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Širokopasovno digitalno omrežje z integriranimi storitvami (B-ISDN) – Dostop do celic nega uporabniškega omrežja – Vmesniki fizične plasti za aplikacije v B-ISDN

Broadband Integrated Services Digital Network (B-ISDN); Cell based user network access; Physical layer interfaces for B-ISDN applications

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Foreword

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

This ETS defines the cell based user network access physical layer interfaces to be applied to the T_B, S_B reference points of the reference configurations of the Broadband Integrated Services Digital Network (B-ISDN) User-Network Interface (UNI), for B-ISDN applications. It addresses the transmission system structure that may be used at these interfaces as well as the implementation of the UNI related Operation And Maintenance (OAM) functions at the cell based physical layer.

The production of this ETS has taken into account the recommendations given in CCITT Recommendations I.413 [7] and I.432 [8].

Transposition dates	
Date of latest announcement of this ETS (doa):	31 May 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 November 1995
Date of withdrawal of any conflicting National Standard (dow):	30 November 1995

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1 Scope

This European Telecommunication Standard (ETS) defines the physical layer interface to be applied to the S_B and T_B reference points of the reference configurations of the Broadband Integrated Services Digital Network (B-ISDN) cell based User-Network Interface (UNI) at 155 520 kbit/s and 622 080 kbit/s. It addresses separately the physical media and the transmission system used at these interfaces and addresses also the implementation of UNI related Operation And Maintenance (OAM) functions.

The selection of the physical medium for the interfaces at the S_B and T_B reference points should take into account that optical fibre is agreed as the preferred medium to be used to cable customer equipment. However, in order to accommodate existing cabling of customer equipment, other transmission media (e.g. coaxial cables) should not be precluded. Also, implementations should allow terminal interchangeability.

This ETS reflects in its structure and content the desire to take care of such early configurations and introduces a degree of freedom when choosing a physical medium at the physical layer.

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] ITU-T Recommendation G.652: "Characteristics of a single-mode optical fibre cable".

[2] CCITT Recommendation G.703: "Physical/electrical characteristics of hierarchical digital interfaces".

[3] ITU-T Recommendation G.957: "Optical interfaces for equipments and systems relating to the synchronous digital hierarchy".

[4] ITU-T Recommendation I.113: "Vocabulary of terms for broadband aspects of ISDN".

[5] CCITT Recommendation I.321: "B-ISDN protocol reference model and its application".

[6] ITU-T Recommendation I.361: "B-ISDN ATM layer specification".

[7] CCITT Recommendation I.413 (1992): "B-ISDN user-network interface".

[8] CCITT Recommendation I.432 (1992): "B-ISDN user-network interface - Physical layer specification".

[9] CCITT Recommendation I.610 (1992): "B-ISDN operation and maintenance principles and functions".

[10] CCITT Recommendation X.200: "Reference model of Open System Interconnection for CCITT Applications".

[11] I-ETS 300 404: "Broadband Integrated Services Digital Network (B-ISDN); B-ISDN Operation And Maintenance (OAM) principles and functions".

[12] IEC Publication 825: "Radiation safety of laser products equipment classification requirements and user's guide".

[13] IEC Publication 950: "Safety of information technology equipment, including electrical business equipment".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the definitions given in ITU-T Recommendation I.113 [4] apply, in particular for the definitions of **idle cell**, **valid cell** and **invalid cell**. In addition, the following definition applies:

to be defined: These items or values are not yet specified.

3.2 Abbreviations

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

AIS	Alarm Indication Signal
ATM	Asynchronous Transfer Mode
BER	Bit Error Rate
B-ISDN	Broadband Integrated Services Digital Network
B-NT	B-ISDN Network Termination
B-TA	B-ISDN Terminal Adaptor
B-TE	B-ISDN Terminal Equipment
BIP	Bit Interleaved Parity
CLP	Cell Loss Priority
CMI	Coded Mark Inversion
CRC	Cyclic Redundancy Check
FERF	Far End Receive Failure
HEC	Header Error Control
LAN	Local Area Network
NNI	Network Node Interface
MA	Medium Adaptor
MPH	Management Physical Header
NRZ	Non Return to Zero
OAM	Operation and Maintenance
OSI	Open System Interconnection
PH	Physical Header
PM	Physical Medium
p.p.m	part per million
PRBS	Pseudo Random Binary Sequence
STI	Surface Transfer Impedance
TC	Transmission Convergence
TFV	Terminal Failure Voltage
UNA	User Network Access
UNI	User Network Interface
TFV	Terminal Failure Voltage

4 Reference configuration at the user-network interface

4.1 Functional groups and reference points

The reference configurations defined for ISDN basic access and primary access are considered general enough to be applicable to all aspects of the B-ISDN accesses.

Figure 1 shows the B-ISDN reference configurations which contain the following:

- functional groups: B-NT1, B-NT2, B-TE1, TE2, B-TE2, and B-TA;
- reference points: T_B, S_B and R.

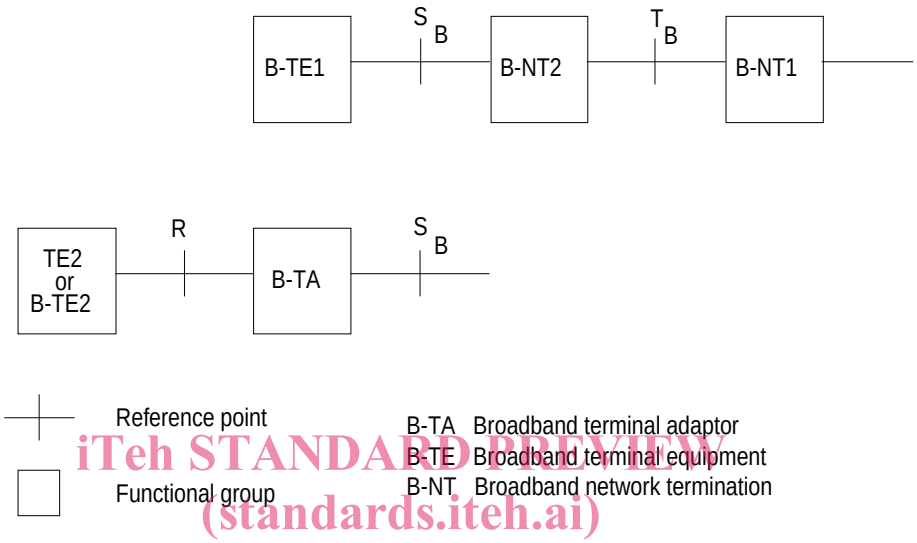


Figure 1: B-ISDN reference configurations

In order to clearly illustrate the broadband aspects, the notations for reference points and for functional groups with broadband capabilities are appended with the letter B (e.g. B-NT1, T_B). The broadband functional groups are equivalent to the functional groups defined in ISDN. Interfaces at the R reference point may or may not have broadband capabilities.

Interfaces at reference points S_B and T_B will be standardized. These interfaces will support all ISDN services.

4.2 Examples of physical realizations

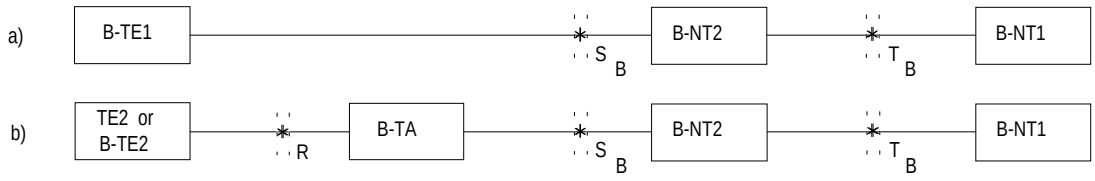
Figure 2 gives examples of physical configurations illustrating combinations of physical interfaces at various reference points. The examples cover configurations that could be supported by standardized interfaces at reference points S_B and T_B. Other configurations may also exist. For example, physical configurations of B-NT2 may be distributed, or use shared medium, to support Local Area Network (LAN) emulation and other applications.

Figure 3 illustrates possible physical configurations, but does not preclude alternative configurations. Whether a single interface at the S_B reference point can cover different configurations, as illustrated in figure 3, is for further study.

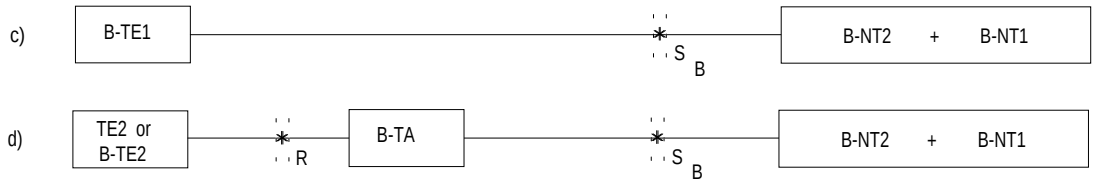
Figure 2 is subdivided into separate items as follows:

- figures 2a) and 2b) show separate interfaces at the S_B and T_B reference points;
- figures 2c) and 2d) show an interface at S_B but not at T_B;
- figures 2e) and 2f) show an interface at T_B but not at S_B;
- figures 2g) and 2h) show separate interfaces at S, S_B and T_B;
- figures 2i) and 2j) show interfaces at S_B and T_B which are coincident.

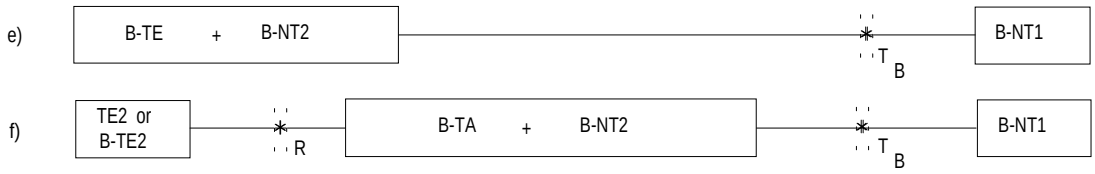
Additionally, figures 2b), 2d), 2f), 2h) and 2j) show an interface at reference point R.



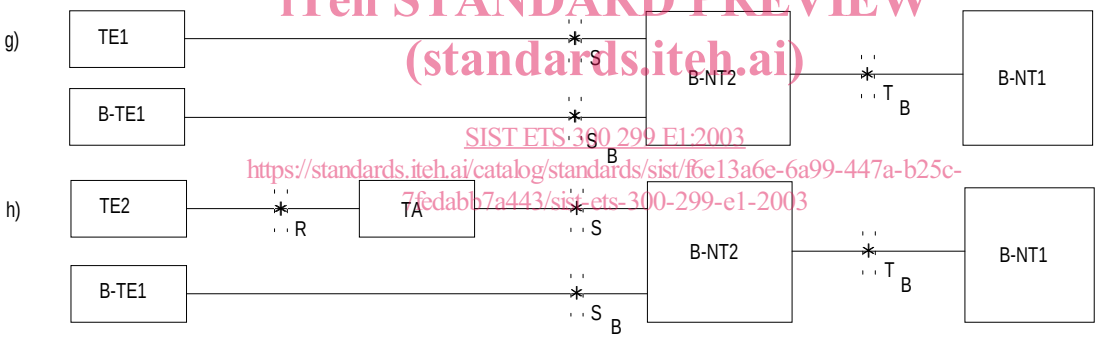
Configurations where B-ISDN physical interfaces occur at reference points S_B and T_B.



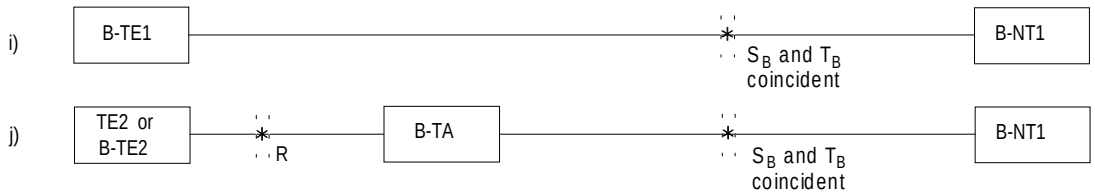
Configurations where B-ISDN physical interfaces occur at reference point S_B only.



Configurations where B-ISDN physical interfaces occur at reference point T_B only.



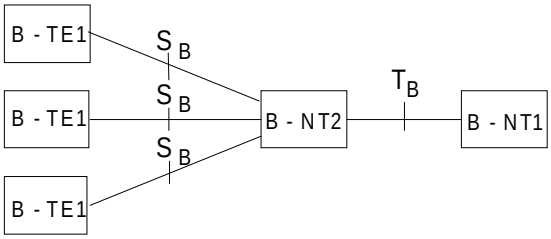
Configurations where B-ISDN and ISDN physical interfaces occur at reference points S, S_B and T_B.



Configurations where a single B-ISDN physical interface occurs at a location where both reference points S_B and T_B coincide.

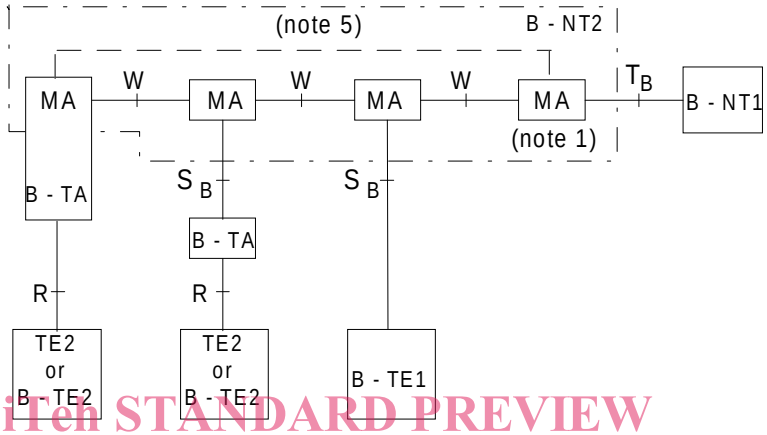
Figure 2: Examples of physical configurations for broadband user applications

a) centralised B-NT2 configuration:



b) distributed B-NT2 configurations:

b1) generic configuration



b2) physical configurations

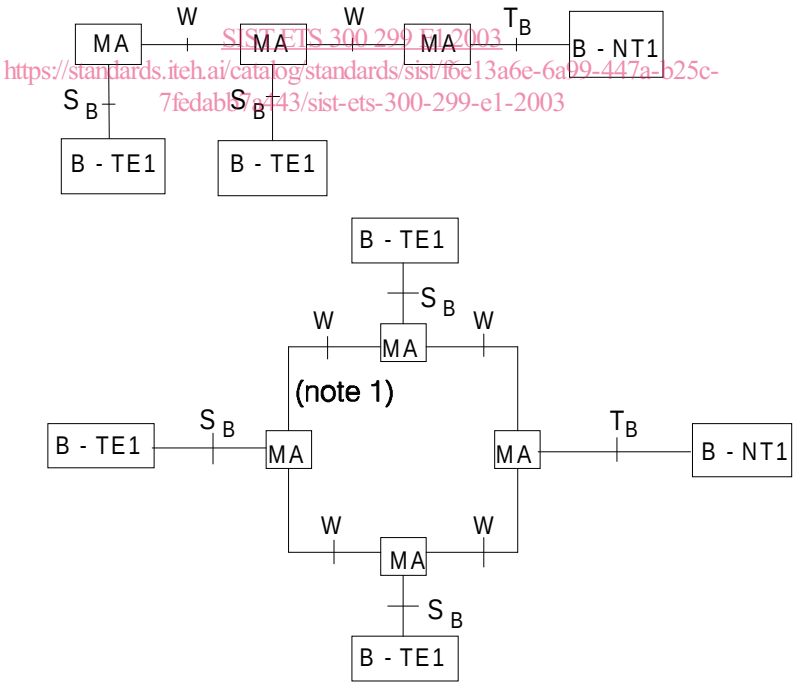


Figure 3: Examples of physical configurations for multipoint applications (continued)