SLOVENSKI STANDARD
SIST EN 300 766 V1.2.1:2004

01-oktober-2004

Dostop in terminali (AT) - Več kanalni digitalni zakupljeni vodi za prenosno hitrost 64 kbit/s brez omejitev za prenašane signale in z ohranjanjem oktetov, ki delujejo na strukturiranem vmesniku s prenosno hitrostjo 2 048 kbit/s na enem, drugem ali obeh koncih (D64M) - Priključitvene značilnosti in omrežni vmesnik

Access and Terminals (AT); Multiple 64 kbit/s digital unrestricted leased lines with octet integrity presented at a structured 2 048 kbit/s interface at either or both ends (D64M); Connection characteristics and network interface presentation

Ta slovenski standard je istoveten z: **EN 300 766 Version 1.2.1**

ICS:

33.040.50	Vodi, zveze in tokokrogi	Lines, connections and circuits

SIST EN 300 766 V1.2.1:2004 **en**

ETSI EN 300 766 V1.2.1 (2001-07)

European Standard (Telecommunications series)

Access and Terminals (AT); Multiple 64 kbit/s digital unrestricted leased lines with octet integrity presented at a structured 2 048 kbit/s interface at either or both ends (D64M); Connection characteristics and network interface presentation

Reference
REN/AT-020011

Keywords
digital, interface, leased line, ONP, testing

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Access and Terminals (AT).

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

There are six other standards directly related to the present document:

- EN 300 288: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Network interface presentation";
- EN 300 289: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Connection characteristics";
- EN 300 290: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Terminal equipment interface";
- EN 300 418: "Access and Terminals (AT); 2 048 kbit/s digital unstructured and structured leased lines (D2048U and D2048S); Network interface presentation";
- EN 300 419: "Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Connection characteristics";
- EN 300 420: "Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Terminal equipment interface".

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

The present document has been written as a "delta" document to the existing standards for 64 kbit/s and 2 048 kbit/s leased lines. It uses requirements from these standards by cross-reference with modifications as necessary to the test. The configurations covered by the present document could have been addressed by modifying the existing standards for 64 kbit/s and 2 048 kbit/s leased lines to make them more modular so that the 64 kbit/s connection characteristics could be used in conjunction with the 2 048 kbit/s structured interface. In some ways this would have been a tidier solution, but it would involve considerable additional activity because the existing standards for 64 kbit/s and 2 048 kbit/s leased lines were, at the time of creation of the present document (see also the introduction of the present document), the subject of regulation and references to them in the annex of the ONP leased line Directive would have to be changed.

National transposition dates	
Date of adoption of this EN:	29 June 2001
Date of latest announcement of this EN (doa):	30 September 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2002
Date of withdrawal of any conflicting National Standard (dow):	31 March 2002

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 harmonized technical characteristics.

Other countries outside the EU may also choose to provide leased lines according to the standards produced to support the Directive.

The consequence of the Directive is that telecommunications organizations within the EU shall make available a set of leased lines between points in these countries with specified connection characteristics and specified interfaces. Under the Directive 91/263/EEC (see annex B), later replaced by 98/13/EC (see annex B), Terminal Equipment (TE) for connection to these leased lines was required to fulfil certain essential requirements.

The present version of the present document has been produced to introduce some necessary changes.

The leased line specified in the present document is not included in the minimum set whose provision is required under Directive 92/44/EEC (see annex B), however the present document is written as a "delta" document based on the specifications for the 2 048 kbit/s digital structured ONP leased line (D2048S) and 64 kbit/s digital unrestricted ONP leased line with octet integrity (D64U) leased lines.

ETS 300 166 and ITU-T Recommendation G.703 (see annex B) were used as the basis for the interface presentation requirements. ETS 300 167, ITU-T Recommendations G.704 and G.706 (see annex B) were used as the basis for the structure of the 2 048 kbit/s interface.

The present document does not apply to terminal equipment. EN 300 290 [4] applies without modification to TE intended for connection to the 64 kbit/s interface of the leased line. In theory EN 300 420 [6] should be modified to define the time slot structure for terminals intended for connection to 2 048 kbit/s interfaces that present 64 kbit/s leased lines. However, the modification is too trivial to be worth implementing.

1 Scope

The present document specifies the technical requirements and test principles for the connection characteristics and network interface presentations of a 64 kbit/s point-to-point digital unrestricted leased line with octet integrity that is provided between either:

- two 2 048 kbit/s structured network interfaces; or
- a 2 048 kbit/s structured network interface and a 64 kbit/s co-directional network interface.

More than one leased line of the type described in the present document may be provided at any 2 048 kbit/s network interface. Such leased lines may connect to the same or different destinations.

The present document is written as a "delta" document based on the following standards:

- EN 300 288: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Network interface presentation".
- EN 300 289: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Connection characteristics".
- EN 300 418: "Access and Terminals (AT); 2 048 kbit/s digital unstructured and structured leased lines (D2048U and D2048S); Network interface presentation".
- EN 300 419: "Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Connection characteristics".

The present document is applicable to leased lines, including part time leased lines, whose establishment or release does not require any protocol exchange or other intervention at the Network Termination Point (NTP).

The present document covers the connection characteristics, and the mechanical and electrical characteristics (except safety, overvoltage and EMC aspects) of the network interface, and specifies conformance tests. Some of the tests for the interface presentation described in the present document are not designed to be applied to the interface of an installed leased line; such tests may be applied to equipment of the kind used to provide the interface. The present document does not include details concerning the implementation of the tests nor does it include information on any regulations concerning testing.

NOTE: There is no requirement for each leased line to be tested in accordance with the present document before it is brought into, or returned into, service.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ETSI EN 300 288: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Network interface presentation".

[2] ETSI EN 300 289: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U); Connection characteristics".

[3] ETSI EN 300 418: "Access and Terminals (AT); 2 048 kbit/s digital unstructured and structured leased lines (D2048U and D2048S); Network interface presentation".

[4] ETSI EN 300 290: "Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U) Terminal equipment interface".

[5] ETSI EN 300 419: "Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Connection characteristics".

[6] ETSI EN 300 420: "Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Terminal equipment interface".

[7] ITU-T Recommendation I.410 (1988): "General aspects and principles relating to Recommendations on ISDN user-network interfaces".

[8] ITU-T Recommendation O.151 (1992): "Error performance measuring equipment operating at the primary rate and above".

[9] ITU-T Recommendation O.152 (1992): "Error performance measuring equipment for bit rates of 64 kbit/s and N × 64 kbit/s".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

errored second: a second with one or more bit errors

frame: sequence of 256 bits of which the first 8 bits define the frame structure

leased lines: 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

octet slip: slip of one complete octet

PRBS(2^{15}-1): Pseudo Random Bit Sequence (PRBS) as defined in clause 2.1 of ITU-T Recommendation O.151

PRBS(2^{11}-1): Pseudo Random Bit Sequence (PRBS) as defined in clause 2.1 of ITU-T Recommendation O.152

severely errored second: a second where at least 0,1 % of the bits are errored

slip: one or more extra or missing consecutive unit intervals in the bit stream

time slot: in the context of the present document, a time slot is a period of nominally 3,90625 µs (8 bits). Each frame of nominally 125 µs is subdivided into 32 time slots numbered 0-31

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

- to be connected directly to the termination of a public telecommunication network; or
- 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.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CRC-4	Cyclic Redundancy Check (using four bits)
D2048S	2 048 kbit/s digital structured ONP leased line
D64M	Multiple 64 kbit/s digital unrestricted leased lines with octet integrity at a structured 2 048 kbit/s interface at either or both ends
D64U	64 kbit/s digital unrestricted ONP leased line with octet integrity
EMC	ElectroMagnetic Compatibility
NTP	Network Termination Point
ONP	Open Network Provision
PRBS	Pseudo Random Bit Sequence
TE	Terminal Equipment

4 Overview (informative)

The present document applies to 64 kbit/s leased lines where at least one end is presented in a 2 048 kbit/s interface. This includes leased lines in a wide variety of cases and configurations such as:

- a number of 64 kbit/s leased lines presented in a single 2 048 kbit/s interface at one location but each connecting to a different location;
- a single 64 kbit/s leased line presented in a single 2 048 kbit/s interface at each end where other time slots in the interfaces are used for other services;
- a number of 64 kbit/s leased lines between the same 2 048 kbit/s interfaces. In this case there is no guarantee that the leased lines will follow the same route and have the same transmission delay, i.e. octets of data that share the same frame at the input will not necessarily share the same frame at the output. An example is shown in figure 1.

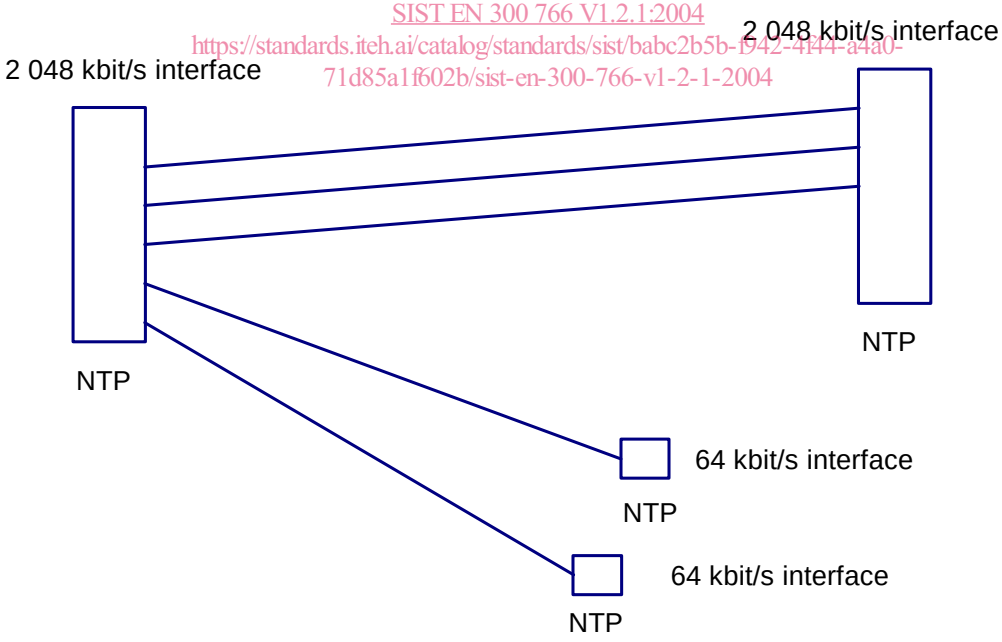

Figure 1