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ELECTRONICS INDUSTRIES

IPC-2517A

Sectional Requirements for Implementation of Assembly In-Circuit Testing Data Description [ASEMT]

“The data model of this standard shall be in effect until 2001-12.” At that time, the committee will consider changes, revision, other actions.

IPC-2517A

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A standard developed by IPC

2215 Sanders Road, Northbrook, IL 60062-6135

Tel. 847.509.9700 Fax 847.509.9701
www.ipc.org



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- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

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- Increase time-to-market
- Keep people out
- Increase cycle time
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- Contain anything that cannot be defended with data

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Adopted October 6, 1998

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IPC-2517A

GenCAM

[ASEMT]

Sectional Requirements for Implementation of Assembly In-Circuit Testing Data Description

A standard developed by the Computerized Data Format Standardization Subcommittee (2-11) of the Data Generation and Transfer Committee (2-10) of the Institute for Interconnecting and Packaging Electronic Circuits.

The GenCAM format is intended to provide CAD-to-CAM, or CAM-to-CAM data transfer rules and parameters related to manufacturing printed boards and printed board assemblies. The requirements of IPC-2511 are a mandatory part of this sectional standard.

This standard is part of the GenCAM 1.5 release.

“The data model of this standard shall be in effect until 2001-12.” At that time, the committee will consider changes, revision, other actions.

Users of this standard are encouraged to participate in the development of future revisions.

Contact:

IPC
2215 Sanders Road
Northbrook, Illinois
60062-6135
Tel 847 509.9700
Fax 847 509.9798



Acknowledgment

Any Standard involving a complex technology draws material from a vast number of sources. While the principal members of the IPC Data Generation and Transfer Committee of the IPC Data Transfer Solution DTS Subcommittee are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of the IPC extend their gratitude.

Data Generation and Transfer Committee	Data Transfer Solution DTS Subcommittee	Technical Liaisons of the IPC Board of Directors	
Chairman Harry Parkinson Digital Equipment	Chairman Harry Parkinson Digital Equipment	Stan Plzak Pensar Corp.	Peter Bigelow Beaver Brook Circuits Inc.

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Sectional Requirements for Implementation of Assembly In-Circuit Test Data Description (ASEMT)

1 SCOPE

This standard specifies data formats used to describe printed board assembly in-circuit testing methodologies. These formats may be used for transmitting information between printed board designers, board fabricators, and assembly manufacturers. The formats are also useful when the manufacturing cycle includes computer-aided processes and numerical control machines.

The information can be used for both manual and for digital interpretation. The data may be defined in either English or SI units.

1.1 Interpretation

"Shall", the emphatic form of the verb, is used through this standard whenever a requirement is intended to express a provision that is mandatory. Deviation from a shall requirement is not permitted, the compliance test modules (CTMs) developed to check syntax, semantics and completeness, will prompt the user to correct the ambiguity, or to insert missing information.

1.2 Assembly In-Circuit Test Focus

The GenCAM format requirements are provided in a series of standards focused on printed board manufacturing, assembly, inspection, and testing. This standard (IPC-2517) provides information on assembly in-circuit test requirements. The generic standard (IPC-2511) contains general requirements and is a mandatory part of the requirements of this standard, and provides general information necessary to completely understand the GenCAM structure.

2 APPLICABLE DOCUMENTS

The following documents contain provisions which, through references in the text, constitutes provisions of IPC-2517. At the time of publication, the additions indicated were valid. All documents are subject to revision and parties to agreements based on this generic standard are encouraged to investigate the possibility of applying the most recent additions of the documents indicated below.

IPC-T-50		Terms and Definitions for Interconnecting and Packaging Electronic Circuits
IPC-2511	(MANGN)	Generic Requirements for Implementation of Product Manufacturing Description Data and Transfer
IPC-2512	(ADMIN)	Sectional Requirements for Implementation of Administrative Methods for Manufacturing Data Description
IPC-2513	(DRAWG)	Sectional Requirements for Implementation of Drawing Methods for Manufacturing Data Description
IPC-2514	(BDFAB)	Sectional Requirements for Implementation of Printed Board Fabrication Data Description.
IPC-2515	(BDTST)	Sectional Requirements for Implementation of Bare Board Product

IPC-2516	(BDASM)	Electrical Testing Data Description Sectional Requirements for Implementation of Assembled Board Product Manufacturing Data Description
IPC-2518	(PTLST)	Sectional Requirements for Implementation of Part List Product Data Description
IPC-2519	(MODEL)	Sectional Requirements for Information Model Data Related to the Printed Board and Printed Board Manufacturing Descriptions.

3 REQUIREMENTS

The requirements of IPC-2511 are a mandatory part of the standard. The IPC-2511 document describes the generic requirements of the GenCAM format. The format specifies details specifically for information interchange of data related to printed board manufacturing, assembly, and test.

GenCAM is comprised of twenty sections as described in the generic GenCAM standard, IPC-2511. The sections are shown in Tables 3-1 and 3-2 of the IPC-2511.

Each section has a specific function or task respectively and is independent of each other. Accordingly, the information interchange for a specific purpose is possible only if the sections required for such a purpose have been prepared.

3.1 Categories and Content

Table 3-1 (below) provides the section names that are appropriate for the printed board assembly testing process. The letter "M" signifies a mandatory requirement. The letter "O" signifies an optional characteristic that may or may not be pertinent to the particular file. A dash signifies an extraneous section (unnecessary); CTMs will not reject file summaries if extraneous sections are present.

The table signifies two requirement conditions separated by a "/". The first representation of requirements is intended to convey those GenCAM sections that **shall** be available as the initial input to the Assembly processes. The second instance of a requirement is to signify those data that **shall** be available once the processing descriptions have been completed.

Table 3-1 GenCAM Section Relationships for Assembled Board Test

Section Identifiers	Assembly Test Program Generation	Assembly Test Fixture Generation
HEADER	M/M	M/M
ADMINISTRATION	M/M	M/M
PRIMITIVES	M/M	M/M
ARTWORKS	M/M	M/M
LAYERS	M/M	M/M
PADSTACKS	M/M	M/M
PATTERNS	M/M	M/M
PACKAGES	M/M	M/M
FAMILIES	M/M	-/-
DEVICES	M/M	M/M
MECHANICALS	M/M	M/M
COMPONENTS	M/M	M/M

Section Identifiers	Assembly Test Program Generation	Assembly Test Fixture Generation
ROUTES	M/M	M/M
POWER	M/M	M/M
TESTCONNECTS	O/O	O/M
BOARDS	M/M	M/M
PANELS	O/O	O/O
FIXTURES	-/O	O/M
DRAWINGS	M/M	M/M
CHANGES	-/O*	-/O*

* The CHANGES section is used independently to alter previously sent files. Included **shall** be a HEADER section (for revision status and identification) and an ADMINISTRATION section to show effectivity

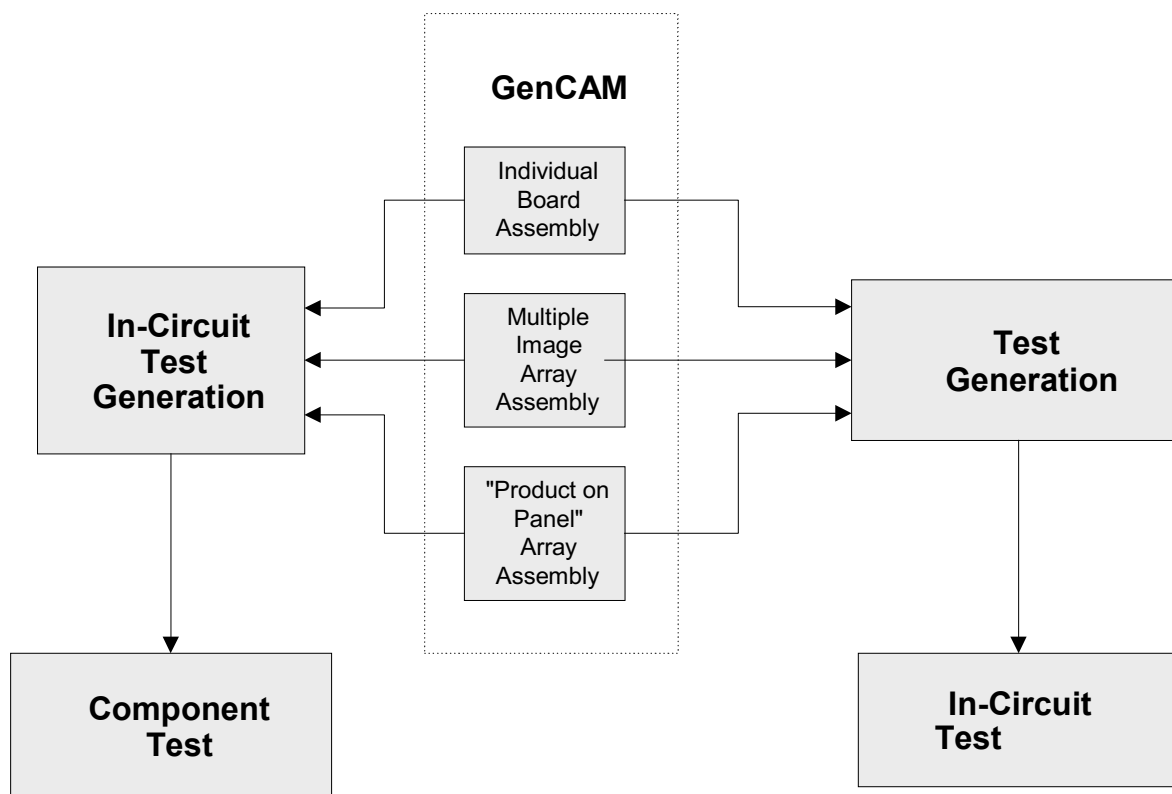


Figure 3-1 In-Circuit Test and Fixture Generation Activities

3.2 Assembled In-Circuit Test

This document is intended to enumerate and explain the data requirements of the assembled board, in-circuit test step of the electronic circuit board manufacturing process. Data needs are described in the context in which they are used, and where assumptions are made, an attempt has been made to explain them. The overall effort is meant to identify and categorize data, to a reasonably, but vendor independent level. Not all data will be applicable to all situations, but any data that may be required should be listed and be provided with a syntax and location within the standard's data sets.