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Poslovne telekomunikacije (BTC) - Digitalni zakupljeni vodi za prenosno hitrost 34 Mbit/s ter za nestrukturirane in strukturirane signale (D34U in D34S) - Priključ itvene zahteve za vmesnik terminalske opreme

Business TeleCommunications (BTC); 34 Mbit/s digital unstructured and structured leased lines (D34U and D34S); Attachment requirements for terminal equipment interface

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Foreword

This Technical Basis for Regulation (TBR) has been produced by the Business TeleCommunications (BTC) Technical Committee, in conjunction with the Terminal Equipment (TE) and Transmission and Multiplexing (TM) Technical Committees, of the European Telecommunications Standards Institute (ETSI).

This TBR resulted from a mandate from the Commission of the European Community (CEC) to provide harmonized standards for the support of the Second Phase Directive (91/263/EEC).

This TBR is based on information from ITU-T 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 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 of a minimum set of leased lines with harmonized technical characteristics.

At the date of publication of this TBR, the 34 Mbit/s unstructured and structured leased lines are not part of the minimum set of leased lines under the Leased Line Directive and it is not planned that they will be added to the minimum set.

Two classes of standard will be used for the interfaces of terminal equipment designed for connection to the ONP leased lines. European Telecommunications Standards (ETSs), which are voluntary, give the full technical specifications for these interfaces, whereas TBRs give the essential requirements under the Second Phase Directive (91/263/EEC) for attachment to the leased lines. This TBR is a subset of the corresponding ETS 300 689.

ETS 300 166 and ITU-T Recommendation G.703 are used as the basis for the terminal equipment interface.

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1 Scope

This TBR specifies the attachment requirements and the corresponding conformance tests for a terminal equipment interface for:

- connection to the Network Termination Points (NTPs) of 34 368 kbit/s digital unstructured leased lines (D34U); and

- connection to the NTPs of 34 368 kbit/s digital structured leased lines (D34S) with an information transfer rate of 33 920 kbit/s without restriction on binary content.

These leased lines are defined in ETS 300 686 and ETS 300 687.

The term "attachment requirements" in the context of this TBR refers to the essential requirements for access that apply under articles 4d and 4f of the Second Phase Directive (91/263/EEC). Conformance to these requirements does not guarantee end-to-end interoperability. Essential requirements under articles 4c and 4e are not applicable to this TBR.

This TBR is applicable to all interfaces intended for connection to the D34U or D34S leased line. It covers the essential requirements for the mechanical and electrical characteristics of the terminal equipment interface. Interfaces intended only for connection to the D34U leased lines which do not comply with the specified requirements on output structure, do not satisfy the attachment requirements for connection to the D34S leased line.

Customer premises wiring and installation between the terminal equipment and the NTP are outside the scope of this TBR.

2 Normative references

This TBR 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 TBR only when incorporated into it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ITU-T Recommendation G.703 (1991): "Physical/electrical characteristics of hierarchical digital interfaces".

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

[3] ITU-T Recommendation O.171 (1992): "Timing jitter measuring equipment for digital systems".

NOTE: This TBR 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 E. 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 TBR, the following definitions apply:

frame: A repetitive set of consecutive bits in which the position of each bit can be identified by reference to a frame alignment signal.

frame alignment signal: The distinctive signal inserted in every frame always occupying the same relative position within the frame and used to establish and maintain frame alignment.

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.

PRBS(2^{23-1}): A Pseudo Random Bit Sequence (PRBS) (as defined in subclause 2.2 of ITU-T Recommendation O.151 [2]).

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 and, for class 1 equipment, between any accessible part and the equipment protective earthing terminal does not exceed a safe value (subclause 1.2.8.5 of EN 60950).

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 this TBR, the following abbreviations apply:

ac	alternating current
AMI	Alternate Mark Inversion
BNC	Bayonet Nut Connector
D34S	34 Mbit/s digital structured leased line
D34U	34 Mbit/s digital unstructured leased line
dc	direct current
EMC	ElectroMagnetic Compatibility
FA1	Frame Alignment byte 1
FA2	Frame Alignment byte 2
HDB3	High Density Bipolar code 3
LSB	Least Significant Bit
MSB	Most Significant Bit
NTP	Network Termination Point
ONP	Open Network Provision
ppm	parts per million
PRBS	Pseudo Random Bit Sequence
RDI	Remote Defect Indication
REI	Remote Error Indication
RX	RX is a signal input (at either the terminal equipment or the test equipment, see figure 1)
SELV	Safety Extra-Low Voltage
TBR-RT	TBR-Requirements Table
TX	TX is a signal output (at either the terminal equipment or the test equipment, see figure 1)
UI	Unit Interval

4 Requirements

The terminal equipment is for use with D34U or D34S leased lines.

The D34U 34 368 kbit/s unstructured leased line provides a bi-directional point-to-point digital connection with an information transfer rate of 34 368 kbit/s without restriction on binary content. Any structuring of the data is the responsibility of the user.

The D34S 34 368 kbit/s structured leased line provides a bi-directional point-to-point digital connection with an information transfer rate of 33 920 kbit/s without restriction on binary content. Any structuring of the data within the transparent 33 920 kbit/s part of the frame is the responsibility of the user.

For both D34U and D34S the provision of timing is the responsibility of the user; however, in certain installations the leased line provider may be able to offer a leased line that is synchronized to the network.

4.1 Mechanical characteristics

Justification: Without a means of connection, it is impossible for the terminal equipment to connect to the network, therefore this is included in order for the terminal equipment to interwork with the network (article 4f).

Requirement: The terminal equipment interface shall provide two coaxial 75 Ω connectors, one each for transmit and receive.

There is no requirement under this TBR for a particular plug or socket to be provided on the terminal equipment.

NOTE 1: ETS 300 689 specifies that the terminal equipment shall provide either:

- two coaxial sockets, one each for transmit and receive; these sockets being either 75 Ω sockets complying with IEC 169-13 or 75 Ω Bayonet Nut Connector (BNC) sockets; or
- two coaxial plugs at the end of a cord (or cords), one each for transmit and receive; these plugs being either 75 Ω plugs complying with IEC 169-13 or 75 Ω BNC plugs.

NOTE 2: 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 TBR, they refer to the terminal equipment interface.

NOTE 3: Normal practice is for the outer conductors of the input and output connectors to be connected via a dc path to the signal ground and thence to ground. This connection is to reduce EMC emissions. If there is a difference in ground potential between the terminal equipment and the NTP, this arrangement may result in high currents in the outer conductors and cause damage.

To prevent this problem, dc isolation may be introduced between the terminal equipment and the NTP, for example by introducing dc isolation between the outer conductor and the signal ground in the terminal equipment. Careful attention should be given to the requirements of standards on installation earthing practice.

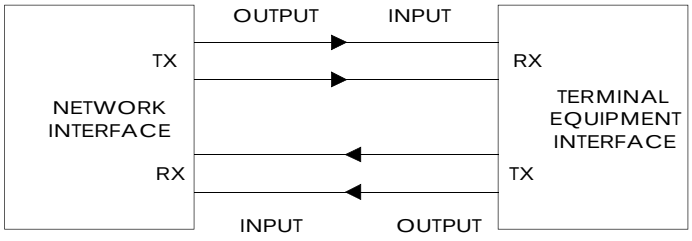

Figure 1