



european space agency  
agence spatiale européenne

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**EXTERNAL VISUAL INSPECTION OF  
INTEGRATED CIRCUITS  
ESA/SCC Basic Specification No. 2059000**



**space components  
coordination group**

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
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**DOCUMENTATION CHANGE NOTICE**

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**1. SCOPE**

This Specification to be read in conjunction with ESA/SCC Basic Specification No. 20500 'External Visual Inspection', contains additional specific requirements for Integrated Circuits. They shall apply, where relevant, to each device inspected.

**2. GENERAL REQUIREMENTS****2.1 APPLICABILITY**

The following criteria may not be varied or modified after commencing any inspection stage. Any ambiguity or proposed minor deviation shall be referred to the Qualifying Space Agency (QSA) for resolution and approval.

**2.2 PROCEDURE**

All items shall be examined in such a manner that a minimum of handling is involved.

**3. EQUIPMENT REQUIRED****3.1 MAGNIFICATION**

All items shall be examined with a binocular or stereoscopic microscope with a minimum range of from 3 power (3X) to 10 power (10X). The minimum magnification used shall be 3X. The maximum magnification used shall be 10X. In the case of criteria for which no measurement is specified, the magnification used shall be 40 power (40X).

**3.2 MOUNTING FIXTURES**

Suitable fixtures may be used to assist in the inspection process, provided that they do not themselves cause damage to the device. Care shall be taken that adequate provision is made to avoid accidental damage by electro-static discharge to certain devices susceptible to this effect.

**4. DETAILED REQUIREMENTS****4.1 REJECT CRITERIA**

A component shall be rejected if it exhibits one or more of the defects listed in any of the following paragraphs of this Section 4. Where applicable, drawings are included to provide additional explanatory material.

**4.2 LEAD CONDITION**

- (a) Base material, in excess of lead diameter thickness, exposed by chipped glass.
- (b) Exposed base material anywhere on the lead within a distance of 20mm of the case, other than that caused by (a).
- (c) Exposed base material greater than 5% of the surface area anywhere on the lead, beyond a distance of 20mm from the case.
- (d) Non-conductive material on the lead, beyond a distance of 1.5mm from the case.
- (e) Reduction of lead diameter, width or thickness by more than 10% within 20mm of the case.
- (f) Nicks, fractures, non-uniformity or discolouration of coating or abrasions exposing base material.

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**4.3 LEAD CONFIGURATION**

- (a) Round leads, twisted more than one revolution along the length, or flat leads, twisted more than 10° per 10mm of length.
- (b) Lead kinked or bent and re-bent within 20mm of the case.
- (c) Lead deviating from the specified direction by more than 1.0mm per any 5.0mm of length.

**4.4 CASE OR PACKAGE**

- (a) Any defect or feature which will interfere with the normal application of the device.
- (b) Any evidence of damage, corrosion or contamination which will interfere with the normal application of the device.