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IEEE Standard for Digital Test Interchange Format (DTIF)

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IEEE Std 1445™-2016
(Revision of IEEE Std 1445-1998)

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Abstract: The information content and the data formats for the interchange of digital test program data between digital automated test program generators (DATPGs) and automatic test equipment (ATE) for board-level printed circuit assemblies are defined. This information can be broadly grouped into data that defines the following: user under test (UUT) model, stimulus and response, fault dictionary, and probe.

Keywords: automatic test equipment, ATE, DATPG, digital automated test program generator, digital test interchange format, DTIF, fault dictionary data, IEEE 1445™

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Introduction

This introduction is not part of IEEE Std 1445-2016, IEEE Standard for Digital Test Interchange Format (DTIF).

A digital automated test program generator (DATPG) produces test pattern and diagnostic data that can be used for testing printed circuit assemblies on automatic test equipment (ATE). The use of several DATPGs, all with individual output formats, created a need for many unique post-processors to be developed and maintained for the life of the ATE. These post-processors supported the link from specific DATPGs to specific testers. The proliferation of unique formats and post-processors created logistical support problems and therefore identified a need for standardization. A DATPG and ATE independent output data format is required to limit the number of post-processors (one for each ATE) requiring life cycle support. The digital test interchange format (DTIF) was chosen because of its wide use and because it was becoming known in industry as the de facto standard.

This standard provides the basis to standardize digital test information for use on ATE. The digital test information consists of the unit under test (UUT) model information, stimulus and response data, fault dictionary data, and probe data.

DTIF is unique from IEEE Std 1450.1™, IEEE Standard Test Interface Language (STIL) for Digital Test Vec-tor Data [B2].[1] STIL was developed to standardize the output interface of existing computer-aided engineering (CAE) tools with the input interface of ATE for integrated circuit (IC) testing only. STIL does not provide board-level fault diagnostics.

Dedication

We, IEEE Standards Coordinating Committee 20 (SCC20), dedicate this standard to its major contributor, our departed colleague, William (Brit) Frank. Brit was in many ways a model for all engineers as he demonstrated through his dedication, tenacity, drive, persistence and commitment to his profession, colleagues, and faith.

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[1] The numbers in brackets correspond to those of the bibliography in Annex C.

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IEEE Standard for Digital Test Interchange Format (DTIF)

1. Overview

The digital test interchange format (DTIF) is designed to provide a mechanism for digital test data interchange independent of specific digital automated test program generators (DATPGs) and test systems. The DTIF provides a neutral database for the development and delivery of digital simulation based test program sets (TPSs). DTIF functionally supports the Unit Under Test (UUT) Model, Stimulus and Response, Fault Dictionary, and Probe databases.

1.1 Scope

This standard defines DATPG output data formats and informational content for UUT models, stimulus and response patterns, fault dictionaries, and diagnostic probing. These outputs provide a standard exchange format for automatic test equipment (ATE).

1.2 Purpose

This standard is to be used as the standard definition of DATPG output formats and informational content.

1.3 General

1.3.1 Application of this document's annexes

This document includes three annexes: Annex A, Annex B, and Annex C, which are informative and are provided strictly as information for users, implementers, and maintainers of this document.

1.3.2 Word usage

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The word *should* is used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability (*can* equals *is able to*).

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