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INTERNAL VISUAL INSPECTION

ESA/SCC Basic Specification No. 20400



space components
coordination group

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		SCCG Chairman	ESA Director General or his Deputy
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**SCC**ESA/SCC Basic Specification
No. 20400

Rev. 'A'

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ISSUE 2

DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
			<p>This Issue supersedes Issue 1 Revision 'B' and incorporates all modifications defined in Revisions 'A' and 'B' to Issue 1 and the changes introduced by the following DCR's:-</p> <p>Cover Page DCN Para. 4: Reference to ESA/SCC Nos. 2043000, 2043501, 2043502, 2043600, 2043701, 2044000, 2045000 and 2049000 added; reference to Nos. 20430 and 20450 deleted.</p>	None None 21057/ 23600
'A'	June '01	P1. Cover Page P2. DCN P5. Para 4	: 2045010 entry amended : 2049010 entry added	None None 23934 23934

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**1. SCOPE****1.1 GENERAL**

This specification defines the minimum acceptable internal visual inspection criteria for electrical, electronic and electro-mechanical components suitable for space applications.

1.2 PURPOSE

The purpose of this specification is to describe the inspection procedures to check the internal aspects of materials, design, construction and workmanship of electrical, electronic and electro-mechanical components.

This specification covers the overall requirements for all components. Specific requirements, for individual families of components, are detailed in ancillary specifications numbered in the 20400 series (see Para. 4). Each of these must be read in conjunction with this specification.

1.3 ALTERNATIVE STANDARDS

Where the configuration of a particular component is not in accordance with the typical examples shown in an ESA/SCC 20400 series of specifications, or where current in-house inspection drawings or standards (accepted in the P.I.D.) are to be used, it shall be the Manufacturer's responsibility to obtain the formal interpretation of the SCCG, or its designated representative, concerning any deviation.

2. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

The terms, definitions, abbreviations, symbols and units specified in ESA/SCC Specification No. 21300 shall apply.

In addition, the following definitions apply in this specification:-

Lead Width

The major dimension.

Lead Thickness

The minor dimension.

Case or Package

The outer envelope of a component, excluding leads and seals, however fabricated, eg welded can, epoxy mould, etc.

Where necessary, other specific definitions will be contained within the relevant ESA/SCC 20400 series of specifications.

3. REQUIREMENTS**3.1 GENERAL**

A lot or sub-lot being examined at any one time shall be drawn from the same production lot. Evidence that this is not so shall be cause for rejection of the total lot in question.

3.2 EQUIPMENT REQUIRED

Optical equipment, visual standards and any other equipment (subject to Para. 1.3), required for the performance of the inspections will be detailed in the appropriate ESA/SCC 20400 series of specifications. All equipment shall be subject to periodic calibration or certification as appropriate.

**3.3 MATERIAL, CONSTRUCTION AND DIMENSIONS**

Material, construction and dimensions shall be in accordance with the appropriate P.I.D.

3.4 SURFACES

Surface shall be free from foreign particles and contamination. There shall be no evidence of corrosion, peeling of finish or plating or of holes and cracks. Surfaces shall not show any unusual colouring change unless explained by and authorised in, the relevant P.I.D.

3.5 SOLDER JOINTS

Any solder joint exhibiting one or more of the following defects shall be cause for rejection:-

- (a) Too much, or too little solder;
- (b) Surface of the solder not smooth or clean;
- (c) Evidence of cracks, voids or holes;
- (d) Structure of the soldered part not visible;
- (e) Incomplete solder flow or coverage;
- (f) Balling, or spherical appearance of the solder;
- (g) Evidence of foreign materials encapsulated in the solder.

4. ANCILLARY SPECIFICATIONS

The following specifications in the ESA/SCC 20400 series have been issued with this issue:-

- 2043000 - Internal Visual Inspection of Capacitors.
- 2043501 - Internal Visual Inspecting of Quartz Crystal Units.
- 2043502 - Internal Visual Inspection of Surface Acoustic Wave (SAW) Devices.
- 2043600 - Internal Visual Inspection of Electromagnetic Relays.
- 2043701 - Internal Visual Inspection of Switches.
- 2044000 - Internal Visual Inspection of Resistors.
- 2045000 - Internal Visual Inspection of Discrete Non-Microwave Semiconductors.
- 2045010 - Internal Visual Inspection of Microwave Devices.
- 2049000 - Internal Visual Inspection of Integrated Circuits.
- 2049010 - Internal Visual Inspection of Monolithic Microwave Integrated Circuits (Please refer to specification 2045010).