customer and manufacturer to operate.

Capability Approval is based on a precise definition of the boundaries of a capability, a

a demonstration that the capability is viable and the subsequent maintenance of the capability by periodic assessment.

The definition of the capability boundaries identifies the area within which consistent production can be achieved to a defined standard and quality of manufacture. Potential customers can negotiate their performance requirements with the manufacturer in the knowledge that these standards will be applied automatically.

5.3 Standard catalogue items

A manufacturer's Capability Approval can also be used to supply standard catalogue items.

When a manufacturer wishes to produce a component under his Capability Approval, which he intends to market as a standard catalogue item, he must first write a detail specification for this component.

The specification must be of a similar format to that required for a customer detail specification (CDS) except that prior agreement with a customer is not necessary.

To produce this type of specification the manufacturer must apply to BSI for the allocation of a specification number. Once the specification has been written and is acceptable to the NSI, production can commence. Items produced are tested against the specification and released to the customer's order. All components released are accompanied by a Certificate of Conformity (C of C) and listed in the Qualified Products List – PD 9002. Long term endurance and periodic tests are normally covered by Capability Qualifying Components (CQC's) under maintenance of Capability Approval.

6. MARK OF CONFORMITY

6.1 General

The Mark of Conformity consists of a symbol which shall be registered (see BS 9000 : Part 1 Clause 6.4 and CL 15 respectively for BS 9000 and CECC marks). There is no IECQ mark at present.

The Mark of Conformity shall be printed on adhesive tape or other similar means for sealing the package. This is not compulsory if

Conformity. In the latter case, the Mark of Conformity shall be placed in the vicinity of the marking required by the relevant specification.

When sealed packages are used, the protection by the Mark of Conformity cannot be given if the order is less than the capacity of the smallest package for the corresponding component or, for part of the order, if this is not a multiple of the capacity of the smallest package.

The Mark of Conformity shall be affixed under the responsibility of the Approved Person and only on components from released lots or their packages or on both.

Information identifying:

- (a) the National Supervising Inspectorate;
- (b) the manufacturer's or the independent distributor's national approval number;
- (c) the National Authorized Institution, (optional);
- (d) the inspection lot;

shall be placed close to the symbol in the order given above.

Note: *Import regulations of some countries may require the country of origin to be marked.*

The information given in (a) to (d) should normally allow the delivery lot to be traced to the manufacturer's test report. If this is not so, the necessary extra information shall be given on the package and/or on the component.

At the manufacturer's discretion, a smaller dimension of the symbol accompanied only by the information in (a) and (b) may be used for the marking of individual components, provided that they are contained in a sealed package as described above.

The stamps or the sealing material bearing the Mark of Conformity shall be stored and used under secure conditions approved by the NSI.

The Approved Person shall keep a register of seals or sealing materials bearing the Mark of Conformity so that the NSI may know where

7. CERTIFICATE OF CONFORMITY FOR USE BY MANUFACTURERS

7.1 General

The certificate for manufacturers shall contain the following information:

- (a) the name of the manufacturer and, where he possesses several factories, the names of the factories concerned and, if he wishes, his address and other details;
- (b) the trade mark of the manufacturer, if he wishes;

Note: *A manufacturer is recommended to use his trade mark on the certificate to provide a measure of legal protection against counterfeiting of the certificate.*

- (c) the full catalogue name and the reference of the component allotted to it by the manufacturer;
- (d) the manufacturer's inspection lot identification under which the component was released. If, due to long storage, the component has been re-inspected by the manufacturer, the new inspection lot identification shall also be given;
- (e) the reference number of the detail specification to which the component conforms. If required by the national rules, the national number of the detail specification may be added;
- (f) the name of the NSI under whose supervision the release took place;
- (g) some form of authentication as is decided by the Approved Person of the manufacturer, or such person as he authorizes. This may be an actual signature, or a printed signature accompanied by some form of symbol such as punched holes or a stamp;
- (h) the manufacturer's appropriate system approval number as granted to him by BSI for the location where the release took place;
- (i) the date of acceptance of the

- (j) the text to be used shall be as stated in the relevant Rules of Procedure;
- (k) date of issue of the certificate.

7.2 General conditions for use of the certificate

The certificate shall be issued under the responsibility of the approved signatory and only for components forming accepted lots.

CHAPTER A4

GUIDE FOR THE APPRAISAL OF A DISTRIBUTOR IN THE BS 9000, CECC AND IECQ SYSTEMS

<i>CLAUSE</i>	<i>PAGE</i>	<i>TITLE</i>
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CHAPTER A4

GUIDE FOR THE APPRAISAL OF A DISTRIBUTOR IN THE BS 9000, CECC AND IECQ SYSTEMS

Issue 3

Reissued November 1989

(3 pages)

1. INTRODUCTION

The BS 9000, CECC and IECQ systems provide for approved distributors of electronic components of assessed quality. The guidelines given are considered equally applicable to all the three systems and provide information on the responsibility of approved distributors for the purchase, storage and distribution of components as required by the rules of the system (see BS 9000 : Part 4, Clause 3).

2. APPROVAL OF A DISTRIBUTOR

When a distributor, independent of any manufacturer's production department, wishes to have recognized his fitness to stock components produced within the framework of the system, he shall satisfy the NSI that his system of storage and delivery ensures:

- conservation of the identity of the lots held in stock and their relation to the results of the tests to which they have been subjected;
- delivery of the components with a guarantee that they have been stored under suitable conditions and that they have not been used, modified, or repaired, and that they are either in their original packing, or repacked by him according to the conditions required by the rules of the system;
- resubmission to the manufacturer or an approved test laboratory, of components which have been kept for 12 months (or longer where permitted by the relevant specification) for the tests prescribed for this purpose in the relevant specification before delivery.

The distributor shall name an individual as an Approved Person who shall ensure compliance with all the appropriate requirements of the system to the satisfaction of the NSI (see Chapter A3, 2.1).

2.1 Distributor's manual

When a distributor applies for approval, the NSI is responsible for appraising his arrangements for meeting the requirements of the system.

distributor and NSI during appraisal and supervision to have the arrangements recorded for reference and as a guide for the distributor's staff. The distributor is therefore required to compile a Distributor's Manual of Organization and Procedures. He may already have such a manual which could be adapted to serve the purpose. These notes are intended as a guide to the preparation of a suitable document, as advised by the NSI.

In general the manual should describe the distributor's organization and show the departmental functional responsibilities to senior management. This can be shown conveniently in a tree chart and list of duties in the posts which are relevant to the operation of the system.

The manual should list the names of the approved manufacturers who supply the distributor. The types of products in terms of generic specification and titles (e.g. capacitors, tantalum) should be stated.

A description of the premises' building structure and floor area and its division into departmental use, should be given.

The stock control system, including purchase, goods inward, reception and inspection, bonded stores, quarantine arrangements, despatch and release procedure, to meet the requirements of the system should be described. A specimen of each paperwork form or label used in the system should be included in the manual. The description should show the arrangements in being, or proposed to ensure:

- that each order placed on a manufacturer calls up the relevant specification and gives full identification detail;
- that only components correct to the order are accepted and passed to a bonded store under proper identity, correlated to the manufacturer's release documents;
- procedures for opening packages and sealing into smaller quantities for despatch;
- incorrect or damaged components are rejected and returned to the manufacturer under suitable documentation;
- maintenance of identity of components

correlation with the incoming release document) throughout quarantine, bonded store and despatch to the customer;

- (f) that sufficient stocks are held and outdated or expired shelf life components are removed from the bonded store for disposal as appropriate;
- (g) that all the requirements of customers' orders are conveyed accurately to all members of staff involved in issuing components from bond in the release procedure (that is, preparation and signing of the Certificate of Conformity or control of the Mark of Conformity).

The procedure for ensuring that a complete set of relevant specifications for all types of components distributed is held and kept up-to-date by amendment is to be described in this document.

3. CERTIFICATE OF CONFORMITY FOR USE BY DISTRIBUTORS

3.1 General

The certificate for independent distributors shall contain the following information:

- (a) the name of the independent distributor and, if he wishes, his address and other details;
- (b) the trade mark of the distributor, if he wishes;

Note: A distributor is recommended to use his trade mark on the certificate to provide a measure of legal protection against counterfeiting of the certificate.

- (c) the name of the manufacturer who released the components;
- (d) the inspection lot identification under which the component was released. If due to long storage the component has been re-inspected while in the distributor's hands, the distributor shall insert the new inspection lot number;
- (e) the full catalogue name and reference of the component allotted to it by the manufacturer, together with the full catalogue name and reference, if any, allotted by the distributor;

specification to which the component conforms. If required by the national rules, the national number of the detail specification may be added;

- (g) name of the NSI under whose supervision the release took place and of the NSI who supervises the distributor;
- (h) the distributor's appropriate system approval number, as granted to him by BSI, for the location where the release took place;
- (i) such form of authentication as is decided by the distributor, or such a person as he authorizes. This may be an actual signature, or a printed signature accompanied by some form of symbol such as punched holes or a stamp.

3.2 General conditions for use of the certificate

The certificate shall be issued under the responsibility of the Approved Person and only for components forming accepted lots.

Such arrangements as are made for authenticating the certificate shall be used under secure conditions approved by the NSI.

The Approved Person shall maintain records showing the relationship between a certificate and the lot of components to which it refers. He may if he wishes allocate a reference number to the certificate.

With the agreement of the NSI the certificate may form any part of any other paperwork given to the customer as part of the commercial transaction.

4. MARK OF CONFORMITY

The Mark of Conformity consists of a symbol which shall be registered (see BS 9000 : Part 1, Clause 6.4 and CL 15 respectively for BS 9000 and CECC marks). There is no IECQ mark at present.

The Mark of Conformity shall be printed on adhesive tape or other similar means for sealing the package. This is not compulsory if the individual components bear the Mark of Conformity. In the latter case, the Mark of Conformity shall be placed in the vicinity of the marking required by the relevant

When sealed packages are used, the protection by the Mark of Conformity cannot be given if the order is less than the capacity of the smallest package for the corresponding component or, for part of the order, if this is not a multiple of the capacity of the smallest package.

Sealed packages may be opened by an approved independent distributor in order to re-distribute their contents in adequate packages of a smaller unit capacity, the latter in turn being sealed with the Mark of Conformity by the distributor. This operation ensures that the components delivered come from an identifiable package which the independent distributor has opened on his premises, and that the operations which he has carried out on the components are as specified in the Rules of Procedure for the appropriate system.

The Mark of Conformity shall be affixed under the responsibility of the Approved Person and only on components from released lots of their packages or on both.

Information identifying:

- (a) the National Supervising Inspectorate;
- (b) the independent distributor's national approval number;
- (c) the National Authorized Institution, (optional);
- (d) the inspection lot;

shall be placed close to the symbol in the order given above.

Note: *Import regulations of some countries may require the country of origin to be marked.*

The information given in (a) to (d) should normally allow the delivery lot to be traced to the manufacturer's test report. If this is not so, the necessary extra information shall be given on the package and/or on the component.

At the manufacturer's discretion, a smaller dimension of the symbol accompanied only by the information in (a) and (b) may be used for the marking of individual components, provided that they are contained in a sealed package as described above.

The stamps or the sealing material bearing the Mark of Conformity shall be stored and used

The Approved Person shall keep a register of seals or sealing materials bearing the Mark of Conformity so that the NSI may know where they are kept and how they are used.

5. APPROVAL OF AN INDEPENDENT DISTRIBUTOR ACTING IN ANOTHER ROLE

When an independent distributor wishes to perform assembly, testing, modification or marking of components released to him partly finished by an approved manufacturer, he shall obtain approval for those operations which he wishes to perform (see BS 9000 : Part 4, Clause 2.12).

6. DELAYED DELIVERIES

Released components which have been in store for a period longer than that specified in the relevant specification shall undergo, before delivery, further tests as detailed in the specification to which they had been released.

CHAPTER A5

GUIDE FOR THE APPRAISAL OF INDEPENDENT TEST LABORATORIES IN THE BS 9000, CECC AND IECQ SYSTEMS

<i>CLAUSE</i>	<i>PAGE</i>	<i>TITLE</i>
1.	1.A5.1	INTRODUCTION
2.	1.A5.1	APPROVAL OF A TEST LABORATORY
2.1	1.A5.1	Test laboratory manual

A5

CHAPTER A5

GUIDE FOR THE APPRAISAL OF INDEPENDENT TEST LABORATORIES IN THE BS 9000, CECC AND IECQ SYSTEMS

Issue 3

Reissued November 1989

(2 pages)

1. INTRODUCTION

The BS 9000, CECC and IECQ systems provide for independent test laboratories to perform all or some of the tests on electronic components as required by the appropriate rules of the system, where a component manufacturer does not have available facilities of his own (see BS 9000 : Part 4, Clause 4).

A test laboratory is defined as an organization having the facilities and capability for carrying out tests and measurements on electronic components in accordance with the relevant specification, and whose decisions are independent from the company manufacturing or supplying the components being tested.

2. APPROVAL OF A TEST LABORATORY

When a test laboratory which is independent of a component manufacturer's production department wishes to become an independent test laboratory approved within the systems it shall submit an application to BSI. It shall have prepared documentation as a basis for the appraisal by the NSI describing its organization and the procedures employed to implement the requirements of the systems. It shall demonstrate to the satisfaction of the NSI that:

- (a) its staff possesses the necessary competence and its test facilities are completely adequate for its purpose;
- (b) it is free from all external influences which would prevent it from acting in an impartial manner;
- (c) it has an adequate system for the calibration of its measurement and test equipment;
- (d) its measuring instruments are checked at regular intervals by an approved calibration service.

The independent test laboratory shall name an Approved Person (see Chapter A3, 2.1) who shall ensure compliance with all appropriate requirements of the system to the satisfaction of the NSI and who shall in particular:

- (e) maintain contact with the NSI;
- (f) assume responsibility for the correct

- (g) ensure that the results of measurements and tests are recorded such that the following can be identified:
 - (i) the sample tested;
 - (ii) the person responsible for the test;
 - (iii) the results obtained;
- (h) ensure the confidentiality of all the work, measurement and test results for which he is responsible.

Test reports issued by an approved test laboratory shall contain certification by the Approved Person that the tests have been performed in accordance with the quoted specification and that the results have been correctly recorded.

Among the things required of an applicant as a condition of approval, is a manual of Test Laboratory Procedures describing the testing facilities of the laboratory and its organization. The manual is usually prepared during the course of the appraisal, with the advice of the NSI. If such a document is already in existence it will, with such adaptations as may be necessary, serve the purpose. The manual is intended to record for reference the testing and organization arrangements as approved. It will be of considerable assistance during appraisal and subsequent supervision and provide essential information to prospective customers.

The following notes are intended as a guide for the preparation of a suitable document which is subject to approval by the NSI and which is important to both the test laboratory and the NSI during subsequent supervision.

2.1 Test Laboratory Manual

The manual should describe the organization of the test laboratory to show the line of responsibility to the senior management and the departmental relationships. This should be in the form of an organization tree chart with a list to show the duties and responsibilities of the various posts which are relevant to the requirements of the system.

The laboratory buildings should be briefly described in terms of construction, floor area and environmental facilities. Brief details of specially controlled areas for temperature, humidity, vibration testing and clean

The laboratory services offered under the approval and the approved scope should be stated. This can best be given in terms of tests and measurements which can be undertaken together with the relevant range of measurement values and limits of accuracy. Major test equipment should be listed with the details mentioned above shown against each item.

The procedures and arrangements used to ensure regular maintenance, periodic calibration or evaluation of laboratory equipment should be described and the system for recording these operations must be stated.

The manual should show the standards held and state the arrangements made to ensure calibration at appropriate intervals. The system of recording should be stated.

The manual should describe the system and operating procedures for:

- (a) dealing with enquiries and orders from customers and passing their instructions to the laboratory staff;
- (b) ensuring that specified sample quantities are available before testing commences;
- (c) ensuring that all testing and conditioning of samples entirely complies with the relevant specifications and the customer's instructions;
- (d) preserving the identity and integrity of samples from the time of receipt to the return to the customer and ensuring accurate correlation of samples, test results and reports;
- (e) allocating and programming the work;
- (f) ensuring the identity, accuracy and completeness of the test report at the time of signature;
- (g) preserving in laboratory files copies of all issued test reports suitably indexed;
- (h) maintaining specifications up-to-date.

The manual should include copies of all documentation (forms and labels, etc.) used in the test laboratory.

efficiency of staff and the method of recording periodic checks on competence should be detailed.

The Test Laboratory Manual should present a concise picture of the system and procedure which will ensure compliance with the system requirements. It should contain sufficient detail for a satisfactory understanding of the soundness of the organization and for reference purposes.

CHAPTER A6

GUIDE FOR THE APPRAISAL OF ASSESSORS OF UNENCAPSULATED ADD-ON COMPONENTS IN THE BS 9000 SYSTEM

<i>CLAUSE</i>	<i>PAGE</i>	<i>TITLE</i>
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2.	1.A6.1	REQUIREMENTS
3.	1.A6.1	APPROVAL OF AN ASSESSOR
4.	1.A6.1	APPOINTMENT OF AN APPROVED PERSON
5.	1.A6.1	QUALITY MANUAL
6.	1.A6.2	PRODUCT SPECIFICATION
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CHAPTER A6

GUIDE FOR THE APPRAISAL OF ASSESSORS OF UNENCAPSULATED ADD-ON COMPONENTS IN THE BS 9000 SYSTEM

Issue 3

Reissued November 1989

(2 pages)

1. INTRODUCTION

The role of the assessor is to assess and supply unencapsulated components for incorporation into electronic components covered by a BS 9000 generic specification. Components may be obtained as part finished devices either from a BS 9000 production line or from an unapproved source. An assessor of unencapsulated add-on components may not be used as an alternative to the procedure of BS 9000 : Part 5, Clause 3.2.5 ('Route 2').

This type of approval is not available under the CECC or IECQ system.

2. REQUIREMENTS

Any organization applying for this type of approval must meet the following criteria:

- (a) it must be technically and financially independent of any manufacturer's production department;
- (b) it must have a satisfactory purchasing policy, which includes adequate purchase specifications, drawings and control procedures for the products covered by the approval application;
- (c) it must have a documented quality system which complies with the requirements of BS 9000 : Part 4, Clause 5.

The organization's inspection and test facilities must be adequate to undertake the supply of such unencapsulated components and be operated by staff that have the necessary competence and expertise. Both these requirements must be to the satisfaction of the NSI.

The assessor shall undertake to allow access by the representatives of the NSI to all parts of the factory relevant to quality assessment.

The Certificate of Conformity shall meet the requirements of BS 9000 : Part 7, Appendix C.

The assessor shall prepare a document, lodging a copy with the NSI, listing for each unencapsulated add-on component the source and technology of component types he may wish to supply as a BS 9000 assessor of unencapsulated add-on components. This document shall show clearly which batches will be overseen by the NSI. The NSI shall

3. APPROVAL OF AN ASSESSOR

The assessor must demonstrate that his inspection and quality assurance departments satisfy the requirements laid down in the rules of the system and various generic specifications, and that his procedures are adequately documented and controlled. An assessment will be performed by the NSI covering details such as inspection staff and facilities, test equipment and calibration procedures, test records and quarantine stores. If the assessor is found acceptable for Inspection Approval he is approved as an assessor of unencapsulated add-on components.

4. APPOINTMENT OF AN APPROVED PERSON

Assessors seeking approval must first appoint an Approved Person. The person fulfilling this role must ensure that the assessor's quality system is maintained in accordance with the requirements given in the relevant rules document.

This position is an important post in a company's quality assurance system and the person concerned accepts full responsibility for all quality matters within the company.

The Approved Person, or any named deputy, shall be qualified both technically and administratively to control the inspection and assessment of components, and to have adequate authority and resources to enable him to exercise effective surveillance over their quality.

The Approved Person shall report to the senior management of the company or unit. He shall in general have the same responsibilities as those detailed in Chapter A3, 2.1.

5. QUALITY MANUAL

The company's Approved Person is responsible for the production of a Quality Manual which should describe the organization and quality procedures within the company.

This document is usually compiled, with the advice of the NSI, during the appraisal process.

has a Quality Manual, it may serve the purpose after suitable adaptations. The Quality Manual is subject to approval by the NSI and is important for both the company and the NSI during subsequent supervision.

6. PRODUCT SPECIFICATION

Product specifications shall preferably be written in BS 9000 format for all add-on components to be supplied under BS 9000. The document shall include:

- (a) a specification number (issued by the assessor and registered within his system), issue status and date;
- (b) a diagram giving the metallization layout and critical dimensions of the add-on component. Sufficient detail must be included for the customer to be able to identify the part. For complex devices an enlarged photograph may be used;
- (c) manufacturer of the add-on component, functional description of the part and the technology used in its manufacture;
- (d) assessment option;
- (e) limiting conditions of use and electrical characteristics;
- (f) package type and (where appropriate) the add-on component marking or identification;
- (g) methods of attachment of add-on components for lot qualification (die attach and wire bond);
- (h) ordering information;
- (i) inspection schedule to include all tests and test methods, test limits, sampling plans and acceptance criteria. The inspection schedule format should follow current BS 9000 practice;
- (j) electrical endurance test conditions (test temperature, electrical loading, etc.) and post-test end-points;
- (k) information to be included in test report (if required by the customer).

7. APPROVAL REVIEW

This review will take the form of an in-depth appraisal of deliveries that have taken place in the previous 12 months and an overall assessment of whether the assessor's quality control procedures continue to be adequate. The assessor shall provide the NSI with a three monthly summary of products assessed and supplied to the BS 9000 system.

CHAPTER A7

PREPARATION, PUBLICATION OR AMENDMENT OF DETAIL SPECIFICATIONS PRODUCED BY MANUFACTURERS

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4.	1.A7.6	AMENDMENTS TO CECC PUBLISHED DETAIL SPECIFICATIONS
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4.2	1.A7.6	Amendment category
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