



SLOVENSKI STANDARD
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Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 4-wire analogue leased lines (A4O and A4S); Terminal equipment interface

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**Business TeleCommunications (BTC);
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Terminal equipment interface**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Business Telecommunications (BTC) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS resulted from a mandate from the Commission of the European Community (CEC) to provide harmonised standards for the support of the Directive on Open Network Provision (ONP) of leased lines (92/44/EEC).

There are two other standards directly related to this ETS:

ETS 300 451: "Business Telecommunications (BTC); Ordinary quality voice bandwidth 4-wire analogue leased line (A4O); Connection characteristics and network interface presentation".

ETS 300 452: "Business Telecommunications (BTC); Special quality voice bandwidth 4-wire analogue leased line (A4S); Connection characteristics and network interface presentation".

This ETS is based on information from ITU-T Recommendations and ETSI publications and the relevant documents are quoted where appropriate.

Transposition dates	
Date of adoption of this ETS:	2 February 1996
Date of latest announcement of this ETS (doa):	31 May 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 November 1996
Date of withdrawal of any conflicting National Standard (dow):	30 November 1996

Introduction

The Council Directive on the application of ONP to leased lines (92/44/EEC), concerns the harmonization of conditions for open and efficient access to, and use of, the leased lines provided over public telecommunications networks and the availability throughout the European Union (EU) of a minimum set of leased lines with harmonised technical characteristics.

The consequence of the Directive is that telecommunications organisations within the EU shall make available a set of leased lines within and between points in these countries with specified connection characteristics and specified interfaces.

Two classes of standard will be used for the interfaces of terminal equipment designed for connection to the ONP leased lines. ETSs, which are voluntary, give the full technical specifications for these interfaces, whereas Technical Basis for Regulations (TBRs) give the essential requirements under the Second Phase Directive (91/263/EEC) for attachment to the leased lines. This standard, which is an ETS, belongs to the first category. The TBR (TBR 17) is a subset of this corresponding ETS.

CCITT Recommendations M.1020 (1988) and M.1040 (1988) are used as the basis for the leased line standards to which this terminal equipment interface relates.

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1 Scope

This European Telecommunication Standard (ETS) specifies the full physical and electrical characteristics and corresponding test principles for a terminal equipment interface for connection to the network termination points of Open Network Provision (ONP) ordinary quality or special quality voice bandwidth 4-wire analogue leased lines defined by ETS 300 451 and ETS 300 452. This ETS is not written for regulatory purposes.

This ETS is written only to ensure that the interface of the terminal equipment is compatible with the ONP ordinary quality or special quality voice bandwidth 4-wire analogue leased line. It is applicable to all interfaces designed for connection to these leased lines, however in the cases of apparatus that carries a particular service, of complex apparatus and of apparatus in private networks, other ETSs may apply in addition to this ETS.

Customer premises wiring and installation between the terminal equipment and the Network Termination Point (NTP) are outside the scope of this ETS.

2 Normative references

This ETS incorporates by dated and undated reference, 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 ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] EN 28877 (1989): "Information processing systems - Interface connector and contact assignments for ISDN basic access interface located at reference points S and T".
- [2] EN 60950 (1992): "Safety of information technology equipment including electrical business equipment".
- [3] ITU-T Recommendation P.56 (1993): "Objective measurement of active speech level".
- [4] ITU-T Recommendation P.64 (1993): "Determination of sensitivity/frequency characteristics of local telephone systems".

NOTE: This ETS also contains a number of informative references which have been included to indicate the sources from which material has been derived, hence they do not have an associated normative reference number. Details of these publications are given in the annex B. In some cases the same publication may have been referenced in both a normative and an informative manner.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

leased lines: The telecommunications facilities provided by a public telecommunication network that provide defined transmission characteristics between network termination points and that do not include switching functions that the user can control, (e.g. on-demand switching).

Network Termination Point (NTP): All physical connections and their technical access specifications which form part of the public telecommunication network and are necessary for access to and efficient communication through that public network.

reference impedance Z_R : This is 600 Ω . See also subclause A.1.2.

terminal equipment: Equipment intended to be connected to the public telecommunication network, i.e.:

- to be connected directly to the termination of a public telecommunication network; or
- to interwork with a public telecommunication network being connected directly or indirectly to the termination of a public telecommunication network,

in order to send, process, or receive information.

voice bandwidth: The band of frequencies over the range 300 Hz to 3 400 Hz.

3.2 Abbreviations

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

a	Return loss
DTMF	Dual Tone Multi-Frequency
EMC	ElectroMagnetic Compatibility
NTP	Network Termination Point
ONP	Open Network Provision
P_m	Sound pressure at the mouth reference point (used in the calculation of SLR)
rms	root mean square
RX	RX is a signal input (at either the terminal equipment or the test equipment, see figure 1)
SLR	Sending Loudness Rating
S_{mJ}	Sending sensitivity (used in the calculation of SLR)
S_{mJn}	Sending sensitivity at frequency f_n (used in the calculation of SLR)
TNV	Telecommunications Network Voltage (see clause 6 of EN 60950 [2])
TX	TX is a signal output (at either the terminal equipment or the test equipment, see figure 1)
W_{sn}	Sending weighting factor (used in the calculation of SLR)
Z_R	Reference impedance
Z_T	Terminating impedance

4 Requirements

4.1 Physical characteristics

Requirement: The terminal equipment shall provide one or more of the following connection methods:

- a) an 8-contact plug of the type specified in EN 28877 [1] with contact assignments as specified in table 1;
- b) a set of connection contacts (e.g. an insulation displacement connector or screw terminal block) to which solid conductors with diameters in the range 0,4 to 0,6 mm may be connected;
- c) a wiring arrangement connected by any means to the terminal equipment, with unterminated solid wire conductors with diameters in the range 0,4 to 0,6 mm at the distant end from the terminal equipment.

Where a) and c) are provided, these may be detachable by the user such that only one is connected to the terminal equipment at any time.

NOTE: The normal presentation of the leased line is by means of a socket.

Table 1: Contact assignment

Contact number	terminal equipment
1	Unused
2	Unused
3 & 6	Transmit pair (Output port)
4 & 5	Receive pair (Input port)
7	Unused
8	Unused

NOTE: The transmit pair is the output from the terminal equipment. The receive pair is the input to the terminal equipment as shown in figure 1. Where the terms "output" and "input" are used without qualification in this ETS, they refer to the terminal equipment interface.



Figure 1: Leased line configuration conventions

Test: There shall be a visual inspection that one or more of the connection methods are provided. The contact assignments and connection methods are tested indirectly through the tests in annex A.

4.2 Electrical characteristics

The requirements of subclause 4.2 apply only in the intended operating state of the terminal equipment.

4.2.1 Return loss

Requirement: The return loss of the impedance of the input and output ports of the terminal equipment interface with respect to the reference impedance, in the frequency range 200 Hz to 4 000 Hz, shall be greater than or equal to 8 dB throughout the range when tested using a stimulus signal at a voltage equivalent to that of a signal power of -13 dBm at 1 020 Hz.

Test: The test shall be conducted according to subclause A.2.1.

4.2.2 Longitudinal conversion loss

Requirement: The longitudinal conversion loss of the input and output ports of the terminal equipment interface shall be greater than or equal to the values given in table 2 and figure 2.

NOTE: The longitudinal conversion loss specifies the unwanted transverse signal detected by the terminal equipment when a longitudinal signal is applied equally to the terminals of the interface. Certain networks may have high longitudinal signal levels (e.g. 65 V root mean square (rms)); in this case, a higher longitudinal conversion loss may be necessary to ensure adequate operation of the terminal equipment.