



# SLOVENSKI STANDARD SIST ETS 300 248 E1:2004

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Business Telecommunications (BT); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U) Terminal equipment interface

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Terminal equipment interface**

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## Foreword

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

This ETS results 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 300 246: "Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U), Interface presentation";

ETS 300 247: "Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U), Connection characteristics".

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

## Introduction

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

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

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Two classes of standard will be used for the interfaces of terminal equipment designed for connection to the ONP leased lines. European Telecommunication Standards (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 12) is a subset of this corresponding ETS.

ETS 300 166 and CCITT Recommendation G.703 are used as the basis for the terminal interface.

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## 1 Scope

This 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 ONP 2 048 kbit/s digital unstructured leased lines using 120  $\Omega$  interfaces.

This ETS is not intended for regulatory purposes. A separate TBR (TBR 12) covers the essential requirements for attachment under the Second Phase Directive (91/263/EEC).

This ETS is to ensure that the interface of the terminal equipment is compatible with the ONP 2 048 kbit/s digital unstructured leased line. It is applicable to all interfaces designed for connection to the leased line, 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 or 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] CCITT Recommendation G.703 (1991): "Physical/electrical characteristics of hierarchical digital interfaces".
- [2] CCITT Recommendation O.151 (1988): "Error performance measuring equipment for digital systems at the primary rate and above".
- [3] EN 60950 (1992): "Safety of information technology equipment including electrical business equipment".
- [4] ETS 300 046-2 (1992): "Integrated Services Digital Network (ISDN); Primary rate access - safety and protection, Part 2: Interface Ia - safety".
- [5] ETS 300 046-3 (1992): "Integrated Services Digital Network (ISDN); Primary rate access - safety and protection, Part 3: Interface Ia - protection".
- [6] ISO/IEC 10173 (1991): "Information technology - Integrated Services Digital Network (ISDN) primary access connector at reference points S and T".

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

## 3 Definitions

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

**Leased lines:** the telecommunications facilities provided by a public telecommunications 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 telecommunications network and are necessary for access to, and efficient communication through, that public network.

**Safety Extra-Low Voltage (SELV) circuit:** a secondary circuit which is so designed and protected that under normal and single fault conditions the voltage between any two accessible parts, or between one accessible part and the equipment protective earthing terminal for a class I equipment, does not exceed a safe value (subclause 1.2.8.5 of EN 60950 [3]).

**Terminal Equipment (TE):** equipment intended to be connected to the public telecommunications network, i.e.:

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

in order to send, process, or receive information.

#### 4 Symbols and abbreviations

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

D2048U	2 048 kbit/s digital unstructured ONP leased line
DC	Direct Current
EMC	Electro-Magnetic Compatibility
HDB3	High Density Bipolar code of order 3 (see Annex B)
ONP	Open Network Provision
NTP	Network Termination Point
ppm	parts per million
PRBS(215-1)	Pseudo Random Bit Sequence (as defined in § 2.1 of CCITT Recommendation O.151 [2])
RX	Receive (a signal input at either the terminal equipment interface or the test equipment)
rms	root mean square
SELV	Safety Extra-Low Voltage
SDH	Synchronous Digital Hierarchy
TE	Terminal Equipment
TX	Transmit (a signal output at either the terminal equipment interface or the test equipment)
UI	Unit Interval

## 5 Requirements

The 2 048 kbit/s unstructured leased line provides a bidirectional point-to-point digital leased line with a usable bit rate of 2 048 kbit/s where timing is not provided from the network. The provision of circuit timing is the responsibility of the user. No structuring of the data is provided by the network and any structuring is the responsibility of the user.

### 5.1 Physical characteristics

**Requirement:** The terminal equipment shall provide an 8-contact plug of the type specified in ISO/IEC 10173 [6] with contact assignments as specified in table 1. In addition, the terminal equipment may provide an alternative method of connection.

NOTE 1: The use of a shielded cord or cable may be necessary to meet radiation and immunity requirements defined in Electro-Magnetic Compatibility (EMC) standards.

NOTE 2: The alternative connection method is primarily for the purpose of permitting hardwired presentations of the leased line using insulation displacement terminals and wire with solid conductors having diameters in the range 0,4 to 0,6 mm.

**Test:** There shall be a visual inspection that the plug is of the correct type. The contact assignments are tested indirectly through the tests in Annex A.

Table 1: Contact assignment

Contact	Terminal interface
1 & 2	Receive pair
3	Shield reference point
4 & 5	Transmit pair
6	Shield reference point
7	Unused
8	Unused

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

NOTE 2: For connection of the shield, or shields, to the common reference point at the NTP contacts 3 and 6 shall be used.

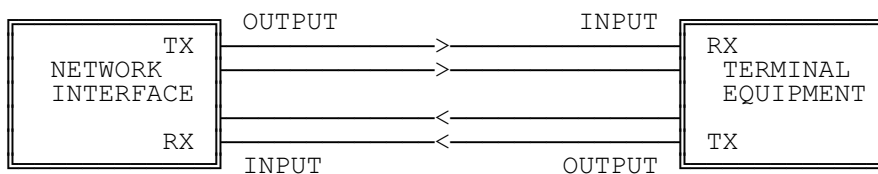


Figure 1

### 5.2 Electrical characteristics

#### 5.2.1 Output port

##### 5.2.1.1 Signal coding

**Requirement:** Coding of the digital signal transmitted at the output port shall be in accordance with High Density Bipolar code of order 3 (HDB3) encoding rules (see Annex B).

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

## 5.2.1.2 Waveform shape

**Requirement:** The pulse at the output port shall comply with the requirements given in table 2 and figure 2, based on CCITT Recommendation G.703 [1].

**Test:** The test shall be conducted according to Annex A, subclause A.2.2.

**Table 2: Waveform shape at output port**

Pulse shape (nominally rectangular)	All marks of a valid signal shall conform with the mask (see figure 2) irrespective of the polarity. The value V corresponds to the nominal peak voltage of a mark.
Test load impedance	120 $\Omega$ non-reactive
Nominal peak voltage V of a mark	3 V
Peak voltage of a space	0 $\pm$ 0,3 V
Nominal pulse width	244 ns
Ratio of the amplitudes of positive and negative pulses at the centre of the pulse interval	0,95 to 1,05
Ratio of the widths of positive and negative pulses at the nominal half amplitude	0,95 to 1,05

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