

Data interchange format for Simulated and Measured Data (ISMD)

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Amendments issued since publication

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National foreword

This Draft for Development is the English language version of ENV 50208-6:1997.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature because the subject matter is still under development requiring wider exposure. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

This document is part of a series of closely related documents describing a technology assessment cycle of submicron CMOS technologies. The following have been published.

PD 6595:1998 (CENELEC Report R117-006:1995) *Parameter extraction techniques for the European test chip.*

ENV 50218:1996 *Description of a parametrized European mini test chip.*

CENELEC Report R117-004:1995 *JESSI 0.8 μ m CMOS Transistor Model.*

CENELEC Report R117-005:1995 *Measurement techniques for the characterization of the European mini test chip.*

The other document in preparation covers the following area.

The steps and objective of the assessment cycle.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion into a European Standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its three-year life. The commencement of the review period will be notified by an announcement in *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the prestandard or to withdraw it. Comments should be sent in writing to the Secretary of BSI Technical Committee GEL/93, Design automation, at 389 Chiswick High Road, London W4 4AL, giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ENV title page, pages 2 to 16 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Data Interchange format for Simulated and Measured Data (ISMD)

This European Prestandard (ENV) was approved by CENELEC on 1996-07-02 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CENELEC will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard (EN).

CENELEC members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

This European Prestandard has been prepared by CENELEC Technical Committee TC 217, Electronic Design Automation.

The text of the draft was submitted to CENELEC members for comments and vote and was approved at the meeting of TC 217 on 1996-07-02.

The following date was fixed:

- latest date by which the existence of the ENV has to be announced at national level (doa) 1997-09-01

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Introduction

This document is part of a series of documents describing a technology assessment cycle of submicron CMOS technologies. The series consists of nine closely related documents: this one and [1, 2, 3, 4, 5] which are mainly technology performance related. Reliability related issues are covered by [6, 7, 8]. A documentation of the steps and the objective of the entire technology assessment cycle¹⁾ is the content of [1]. The transistor model which is able to deal with the effects of modern submicron CMOS technologies is presented in [2]. The parameter extraction procedures [5] are based on the measurement results which are derived from the devices of the modules of the Parameter Extraction Test Chip (PTC). The PTC is a part of the **European Mini Test Chip** (ETC) [3]. This mini test chip provides a minimum set of test structures to characterize a technology. The test structures of the ETC are generated automatically by a computer program [3] for a given MOS technology. The measurements which are the base of the extractions are documented in [4]. A common data exchange format (**Interchange Format for Simulated and Measured Data** — ISMD) can be used to ship the measured data of the PTC to companies which have no access to the PTC of the desired technology or the required measurement equipment. This document describes the exchange format of measured and simulated data. The format has been developed as a part of the work of the JESSI AC 41 consortium²⁾. Test structures for a fast reliability assessment with respect to the major failure mechanisms in CMOS technologies are described in [6]. The measurement techniques required for the characterization of the reliability test structures are documented in [7]. The evaluation of these measurements is subject of document [8].

The original purpose of the ISMD is the exchange of measured and simulated data of the JESSI test chips. This exchange is supposed to occur exclusively between the partners of the JESSI AC 41 consortium. This limited scope, however, had to be extended as the JESSI AC 41 project showed results which are useful for non-JESSI members as well as JESSI members.

1 Scope

The purpose of the Interchange of Simulated and Measured Data (ISMD) is to exchange measured and simulated data of test chips to make it available to different parties. For example, this data exchange format can be used to ship the measured data of test chips to companies which have no access to a testchip of a certain technology or the required measurement equipment, nevertheless they want to use these data, e.g. to prove the efficiency of a technology for a certain product.

This document describes a data interchange format which is applicable to

1. the gathering of measured and/or simulated data which originate from a variety of measurement and simulation programs,
2. the support of a data representation format which can be read by a variety of existing data analysis programs with little or no modifications.

This task implies the establishment of a set of syntax rules. These syntax rules transform the existing data formats created by various measurement and/or data analysis programs into a single standard data representation format. A formal definition of the data elements beyond the syntax rules and the overall data structure has to be omitted in order to guarantee the flexibility necessary to handle the existing data formats. Additionally, short technical development cycles require a high degree of flexibility of the data elements. The definitions of the detailed data elements are subject to bilateral agreements. Accompanying information are included by means of comments.

The syntax described is the base of the data gathering. It may be necessary to modify the list of command words or the list of keywords in order to meet the requirements of non-electrical measurements or electrical measurements without known correlation of process technologies or wafer lots, and so on. For this situation, however, the syntax rules are supposed to serve as guidelines for the documentation of the measured data and the circumstances of the measurement.

¹⁾ The Technology Assessment Support Center (TASC) provides more information about the computer programs which support measurement and extraction routines. Send a fax or a e-mail to TASC, Technology Assessment Support Center, c/o H.Richter, IMS, Allmandring 30a, D-70569 Stuttgart
FAX: +49-711-685-5930
e-mail: tasc@svlsi1.mikro.uni-stuttgart.de

²⁾ This work is part of the JESSI Program "Application"-Project AC 41 "Technology Assessment" and is sponsored by the national Public Authorities of Belgium, France, and Germany.