IEC TR 61967-1-1

Edition 2.0 2015-08

TECHNICAL REPORT

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Integrated circuits – Measurement of electromagnetic emissions – Part 1-1: General conditions and definitions – Near-field scan data exchange format

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 31.200

ISBN 978-2-8322-2880-7

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTEGRATED CIRCUITS – MEASUREMENT OF ELECTROMAGNETIC EMISSIONS –

Part 1-1: General conditions and definitions – Near-field scan data exchange format

FOREWORD

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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC TR 61967-1-1, which is a technical report, has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

This second edition cancels and replaces the first edition published in 2010. This edition constitutes a technical revision.

This edition includes the following significant changes with respect to the previous edition:

- Addition of:

  - 4.11 3D objects;
  - Binary data files;
  - Piece-wise linear time domain and frequency domain data;
  - Vectors permitting rotation and offset of measurement and DUT reference planes;
  - Transducer gain and probe factor can be complex;
  - New keywords: Object3d, Mapobj, Maxhold, Datafileformat, Vx, Vy, Vz, Target, Software, Data_source.
- Updating of:
  - 4.9 Probe factor and corresponding keywords.
- Modification of:
  - Keywords: Average.

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

Enquiry draft	Report on voting
47A/953/DTR	47A/962/RVC

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

A list of all parts of the IEC 61967 series, under the general title *Integrated circuits – Measurement of electromagnetic emissions,* 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 website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication 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

Near-field scan measurements, as described for example in IEC TS 61967-3 [1] [1] or IEC TS 62132-9 [2], and simulations generate a large amount of data. Many different formats are used for storing the data, thereby rendering its exchange extremely difficult.

The proposed format is intended to facilitate exchange of near-field scan data between industrials, academics, EDA tool vendors and end customers. It is based on the well-known XML format, which is both machine and human readable. Its structure allows the files to be generated and processed on any operating system. In order to limit the file size, it is possible to store the information and data in a single file or multiple files. Moreover, the ASCII-based XML format allows the files to be compressed to a very high level with readily available compression software.

The three conventional coordinate systems (Cartesian, cylindrical and spherical) are supported by the proposed exchange format. Information on the device under test, the test set-up, the probe, etc., is also included in the files. Notes and links to external documents allow complex test environments to be well described.

The version of the exchange format described in this technical report is 2.0. Future revisions will add items, such as new keywords and rules, considered to be "enhancements" to Version 1.0. Consequently, all future revisions will be considered supersets of Version 2.0, allowing backward compatibility.

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1 Figures in square brackets refer to the Bibliography.

INTEGRATED CIRCUITS – MEASUREMENT OF ELECTROMAGNETIC EMISSIONS –

Part 1-1: General conditions and definitions – Near-field scan data exchange format

1 Scope

This part of IEC 61967 provides guidance for exchanging data generated by near-field scan measurements.

The described exchange format could also be used for near-field scan data generated by simulation or computation software. It should be noted that, although it has been developed for near-field scan, its use is not restricted to this application. The exchange format can be applied to emission and immunity near-field scan data in the frequency and time domains.

The scope of this technical report includes neither the methods used for the measurements or simulations, nor the software and algorithms used for generating the exchange file or for processing or viewing the data contained therein.

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 61967-1, *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 1: General conditions and definitions*

ISO 8879, *Information processing – Text and office systems – Standard Generalized Markup Language (SGML)*

ANSI INCITS 4:1986, *Information Systems – Coded Character Sets – 7-Bit American National Standard Code for Information Interchange (7-Bit ASCII)*

IEEE Std 754™-2008: *IEEE Standard for Floating-Point Arithmetic*