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Standard for automatic test markup language (ATML) test adapter description

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Standard for Automatic Test Markup Language (ATML) Test Adapter Description

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IEEE Standard for Automatic Test Markup Language (ATML) Test Adapter Description

Sponsor

**IEEE Standards Coordinating Committee 20 on
Test and Diagnosis for Electronic Systems**

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Abstract: An exchange format using extensible markup language (XML) for identifying all of the hardware, software, and documentation associated with a test adapter is specified in this document. This test adapter may be used as a component of a test program set to test and diagnose a unit under test.

Keywords: ATML instance document, automatic test equipment (ATE), automatic test markup language (ATML), automatic test system (ATS), IEEE 1671.5™, interface device (ID), interface test adapter (ITA), test adapter, test fixture, XML schema

IEEE Introduction

This introduction is not part of IEEE Std 1671.5™-2015, IEEE Standard for Automatic Test Markup Language (ATML) Test Adapter Description.

This child, or dot, standard, also known as an ATML component standard, provides for the definition of the Test Adapter XML schemas, and contains references to examples; both of which accompany this standard.

These XML schemas provide for the identification and definition of a test adapter.

ATML's XML schemas define the basic information required within any test application and provide a vehicle for formally defining the test environment by defining a class hierarchy corresponding to these basic information entities and provide several methods within each to enable basic operations to be performed on these entities. ATML component standards within the ATML framework define the particular requirements within the test environment.

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1. Overview

1.1 General

Automatic test markup language (ATML) is a collection of IEEE standards and associated extensible markup language (XML) schemas that allow automatic test system (ATS) and test information to be exchanged in a common format adhering to the XML standard.¹

The ATML framework and the ATML family of standards have been developed and are maintained under the guidance of the Test Information Integration (TII) Subcommittee of IEEE Standards Coordinating Committee 20 (SCC20) to serve as a comprehensive environment for integrating design data, test strategies, test requirements, test procedures, test results management, and test system implementations, while allowing test program (TP), test asset interoperability, and unit under test (UUT) data to be interchanged between heterogeneous systems.

This standard (as well as the XML schemas and XML instance document examples² that accompany this standard) is intended to be used in identifying and documenting test adapters which may be utilized during the testing of a unit under test (UUT). This information includes the mechanical, electrical, and software interfaces of the test adapter.

¹ This information is given for the convenience of users of this standard and does not constitute an endorsement by IEEE of this consortium standard. Equivalent standards or products may be used if they can be shown to lead to the same results.

² The XML schemas and examples that accompany this standard are available at the locations defined in Clause 6.

This standard makes use of XML schemas and XML terminology. For readers new to XML, the XML Schema Tutorial [B4] provides a general introduction.

1.2 Application of this document's annexes

This document includes four annexes.

Annex A through Annex D are informative; thus they are provided strictly as information for users, implementers, and maintainers of this document.

1.3 Scope

This standard defines an exchange format, utilizing XML, for both the static description of a test adapter by defining the interface between the UUT and the test station, and the specific description of test adapter instance information.

1.4 Application

This standard provides a clear definition of test adapter information that may be exchanged between conformant cooperating software components and applications. This standard provides a definition that accomplishes the following objectives:

- a) Provide a means of describing the aspects of the test adapter, which is the interface between the test station and the UUT
- b) Provide a means of describing simple (e.g., cable only), passive, or active test adapters
- c) Provide a means of describing multiple or layered test adapters

The information contained in XML documents conforming to this standard will be useful to:

- a) Test program set (TPS) developers
- b) TPS maintainers
- c) ATE system developers
- d) ATE system maintainers
- e) Developers of ATML-based tools and systems
- f) UUT developers and maintainers

1.5 Conventions used within this document

1.5.1 General

In accordance with the *IEEE Standards Style Manual* [B3],³ any schema examples will be shown in Courier font. In cases where instance document examples are necessary to depict the use of a schema type

³ The numbers in brackets correspond to those of the bibliography in Annex D.

or element, such examples will also be shown in Courier font. When the characters “...” appear in an example, it indicates that the example component is incomplete.

All simple types, complex types, attribute groups, and elements will be listed; explanatory information will be provided, along with examples, if additional clarification is needed. The explanatory information will include information on the intended use of the elements and/or attributes where the name of the entity does not clearly indicate its intended use. For elements derived from another source type (e.g., an abstract type), only attributes that extend the source type will be listed; details regarding the base type will be listed along with the base type.

When referring to an attribute of an XML element, the convention of [element]@[attribute] will be used. In cases where an attribute name is referred to with no associated element, the attribute name will be enclosed in single quotes. Element and type names will always be set in italics when appearing in text.

This standard uses the vocabulary and definitions of relevant IEEE standards. In case of conflict of definitions, except for those portions quoted from standards, the following precedence shall be observed: 1) Clause 3, and 2) The *IEEE Standards Dictionary Online* [B2].

1.5.2 Precedence

The TestAdapterDescription schema (TestAdapterDescription.xsd) element, child element, and annotation information shall take precedence over the descriptive information contained in Clause 4.

The TestAdapterDescription schema and the material contained in Clause 4 shall take precedence over the example information represented in Annex B.

The TestAdapterInstance schema (TestAdapterInstance.xsd) element, child element, and annotation information shall take precedence over the descriptive information contained in Clause 5.

The TestAdapterInstance schema and the material contained in Clause 5 shall take precedence over the example information represented in Annex B.

1.5.3 Word usage

In accordance with the *IEEE Standards Style Manual* [B3], the word *shall* is used to indicate mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*). The use of the word *must* is used only to describe unavoidable situations. The use of the word *will* is only used in statements of fact.

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*).

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is

explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

IEEE Std 1671™, IEEE Standard for Automatic Test Markup Language (ATML) for Exchanging Automatic Test Equipment and Test Information via XML.^{4, 5}

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