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SIST ETS 300 001 E2:2003

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Attachments to the Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN

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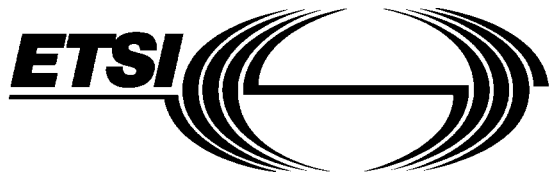
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**Attachments to the Public Switched Telephone Network (PSTN);
General technical requirements for equipment connected to an
analogue subscriber interface in the PSTN**

Chapter 1: General

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Foreword

Chapter 1 of this European Telecommunication Standard (ETS) has been produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI). The text of this ETS may be utilized, wholly or in part, for the establishment of NET 4.

For historical purposes, this ETS was drafted in the form of a NET. However, the terms NET or NET 4 in this document should be read as ETS or ETS 300 001 respectively.

This ETS comprises ten chapters:

"Attachments to Public Switched Telephone Network (PSTN); General technical requirements for equipment connected to an analogue subscriber interface in the PSTN".

| | | | |
|----------------|----------|---|--------------------------------------|
| Chapter | 1 | - | General |
| Chapter | 2 | - | DC characteristics |
| Chapter | 3 | - | Ringing signal characteristics |
| Chapter | 4 | - | Transmission characteristics |
| Chapter | 5 | - | Calling functions |
| Chapter | 6 | - | Answering function |
| Chapter | 7 | - | Power failure |
| Chapter | 8 | - | Connection methods |
| Chapter | 9 | - | Special functions |
| Chapter | 10 | - | Additional unclassified requirements |

This is the first chapter providing, among other information, the scope of this ETS, definitions, symbols and abbreviations, an explanation of the structure of the ETS and its method of use.

This ETS contains requirements and associated compliance tests. Each compliance test has been assigned a section number which is identical to that of the related requirement and has been given the prefix "A". The requirements and their associated compliance tests are grouped together in the main body of this ETS.

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National variations to each requirement and test, which may be particular to an Administration, are given as additional text within the body of each requirement or test. The national designations used are given in section 1.9 of this chapter. Section 1.3 provides further details on the structure and how to use this ETS.

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1 General

1.1 Introduction

1.1.1 Foreword

It is recognised, in the field of telecommunications within Europe, that there is a need to create common European standards for telecommunication equipment.

Such harmonisation would, among other things, facilitate co-operation between telecommunication equipment manufacturers and public telecommunication network operators, create a marketplace which naturally transcends that of national frontiers, enhance the efficiency of business and other communications across Europe to bring economic benefits, and help translate the vision of a united Europe into a working reality.

In 1985, an initiative by the Conference of European Posts and Telecommunications Administrations (CEPT) resulted in the drafting of a Memorandum of Understanding (MoU) agreeing to the mutual recognition of results of tests of conformity to a technical specification which would be known as a Norme Européenne de Telecommunication (or NET). The signatories of the MOU represent the telecommunications administrations of most countries in Western Europe, including EEC and EFTA administrations.

In 1986, European Community Council Directive 86/361/EEC laid down the principles of the initial stage of the mutual recognition of type approval for telecommunications Terminal Equipment (TE). The Directive imposes the obligation on EC Member States to implement the recognition of tests to common conformity specifications.

1.1.2 NETs iTeh STANDARD PREVIEW

The guiding principals under which a NET is written are the need to ensure that essential requirements are met.

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- user safety, insofar as this requirement is not covered by other legal instruments (e.g. Directive 73/23/EEC);
- safety of employees of the public telecommunication network operators, insofar as this requirement is not covered by other legal instruments (e.g. Directive 73/23/EEC);
- protection of public telecommunication networks from harm;
- interworking of TE, in justified cases.

Each NET constitutes part of a series of NETs prepared in response to the MOU and the EC Directive 86/361.

A NET details the requirements, and a specification of interface tests for conformance to those requirements, which a defined type of telecommunication TE is required to satisfy in order to obtain authorisation for connection of the equipment to a defined European Telecommunications Network. The NET also includes, where appropriate, requirements made necessary in a given State by historical network peculiarities.

The existence of a NET will make it possible for an accredited laboratory in a country whose administration has signed the MOU, to carry out tests, specified in the NET, on TE submitted to it, and to issue a test report. On the basis of the report, a competent body may then issue a certificate of conformity to the NET. There may of course be cases where the laboratory itself is the competent certification authority. This certificate is then recognised as valid in all other signatory countries, avoiding the need for the equipment to have to undergo the same tests, over and over again, each time approval is applied for in any of those countries.

The common reference point which a NET represents thus offers the opportunity of substantially reducing the complexity, length and cost of approval formalities. The operators of public networks are required to make reference to relevant NETs in public supply contracts. Manufacturers are thereby enabled to compete on a more equal technical basis in the supply of terminal equipment covered by NETs.

1.1.3 Types of NET

The majority of NETs fall into one of two categories; access NETs and terminal NETs as described below;

a) Access NET

Details of the technical characteristics (electrical, mechanical and access control protocols), to be offered by TE at the interface to a specific public telecommunications network are covered in an access NET.

The objective of an access NET is to ensure no disturbance occurs to the network and to ensure interworking between network and TE so that calls can be routed successfully through the network (but without any guarantee of terminal to terminal operation). Indeed, since an access NET may have to serve a number of terminal NETs and applications which have not even been envisaged at present, it is important for the content not to include anything which is particular to a specific terminal or otherwise inhibiting to new developments.

b) Terminal NET

The objective of a terminal NET is to ensure the end-to-end compatibility of a defined telecommunication service. The terminal NET should indicate any requirement which must be added to the corresponding access NET(s) to ensure end-to-end communication.

1.1.4 NET 4

ETSI has adopted this approach in the generation of NETs, but labelled as follows:

- a) Aspect 1 - General requirements;
- b) Aspect 2 - Access requirements;
- c) Aspect 3 - TE requirements.

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This document is a candidate for adoption as an access NET and is to be used for type approval according to the scope stated in section 1.2. [SIST ETS 300 001 E2:2003](https://standards.iteh.ai/catalog/standards/sist/cffa5fb-8c9-48a0-8dd6-)

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TE submitted for type approval is subject to Aspect 1 requirements in every case and, in addition to other relevant requirements e.g. NETs, international or national specifications. Such additional requirements are not contained in this document.

Aspect 3 NETs or other national standards which are relevant to a given type of TE meeting the requirements of this NET shall be in addition to, and refer to the requirements in this NET and shall not modify the requirements in this access NET.

1.1.4 (D) 1

In accordance with the three level approach of EG and ETSI, all TEs have to fulfil in addition to the requirements stated in this document the following Aspect 1 requirements:

- electrical safety;
- climatic environment;
- EMC.

As long as there are no European recommendations for electrical safety, climate and EMC, the relevant enclosures of the national specifications 1 TR 2, Part 1 are applicable.

1.2 Scope

This Access ETS specifies the technical requirements (electrical, mechanical and method of signalling) and their associated compliance tests to be met by all TE at each of its ports provided for connection to the Public Switched Telephone Network (PSTN). This connection is effected at a standard analogue interface. This interface is characterised by a two-wire derived presentation using dc loop seizure and clear and low-frequency ac ringing signals below the speech passband.

These requirements and associated compliance tests form the definition of the standard analogue PSTN access (Aspect 2) in each of the participating Administrations.

It is recognised that for historical reasons requirements and their associated compliance tests may include values particular to each Administration's network. These requirements reflect existing standards.

This access ETS does not necessarily contain all the requirements which a specific type of TE shall meet in order to gain type approval for attachment to the relevant PSTN attachment point.

1.2 (DK) 1 This document does not form the type approval requirements for those equipments that are part of PABX or other complex installations connected to the PSTN.

For these types of installations, including their associated (series- or parallel connected) equipment to the PSTN, DK national requirements apply.

In every case, reference shall be made to the DK Approval Authority in order to determine the totality of applicable requirements and associated tests.

1.2 (SF) 1 This document does not form the type approval requirements for TE that contain call routing and switching functions except very small PBXs or key systems with 1 or 2 trunk lines. For TE with more trunk lines, the national standards apply.

1.2 (F) 1 The national values contained in the current issue of this NET are not applicable to the standard analogue interface used for the connection to the PSTN when connecting a complex installation. For these types of installation, connection to the PSTN is covered by:

- I-ETSs 300 003 and 300 004 for transmission characteristics of digital PABXs;
- national standards for other characteristics of digital PABXs and for other complex installations, until a new enhancement of this ETS will be available.

Complex installations are hereby understood as equipment:

- including switching capability to interconnect at least one PSTN access with at least two other ports (e.g. PBXs);
- or
- able to interconnect PSTN accesses (e.g. call diverting devices);
- or
- able to broadcast the same information to several PSTN accesses at the same time.

1.2 (D) 1 This document basically applies to all TE intended for linking to customer accesses with analogue interconnection points. For PBXs, besides the interface requirements set out in this document, relevant provisions are contained in the:

- approval specifications for PABXs and telecommunications systems, KNr.: 651 500 800-0 (catalogue number).

1.2 (D) 2 This document is applicable for PABXs and telecommunications systems in which the a/b input wires are switched galvanically to the extension lines.

Technical equipment intended for connection to these PABXs via user accesses for permanent services are subject to other regulations. This document does not apply for TEs connected to public call offices.

1.2 (D) 3 This guideline does not apply to TE intended to be connected to:

- user access for broadcast services;
- radiopaging accesses;
- special telephone accesses;
 - a) mobile radiotelephone accesses;
 - b) accesses for maritime mobile communication;
 - c) Rhine radiotelephone accesses;
 - d) emergency telephone accesses for the police and fire brigade;
 - e) public emergency call boxes;
- telephone accesses with Impulskennezeichnung (IKZ);
- telephone accesses with Gleichstromkennezeichnung (GKZ);
- accesses for Group 1 fixed connections (leased lines);
- accesses for the warning and alarm service.

For these accesses special regulations apply.

1.2 (D) 4 In view of the reunification of the FRG and the GDR, the requirements imposed by the FRG in this document possibly have to be supplemented with the particularities of the GDR-specific network requirements. Pending corresponding amendment of this document, the document containing these particularities can be obtained from the approval authority and may be ordered from there.

1.2 (I) 1 This document does not form the type approval requirements for those TE that contain call routing or switching functions. In these cases Italian national requirements apply. In every case, reference must be made to the Italian Approval Authority in order to determine the totality of applicable requirements and associated tests.

1.2 (NL) 1 This document does not contain the type approval requirements for those TE that contain call routing and switching functions. In these cases Dutch national requirements apply and reference must be made to the Dutch Approval Authority in order to determine the totality of applicable requirements and associated tests.

1.2 (N) 1 This document does not contain the type approval requirements for those equipment that includes call routing and switching functions, and which provides local dc loop current on the extension side of the equipment. In these cases the Norwegian national requirements apply.

1.2 (S) 1 This standard shall not form the type approval requirements for user classes of equipment that are characterised as providing:

- multiple lines to the PSTN;
- multiple ports for separately identifiable terminal equipment;
- switching and routing functions; and
- the capability of providing additional telecommunication services at these ports not provided by the PSTN.

Accordingly, this document is not applicable for PBXs and other private telecommunication networks nodal components.

In these cases the Swedish national requirements apply.

1.2 (GB) 1 This document does not form the type approval requirements for equipment that contain certain call routing or certain switching functions, in these cases UK national requirements apply and reference must be made to the UK Approval Authority in order to determine the totality of applicable requirements and associated tests.

1.3 Method of use

1.3.1 Structure of the ETS

This ETS contains requirements and associated compliance tests. Each compliance test has been assigned a section number which is the same as the related requirement and has, in addition, a prefix "A". Thus the requirements and their associated compliance tests are grouped together in the main body of the document.

Where applicable, each requirement and associated compliance test have harmonised text which includes parameters to which each Administration may assign its own values. In these cases, parameter values are set out in accompanying tables.

National variations to each requirement and test which may be particular to a single Administration are set out as additional text within the body of each requirement or test. These are designated nationally according to the convention set out in section 1.9 and are referenced in the "remarks" column of relevant tables.

This ETS includes a number of Chapters, arranged according to general technical content; Chapter 1 includes introductory information of a general nature, definitions and abbreviations. Chapter 10 includes technically unclassified additional national requirements and tests particular to various Administrations. It may therefore be necessary, in order to determine the total requirement and compliance test in any given case, to refer to the harmonised text and its national variations as well as to the relevant contents in Chapter 10.

1.3.2 Use of requirements and tests

Each of the requirements in the common text of this document is a harmonised text. The use of each requirement by each Administration is determined by parameter values shown in the requirement table(s) and may be qualified further by remarks. These are set out in the requirement table(s).

It is common to find that certain requirements are to be met over ranges of parameter values; for example, return loss values might be required to be met over two independent ranges of frequency and of loop current. In such cases, compliance may be determined by testing at a limited number of parameter test values within these ranges. Such cases are clearly set out in this document, appears to comply with a requirement but which subsequently is found to be non-compliant at an untested point within the range must be considered according to the relevant type approval procedures under which this document is used.

1.4 Definitions of terms used in this ETS

The following terms are given particular meaning within this ETS. Other technical terms not specifically mentioned are to be taken according to their normally accepted meaning.

1.4.1 Local subscriber line (analogue)

An analogue subscriber line is part of a local telephone network and is traditionally metallically connected to the analogue interface of an exchange port by means of two wires (normally termed the a-wire and the b-wire) and to which an unique telephone network address has been assigned (telephone number).

NOTE: This definition does not exclude standard analogue interfaces of the PSTN where a unique telephone network address is assigned to a number of such separate physical presentations.

1.4.2 Public Switched Telephone Network (PSTN)

A generally used term for the nation-wide public telephone network comprising interconnected telephone exchanges capable of switching telephone calls between telephones connected to the network (exchanges).

1.4.3 PSTN connection point

The point where the local subscriber line (analogue) is terminated, the PSTN standard analogue interface is presented and the TE is connected. Reference is made to figure 1.4.4.3.

- a) Leads a_1 and b_1 are provided for connection to the PSTN.
- b) Leads a_2 and b_2 (if they are provided) are intended for the connection of this TE in series with other TEs.
- c) Additional leads for instance n_1 (if provided) are intended for auxiliary connections, to be defined by the National Administrations' Network Termination Schedules (Chapter 8).
- d) Additional leads for instance n_2 (if provided) are intended for optional connections, to other TEs, to be defined in Chapter 8.
- e) Lead "e" (if provided) is intended for connection to signal earth.
- f) Figure 1.4.4.3 does not indicate that TEs may have other interfaces. These interfaces are not described in this document.

1.4.3 (E) 1 Common reference terminal

The common reference terminal is defined as the terminal or lead provided for connection to a common reference potential, for the functional purpose of receiving longitudinal 50 Hz metering pulses. In the Spanish contribution (E) this terminal or lead is normally called "REF", and it may either be connected internally to the earth terminal or lead "e" when it exists, or not.

1.4.4 Terminal equipment

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1.4.4.1 General definitions

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Terminal equipment is defined as an equipment which is intended to be connected to a termination point of PSTN (PSTN connection point: PSTN CP).

One-port TE is defined as TE with wires or leads intended solely for connection to a PSTN CP (see figure 1.4.4.1.a).

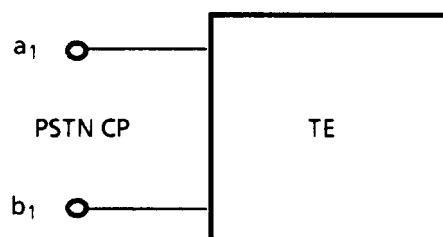


Figure 1.4.4.1.a: One-port TE

Series-connected TE is defined as TE intended to be attached to a PSTN CP and which in addition provides a second connection point to which a second TE may be attached so as to permit this second TE to be excited solely by loop current wholly derived from the PSTN connection (see figure 1.4.4.1.b).

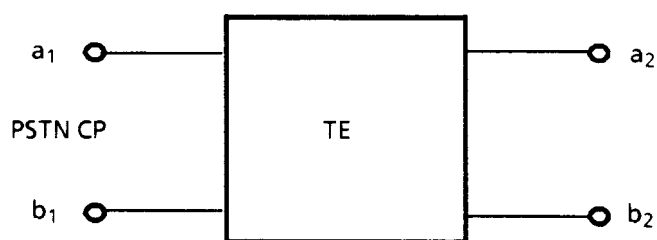
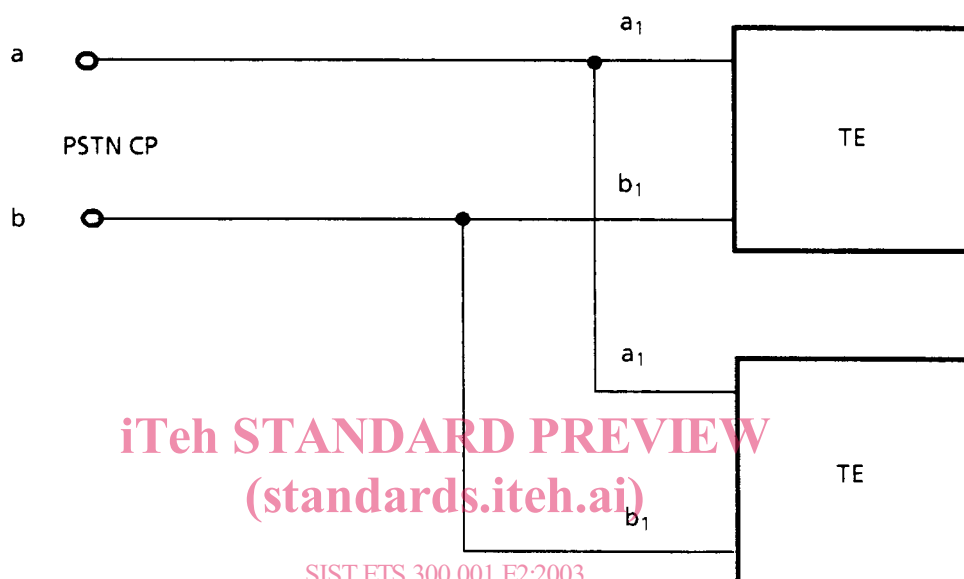


Figure 1.4.4.1.b: Series-connected TE

NOTE: Two or more TE can be connected to the PSTN CP in parallel (see figure 1.4.4.1.c).



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Figure 1.4.4.1.c: Parallel connected TE

- 1.4.4.1 (D) 1** For TEs with telephony functions in Germany direct parallel connection is not permitted. Reference is made to Chapter 8.
- 1.4.4.1 (D) 2** In the German contribution (D), in some places the term "additional equipment" which is a special group of series-connected TEs is used instead of "series-connected TE". Special reference is made to section 8.3 (D).
- 1.4.4.1 (E) 1** (This remark relates to series-connected TEs).
- PROVISION: Network compatibility cannot be expected if several series TEs are simultaneously connected in series to the same line.
- NOTE: In the Spanish contribution (E), the additional requirements for series TEs have the word "series" included in brackets in the requirement heading.
- 1.4.4.1 (E) 2** Associated TE
- Associated TE is defined as a TE which is approved for connection to the network. This name is normally used, in the Spanish contribution (E), to designate a TE which is connected to the line output terminals of a series-connected TE.
- 1.4.4.1 (E) 3** Multiline TE
- Multiline TE is defined as a TE which is able to be connected to either more than one PSTN connection point, or to a multiline PSTN CP.