



# SLOVENSKI STANDARD

## SIST ETS 300 243-2 E1:2003

01-december-2003

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**Terminalna oprema (TE) – Programirljivi komunikacijski vmesnik (PCI) – APPLI/COM za faksimilno skupino 3, faksimilno skupino 4 ter storitve teletex in telex – 2. del: Preskušanje skladnosti**

Terminal Equipment (TE); Programmable Communication Interface (PCI) APPLI/COM for facsimile group 3, facsimile group 4, teletex and telex services; Part 2: Conformance testing

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**ICS:**

33.050.30	Oprema za teleks, teletekst, telefaks	Equipment for telex, teletext, telefax
35.180	Terminalna in druga periferna oprema IT	IT Terminal and other peripheral equipment

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## Foreword

Part 2 of this European Telecommunication Standard (ETS) was produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS comprises two Parts:

"Terminal Equipment (TE); Programmable Communication Interface (PCI) APPLI/COM for facsimile group 3, facsimile group 4, teletex and teletex services;

Part 1: CCITT Recommendation T.611 (1992) [modified];

**Part 2: Conformance testing".**

Transposition dates	
Date of adoption of this ETS:	10 November 1995
Date of latest announcement of this ETS (doa):	29 February 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 August 1996
Date of withdrawal of any conflicting National Standard (dow):	31 August 1996

## Introduction

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This second Part of ETS 300 243 describes the conformance testing of APPLI/COM Programmable Communication Interfaces (PCIs). ETS 300 243-1 [1] endorses CCITT Recommendation T.611 [2], which is known as APPLI/COM PCI. As described in CCITT Recommendation T.611 [2], an APPLI/COM PCI is located within a TE between two entities, a Communication Application (CA) as service provider and a Local Application (LA) as service user. The services provided by the CA and used by the LA are services such as sending a document, receiving a document or tracing document transmissions. This second Part of the ETS describes the testing of the conformance of both entities - CA and LA - with respect to the interface behaviour.

The reason for providing this Part of the ETS was to give developers assistance in the testing of their commercial products as well as to make test laboratories able to perform fair testing on different APPLI/COM products that claim conformance to the APPLI/COM PCI standard. It is expected that CA testing will be mainly performed by test laboratories, whereas LA testing is rather seen as assistance to LA developers.

Since no former material exists on which the description of conformance testing of PCIs could rely, the terminology and notation for describing the testing was deduced from ISO/IEC 9646, Parts 1 to 4 [3]. ISO/IEC 9646 [3] is a general framework for conformance testing of OSI layer protocols. However, because a PCI is not a protocol, adaptation of certain terms and notations to the requirements of PCIs were necessary. They are described at appropriate places in this ETS.

Besides the general clauses describing test methodology and adaptation of ISO/IEC 9646 [3], this ETS contains two separate Abstract Test Suite (ATS) descriptions using (adapted) Tree and Tabular Combined Notation (TTCN). Hence the testing of either component - CA or LA - can be set up and carried out independently of each other. In both cases, this ETS tries to provide the shortest list of test cases necessary to be confident in the conformance of the interface implementation under test. However, passing the test suites does not guarantee good performance nor does it guarantee reliability in any environment.

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## 1 Scope

Part 2 of this ETS describes the conformance testing of APPLI/COM Programmable Communication Interfaces (PCIs) that claim conformance to ETS 300 243-1 [1], which in turn endorses CCITT Recommendation T.611 [2], with certain ETSI modifications.

The aim of this Part of the ETS is to define conformance tests and methods which ensure, when applied, that:

- a conforming implementation of a Local Application (LA) can work together with a conforming implementation of a Communication Application (CA). The LA can coexist, access and communicate with the CA from within the Terminal Equipment (TE) of the LA;
- a conforming implementation of a CA offers and carries out the functionality and features declared and covered by one of the functional classes defined by CCITT Recommendation T.611 [2].

The intention of this Part of the ETS is to test one LA to one CA relation.

When many LAs are present within the same TE, many LAs to one CA relation, testing of the LAs need to handle one LA at a time. To ensure conformance in the case of a many LA to one CA relationship, test cases are provided exclusively for testing the CA conformance with respect to multiple LAs.

When many CAs are accessible from within the same TE, the testing of the CAs needs to be carried out one CA at a time. No special test cases are provided for the case of multiple CAs in the same equipment.

## 2 Normative references

Part 2 of this ETS incorporates by dated and undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Part of the ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- <https://standards.iteh.ai/catalog/standards/sist/41cf5ca5-ea12-435b-9f54-0320c7d9a10/sist-ets-300-243-2-e1-2003>
- [1] ETS 300 243-1 (1995): "Terminal Equipment (TE); Programmable Communication Interface (PCI) APPLI/COM for facsimile group 3, facsimile group 4, teletex and telex services; Part 1: CCITT Recommendation T.611 (1992) [modified]".
- [2] CCITT Recommendation T.611 (1992): "Programmable Communication Interface (PCI) APPLI/COM for facsimile group 3, facsimile group 4, teletex and telex services".
- [3] ISO/IEC 9646: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework
- Part 1: General concepts;
- Part 2: Abstract Test Suite specification;
- Part 3: The Tree and Tabular Combined Notation (TTCN);
- Part 4: Test realization".

### 3 Definitions and abbreviations

#### 3.1 Definitions

For the purposes of this Part of the ETS, the following definitions apply along with those given in CCITT Recommendation T.611 [2] and ISO/IEC 9646 [3].

**Communication Application Emulator (CA Emulator):** Lower Local Application (LA) Tester, emulating a CA.

**Local Emulation Application (LA Emulator):** Upper CA Tester, emulating a LA.

**LA User:** Upper LA Tester; test entity using the LA under test.

**Lower LA PCO:** Point of Control and Observation (PCO) for LA testing, located "below" the LA towards the CA Emulator.

**Lower CA PCO:** Point of Control and Observation (PCO) for CA testing, located "below" the CA towards the network or the Remote Test Equipment respectively.

**Remote Test Equipment:** Lower CA Tester, simulating a remote device.

**Upper CA PCO:** PCO for CA testing, located "above" the CA towards the LA Emulator.

**Upper LA PCO:** PCO for LA testing, located "above" the LA towards the LA User.

#### 3.2 Abbreviations

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For the purposes of this Part of the ETS, the following abbreviations apply:

ASP	Abstract Service Primitive
ATS	Abstract Test Suite
BIT	Basic Interconnection Test
CA	Communications Application
CA Emulator	Common Application Emulator
EM	Exchange Method
ICE	Interface Configuration Environment
IUT	Implementation Under Test
LA	Local Application
LA Emulator	Local Application Emulator
PCI	Programmable Communication Interface
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	PCI Implementation Conformance Statement
PIUT	PCI Implementation Under Test
PIXIT	PCI Implementation eXtra Information for Testing
TDD	Task Data Description
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
TE	Terminal Equipment
TF	Transfer Formats

## 4 PCI testing model

### 4.1 Overview

CCITT Recommendation T.611 [2] and ETS 300 243-1 [1] define an interface (called the APPLI/COM interface) between LAs and CAs. The use of this APPLI/COM interface allows the sending and receiving of documents through telematic services (e.g. facsimile, telex or Teletex).

Two kinds of implementations can be derived from the above-mentioned standards: Local Applications (LAs) and Communication Applications (CAs). A LA may dialogue with one or many CAs simultaneously. Conversely, a CA may service one or many LAs simultaneously.

This Part of the ETS defines the testing of the interactions between LAs and CAs claiming conformance to the above-mentioned standards. It is important to notice that this ETS does not test the effects resulting from the use of the interface. For instance, this ETS ensures that a CA correctly handles SEND TDD requests, it understands it correctly; but it does not ensure that the further actions undertaken by the CA are correct, i.e. that it effectively sends the documents to the intended recipient, nor does it test that the underlying communication protocols are well implemented.

Similarly, the ETS ensures that the LA generates correct Task Data Descriptions (TDDs) and understands the responses; however, this ETS provides no means to check that the LA reacts appropriately to a given TDD response.

To summarise, only "visible" events at the CA-LA interface are covered by this ETS. All other events are outside the scope of this ETS.

The APPLI/COM interface, as described in CCITT Recommendation T.611 [2], conveys information between two entities (LAs and CAs). This exchange has two aspects: the dynamic aspect which covers the interactions themselves, i.e. "how exchanges are done" and the static aspect which covers the pieces of information exchanged, i.e. "what is exchanged".

Testing implementations that claim conformance to the APPLI/COM interface implies testing conformance to both the static aspect and the dynamic aspect.

### 4.2 PCI interfaces and ISO/IEC 9646

In the course of building this testing Part of the ETS, consideration was taken of existing material dealing with tests in general. ISO/IEC 9646 [3] was especially studied. ISO/IEC 9646 [3] explicitly states that it applies only to protocols of the OSI stack. Since PCIs are interfaces and not protocols, there should be no point in applying ISO/IEC 9646 [3] concepts to the testing of PCI interfaces.

However, most of the principles described in the ISO/IEC 9646 [3] can apply to the testing of PCI interfaces, and especially to the APPLI/COM interface as described in CCITT Recommendation T.611 [2]. This is possible by mapping some of the ISO/IEC 9646 [3] concepts onto PCI testing concepts. In particular, it is necessary to map Abstract Service Primitives (ASPs) and Protocol Data Units (PDUs) onto PCI concepts. Similarly, Tree and Tabular Combined Notation (TTCN) statements need to be adapted to the PCI environment of Abstract Test Suites (ATSs). Clause 5 of this Part of the ETS describes the changes and adaptations that are required to carry out the testing of APPLI/COM implementations.

4.3 Model

Testing implementations that conform to the APPLI/COM interface follow the general model described below.

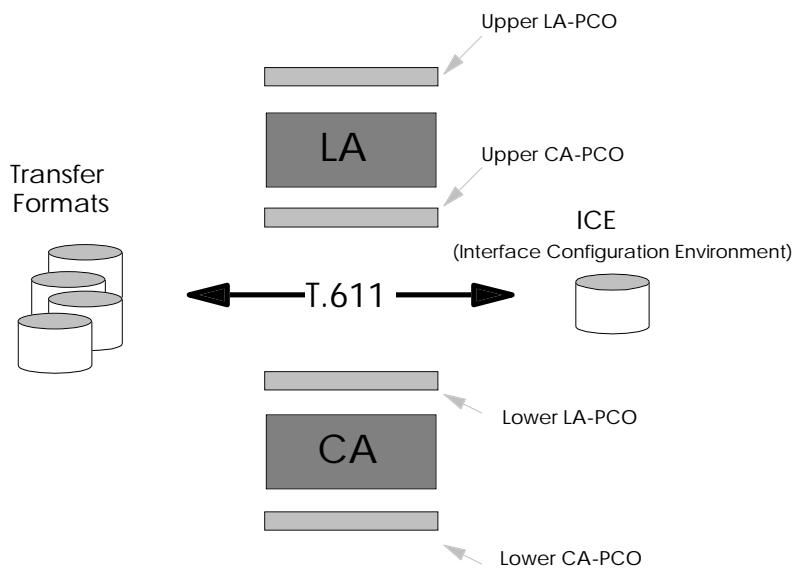


Figure 1: Placement of the various PCOs related to the APPLI/COM interface

Figure 2 depicts the PCOs used for testing an LA-CA interaction, which observe the LA behaviour. These PCOs are called the Upper LA PCO and the Lower LA PCO for the remainder of this ETS.

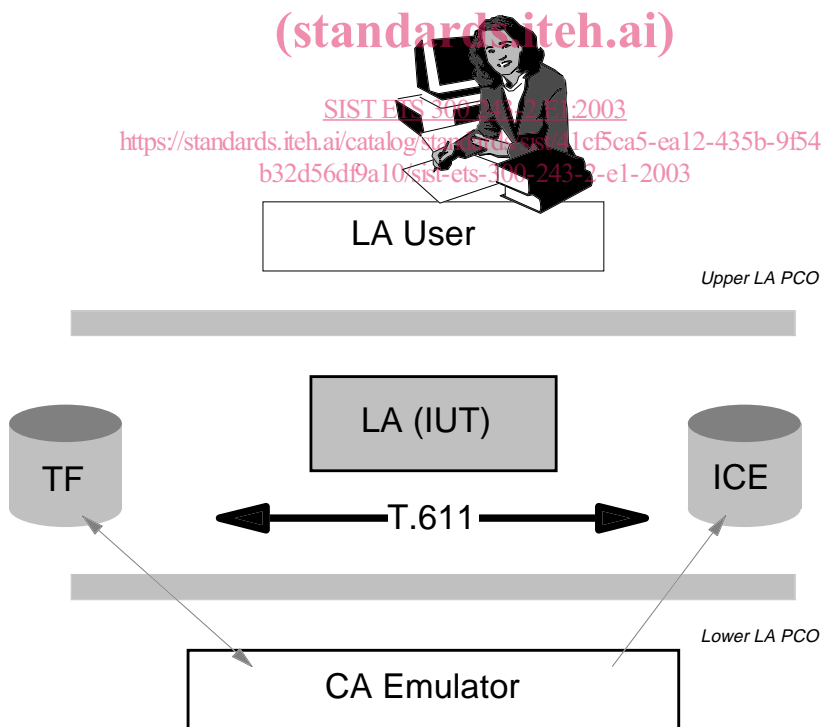


Figure 2: PCOs used to observe the LA behaviour

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Figure 3 shows the Upper CA PCO and Lower CA PCO used to observe the CA behaviour.

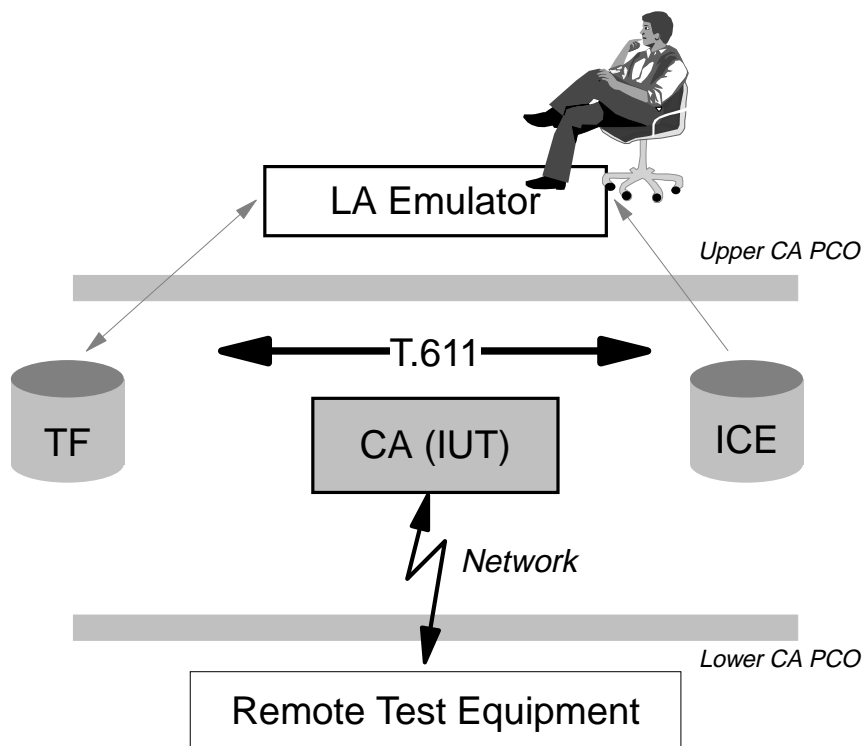


Figure 3: PCOs used to observe the CA behaviour

CCITT Recommendation T.611 [2] defines the APPLI/COM interface between LAs and CAs. It also gives information about the internal behaviour of the CA so that it can fulfil the requirements of the interface. However no information is given on the internal behaviour of LAs. Since the APPLI/COM interface obeys the client-server model, very few constraints are placed on the LA (client). On the opposite, the CA acts as a server and shall respect specific constraints. The following subclauses identify where control and observation of meaningful information can occur in a LA-CA configuration. The location of these specific points are called Points of Control and Observation (PCOs).

According to CCITT Recommendation T.611 [2], an LA can use multiple CAs simultaneously. Conversely, a CA may service multiple LAs at the same time. Testing of such configurations shall be achieved on a single LA-CA interaction basis, i.e. by repeating the test suite execution for each pair of possible LA-CA couples involved.

#### 4.3.1 Lower LA PCO

The Lower LA PCO is positioned at the location where a CA would normally be placed. The Lower LA PCO can be considered at the upper border of a "virtual" CA.

At the Lower LA PCO, one can observe:

- how the LA uses the Exchange Mechanism;
- TDD Requests generated by the LA;
- transfer formats of the files exchanged with CAs.

At the Lower LA PCO, one can control:

- how the LA reacts to information contained in the Interface Configuration Environment (ICE).

A lower LA Tester for the APPLI/COM interface can be defined: the lower LA Tester takes the place of the "virtual" CA. The lower LA Tester can be physically located on the same system or on a remote system.

When the Upper LA PCO (as defined in subclause 4.3.2) is not defined on the LA to be tested, the Lower LA PCO serves as a point of observation only. No control from the Lower LA PCO can be exercised on