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BSI Standards Publication

Integrated circuits — Measurement of electromagnetic immunity

Part 9: Measurement of radiated immunity — Surface scan method

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The UK participation in its preparation was entrusted to Technical Committee EPL/47, Semiconductors.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Circuits intégrés – Mesure de l'immunité électromagnétique – Partie 9: Mesure de l'immunité rayonnée – Méthode de balayage en surface

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FOREWORD

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62132-9, which is a technical specification, has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
47A/924/DTS	47A/936/RVC

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

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

A list of all parts in the IEC 62132 series, published under the general title *Integrated circuits – Measurement of electromagnetic immunity*, can be found on the IEC website.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

Techniques for generating near-fields over integrated circuits and their surrounding environment can identify the areas susceptible to radiation, which could cause errors in the device. The ability to associate magnetic or electric field strengths with a particular location on a device can provide valuable information for improvement of an IC both in terms of functionality and EMC performance.

Near-field scan techniques have considerably evolved over recent years. The improved efficiency, bandwidth and spatial resolution of the probes offer analysis of integrated circuits operating into the gigahertz range. Post-processing can considerably enhance the resolution of a near-field scan test bench and the measured data can be shown in various ways per user's choice.

INTEGRATED CIRCUITS – MEASUREMENT OF ELECTROMAGNETIC IMMUNITY –

Part 9: Measurement of radiated immunity – Surface scan method

1 Scope

This part of IEC 62132 provides a test procedure, which defines a method for evaluating the effect of near electric, magnetic or electromagnetic field components on an integrated circuit (IC). This diagnostic procedure is intended for IC architectural analysis such as floor planning and power distribution optimization. This test procedure is applicable to testing an IC mounted on any circuit board that is accessible to the scanning probe. In some cases it is useful to scan not only the IC but also its environment. For comparison of surface scan immunity between different ICs, the standardized test board defined in IEC 62132-1 should be used.

This measurement method provides a mapping of the sensitivity (immunity) to electric- or magnetic-near-field disturbance over the IC. The resolution of the test is determined by the capability of the test probe and the precision of the Probe-positioning system. This method is intended for use up to 6 GHz. Extending the upper limit of frequency is possible with existing probe technology but is beyond the scope of this specification. The tests described in this document are carried out in the frequency domain using continuous wave (CW), amplitude modulated (AM) or pulse modulated (PM) signals.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <http://www.electropedia.org>)

IEC 62132-1, *Integrated circuits – Measurement of electromagnetic immunity, 150 kHz to 1 GHz – Part 1: General conditions and definitions*

IEC TS 61967-3, *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 3: Measurement of radiated emissions – Surface scan method*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purpose of this document, the definitions and definitions given in IEC 62132-1, IEC 60050-131 and IEC 60050-161, as well as the following apply.

3.1.1
altitude
distance between the tip of the near-field probe and the reference plane of the scan (e.g. the PCB, the upper surface of the package)