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TECHNICAL REPORT

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Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 5-506: General test methods for materials and assemblies – An intercomparison evaluation to implement the use of fine-pitch test structures for surface insulation resistance (SIR) testing of solder fluxes in accordance with IEC 61189-5-501

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IEC/TR 61189-5-506, which is a technical report, has been prepared by IEC technical committee 91: Electronics assembly technology.

The text of this Technical Report is based on the following documents:

Draft TR	Report on voting
91/1500/DTR	91/1530A/RVDTR

Full information on the voting for the approval of this Technical Report can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61189 series, published under the general title *Test methods for electrical materials, printed boards and other interconnection structures and assemblies*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document addresses the development of IEC 61189-5-501 and the introduction of a fine-pitch test pattern. The introduction of this pattern is needed to meet the need for IEC 61189-5-501 to reflect current assembly technology. This document describes an intercomparison that tests a new test pattern and benchmarks it to existing test patterns. The work validates the introduction of the new fine-pitch test pattern.

It is well known that structures at fine pitches with flux residues are more susceptible to corrosion issues and electrochemical migration (ECM) problems. Characterization of flux residues in terms of ECM are commonly characterized using SIR testing. A key parameter of the SIR test is the comb pattern used and gap between the electrodes. The current B24 and B25 with their 500-µm and 318-µm gap patterns are not representative of fine pitches. It has been proposed to use a 200-µm gap pattern, and this document describes an intercomparison that validates the introduction of the 200-µm gap pattern.

This document describes an exercise that used a new test board that included the B24 and B25 patterns with an additional 200-µm pattern, with each pattern duplicated, giving six patterns in all on each test board. This work was motivated by an update to IEC 61189-5-501. A protocol for the testing was developed that took a standardised test rosin flux and defined the flux loading and thermal conditioning. Seven laboratories took part from five countries. The test boards were prepared centrally and then tested in the seven laboratories, and the results analysed to validate the usage of the 200-µm pattern. The document describes the intercomparison and the data analysis.

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1 Scope

This Technical Report is an intercomparison supporting the development of IEC 61189-5-501 in relation to the SIR method. This document sets out to validate the introduction of a new 200-µm gap SIR pattern, and was benched marked against existing SIR gap patterns of 318 µm and 500 µm.

2 Normative references

There are no normative references in this document.