INTERNAL VISUAL INSPECTION

ESCC Basic Specification No. 20400

Issue 3	February 2014

Document Custodian: European Space Agency – see https://escies.org

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DOCUMENTATION CHANGE NOTICE

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DCR No.	CHANGE DESCRIPTION
838	Specification upissued to incorporate editorial changes per DCR.

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1 SCOPE

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

1.1 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 electromechanical 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. Each of these must be read in conjunction with this specification.

1.2 ALTERNATIVE STANDARDS

Where the configuration of a particular component is not in accordance with the typical examples shown in an Ancillary Specification, or where current in-house inspection drawings or standards (accepted in the PID) are to be used, it shall be the Manufacturer's responsibility to obtain the formal interpretation of the ESCC Executive, concerning any deviation.

2 TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

The terms, definitions, abbreviations, symbols and units specified in the ESCC 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, e.g. welded can, epoxy mould, etc.

Where necessary, other specific definitions will be contained within the relevant Ancillary Specification.

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, required for the performance of the inspections will be detailed in the appropriate Ancillary Specification. 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 PID.

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 PID.

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 Ancillary Specifications in the ESCC20400 series have been issued:

2043000 Internal Visual Inspection of Capacitors.

2043501 Internal Visual Inspection 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 Discrete Microwave Semiconductors.

2049000 Internal Visual Inspection of Integrated Circuits.

NOTES:

1. For Photosensitive Charge Coupled Devices and Active Pixel Sensors with Hermetic and Non-Hermetic Packages (ESCC Generic Specification No. 9020), no individual ancillary specification for Internal Visual Inspection exists. ESCC 2049000 should be used to the extent applicable.