

**DEPARTMENT OF CIVIL AVIATION  
MALAYSIA  
AIRWORTHINESS NOTICE**

<b>No: 71</b>	<b>Issue: 1</b>	<b>Page: 1</b>
---------------	-----------------	----------------

Date: 01 July 1997

**THE SELECTION AND PROCUREMENT OF ELECTRONIC COMPONENTS.**

**1. Introduction**

The selection and procurement of electronic components for use within aircraft equipment or for direct fitment to airframes continues to present problems for those concerned with airworthiness procedures for civil aircraft. This Notice prescribes how the relevant BCAR should be applied in order to achieve design and quality control of equipment and components.

**2. Definition**

2.1 The term 'Electronic Components', as interpreted by the BSI and other agencies, may include such items as micro-switches or electrical connectors which are likely to be fitted to an airframe. More conventionally the term 'Component' also refers to parts such as capacitors and resistors which have no method of mounting other than by the soldered electrical connections. The application of such terms is usually within an equipment which itself is approved for installation in an aircraft.

2.2 For the purpose of this Notice such items are referred to as:-

- (a) **Aircraft Components**, for items *fitted directly* to airframe or engine, and
- (b) **Component Parts**, for items *fitted within* equipment.

**3. Design Responsibility**

**3.1 Aircraft Components**

The requirements for electrical aircraft components are given in BCAR Chapter A3-3 and JAR 25.1351 to 25.1363, the installation requirements of electrical items is further considered in BCAR D6-1.

3.2 For correct interpretation of this notice it is important to understand the significance of the terms '**Controlled**' and '**Uncontrolled**' as applied to electrical components. For items used as 'Aircraft Components' as defined here, the known or probable use will determine the approval category and, for 'controlled items', the requirement of paragraphs 5 and 6 of BCAR Chapter A3-3 will need to be followed as appropriate. The term 'Uncontrolled' relates solely to the status of items in their functional role in an aircraft and does not imply that such components may be ignored. Paragraph 2 of BCAR Chapter D6-1 requires those designing installations to consider the suitability of 'Unclassified parts and Equipment' and where necessary, these 'shall be controlled ..... to a standard to ensure compliance with the relevant requirement of ..... Section D'. Thus the design and build standard of the 'Uncontrolled Item' may still be subject to a measure of control under the DCA procedures prescribed in this Notice to ensure that no new unassessed failure modes are introduced.

3.3 The selection and use of Aircraft Components is normally the responsibility of an Approved Organisation with appropriate terms of approval under BCAR Section A procedure. Such organisations need to satisfy themselves, and ultimately the DCA, as to the suitability of an equipment in a given application. The authorisation by an Approved Signatory within an Approved Organisation and its acceptance by the user constitutes Approval under Component Procedures. If the design authority for an equipment additionally obtains approval for their product from the DCA, it does not absolve the user from ensuring that the item to be used as an aircraft component is suitable for the particular application.

3.4 In the context of this Notice it is essential that users appreciate that generalised claims that an item can only relate to the conformity with specifications, compliance with which may, or may not have been validated by a third party. Approval for aircraft is a function of selection by an authorised design authority who will in effect, approve the application of the item.

**4. Component Parts - Selection**

4.1 The designer of a piece of equipment which utilises individual component parts has freedom of choice in the matter of selection provided that the equipment taken as a whole meets its design specification and the relevant airworthiness requirements. The requirement of BCAR Chapters A4-1, A4-2, and A4-3 have to be satisfied and this establishes the need for control of the identification, reliability and modification standard of component parts. Users and overhaulers of equipment need to be able to procure component parts. Which will maintain the established and accepted reliability of the total equipment. It follows that all necessary information regarding special testing, selection or condition of component parts shall be given in the Overhaul Manuals.

4.2 Items produced to BS9000 specifications may well be suitable if the defined level of quality is compatible with the declared reliability for the total equipment, as further noted in paragraph 7.

## **5. User Responsibility**

- 5.1 Users and Overhaulers of equipment are responsible for showing compliance with the requirements of BCAR Chapter A4-2 when obtaining replacement 'component parts' as stated in paragraph 4 of this Notice. It is emphasized that overhaulers of equipment are required to obtain authorisation before making substitutions or in any way deviating from the spares or replacements listed in the relevant Approved Overhaul or Maintenance Manuals of a 'controlled' item of equipment. In cases of difficulty in procurement of the items referred to in approved manuals, the acceptance of alternatives must include authorisation by an appropriate Design Organisation.
- 5.2 BCAR Chapter A3-3 provide guidance on the control of quality of components obtained from suppliers.

## **6. Approved Certificate**

- 6.1 Users are reminded that the function of an approved certificate is intended to ensure that the purchaser obtains the items which are ordered. The use of an Approved Certificate does not automatically confer any approval status on the product and it is the responsibility of the purchaser to reference the required part or drawing number on his order, together with any other necessary definition. The issue of a proprietary item on an approved certificate indicates that the producing organisation is approved and that the appropriate DCA procedures have been followed, and will be followed in the event of any subsequent enquiry. It is apparent, therefore, that it is not necessary for products to be design approved by the DCA before they are released unless this is a condition of the order.
- 6.2 Purchasers should note that airworthiness procedures are applicable to airborne equipment and request for 'DCA release' should be restricted to items which fall within the requirements of BCARs and where, therefore, the release has Significance.

## **7. BS9000 Electronic Component of Assessed Quality.**

- 7.1 Users proposing to accept components supplied to any form of BS9000 specification or other specification systems employing similar formats should note and understand the assured quality aspect which is employed. Statistical sampling techniques essentially involve an element of risk which is determined by the Acceptance Quality Level (AQL) and sampling plans referenced in the specifications. The DCA will expect users of BS9000 components to hold copies of specifications concerned and to be in a position to appreciate the significance of the quality assurance techniques employed in these and other specifications involving sampling techniques.

DIRECTOR GENERAL  
DEPARTMENT OF CIVIL AVIATION  
MALAYSIA.