SLOVENSKI STANDARD
SIST I-ETS 300 464 E1:2003

01-december-2003

Širokopasovno digitalno omrežje z integriranimi storitvami (B-ISDN) – Asinhroni prenosni način (ATM) – Celična prenosna zmogljivost na plasti ATM za tipe zvez v B-ISDN

Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM); ATM layer cell transfer performance for B-ISDN connection types

Ta slovenski standard je istoveten z: **I-ETS 300 464 Edition 1**

ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)

SIST I-ETS 300 464 E1:2003 **en**

INTERIM
EUROPEAN
TELECOMMUNICATION
STANDARD

I-ETS 300 464

February 1996

Source: ETSI TC-NA

Reference: DI/NA-042119

ICS: 33.020, 33.080

Key words: ATM, B-ISDN, performance

Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM); ATM layer cell transfer performance for B-ISDN connection types

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

*

Contents

Foreword

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

An ETSI standard may be given I-ETS status either because it is regarded as a provisional solution ahead of a more advanced standard, or because it is immature and requires a "trial period". The life of an I-ETS is limited to three years after which it can be converted into an ETS, have it's life extended for a further two years, be replaced by a new version, or be withdrawn.

Proposed announcement date	
Date of adoption of this I-ETS:	16 February 1996
Date of latest announcement of this I-ETS (doa):	31 May 1996

Blank page

1 Scope

This Interim European Telecommunication Standard (I-ETS) defines speed and accuracy performance parameters and values for cell transfer in the Asynchronous Transfer Mode (ATM) layer of a Broadband Integrated Services Digital Network (B-ISDN). The defined parameters and values apply to end-to-end ATM connections and to specified portions of such connections. The parameters are defined on the basis of ATM cell transfer reference events which may be observed at physical interfaces between ATM networks and associated customer equipment, and at physical interfaces between ATM networks. The values characterize the ATM layer performance for B-ISDN connection types.

NOTE: The parameters defined in this I-ETS may be augmented or modified based upon further study of the requirements of the services to be supported on B-ISDNs.

The defined parameters apply to compliant connections or connection portions. The criteria for deciding a connection or a connection portion as compliant or not need to be defined. These criteria such as the ratio of non conforming cells may be operator specific.

It is intended that one or more ATM connection performance objectives will be specified for each of the defined parameters.

Each value applies to ATM connections in their available state. Dependability aspects will be considered in separate standards.

This I-ETS provides a theoretical framework for the measurement of the performance parameter values. In some instances they may not be directly applied for real network measurements, and need to be approximated.

2 Normative references

This I-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 I-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.826 (1994): "Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate".

[2] ITU-T Recommendation I.150 (1993): "B-ISDN asynchronous transfer mode functional characteristics".

[3] ITU-T Recommendation I.353 (1993): "Reference events for defining".

[4] ITU-T Recommendation I.363 (1993): "B-ISDN ATM adaptation layer (AAL) specification".

[5] ITU-T Recommendation I.371 (1993): "Traffic control and congestion control in B-ISDN".

[6] ITU-T Recommendation I.610 (1993): "B-ISDN operation and maintenance principles and functions".

3 Symbols and abbreviations

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

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
BER	Bit Error Ratio
BIP	Bit Interleave Parity
CBR	Constant Bit Rate
CDV	Cell Delay Variation
CEQ	Customer Equipment
CER	Cell Error Ratio
CLR	Cell Loss Ratio
CMR	Cell Misinsertion Rate
CRE	Cell Reference Event
CTD	Cell Transfer Delay
FS	Frontier Station
HEC	Header Error Control
ISC	International Switching Center
ISDN	Integrated Services Digital Network
MP	Measurement Point
MPI	International Measurement Point
MPT	Measurement Point, located at the T_B reference point
NCCR	Non Conforming Cell Ratio
NNI	Network Node Interface
NP	Network Performance
NPC	Network Parameter Control
NT	Network Termination
OAM	Operation Administration and Maintenance
PDH	Plesiochronous Digital Hierarchy
PL	Physical Layer
SDH	Synchronous Digital Hierarchy
SDU	Service Data Unit
SECBR	Severely Errored Cell Block Ratio
SN	Sequence Number
SSN	Signalling Switching Node
STM	Synchronous Transfer Mode
TE	Terminal Equipment
UNI	User Network Interface
UPC	Usage Parameter Control
VBR	Variable Bit Rate
VC	Virtual Channel
VCC	Virtual Channel Connection
VP	Virtual Path
VPC	Virtual Path Connection

4 Performance model

ITU-T Recommendation I.353 [3] defines Measurement Points (MPs) and associated reference events that provide a basis for ISDN performance description. ATM cell transfer performance is measured by observing the reference events created as ATM cells cross MPs.

For B-ISDN, the MPs are ideally located at interfaces where the ATM layer is accessible. For broadband ISDN two types of MP are defined:

- an ingress MP is located at the input of the first equipment which accesses the ATM layer in a network operator domain;

- an egress MP is located at the output of the last equipment which accesses the ATM layer in a network operator domain.

For B-ISDN, the location of the MPI is on the international side of the International Switching Center (ISC) (or Frontier Station (FS), if the FS accesses the ATM layer) at:

- the last egress MP in a given country; and

- the first ingress MP in a given country.

For B-ISDN, the Measurement Point, located at the T_B reference point (MPT) is conceptually located at the interface (the T_B reference point) that separates the network operator domain and the customer equipment or private network domain. Since a given ATM layer connection (VPC or VCC) is likely to terminate within the Customer Equipment (CEQ), the ATM reference events detailed is this I-ETS may not be directly observable at the MPT. Practical guidance on measurement at the MPT are under study.

Two possible methods are :

- locating a physical test set at the UNI; and

- approximation by measuring within the network at the nearest point to the MPT at which the ATM layer is observable.

Figure 1 illustrates the layered nature of B-ISDN performance issues. The Network Performance (NP) provided to B-ISDN users depends on the performance of three layers:

- the physical layer, which may be based on Plesiochronous Digital Hierarchy (PDH), Synchronous Digital Hierarchy (SDH), or cell-based transmission systems. This layer is terminated at points where a virtual channel or virtual path is switched by equipment using the ATM technique, and thus has no end-to-end significance when such switching occurs;

- the ATM layer, which is cell-based. The ATM is physical media and application independent and has end-to-end MPT significance;

- the ATM adaptation layer (AAL), which may enhance the performance provided by the ATM layer to meet the needs of higher layers. The AAL supports multiple protocol types, each providing different functions and different performance.

Qualitative relationships between ATM layer NP and the NP provided by the Type 1 AAL are described in annex A. It is intended that quantitative relationships between ATM layer network performance and the performance of the physical layer and AAL will be developed.

In the context of ITU-T Recommendation I.353 [3] and of this I-ETS:

- a cell exit event occurs when an ATM cell crosses an MP out of a TE, or crosses an MP out of an SSN;

- a cell entry event occurs when an ATM cell crosses an MP into a TE or crosses an MP into a SSN.

NOTE: For practical measurement purposes, reference events can be observed at a physical location that differs from the actual MP. In cases where reference events are monitored at a physical interface, the time of occurrence of an actual exit can best be approximated by the observation of the first bit of the unit of control or user information out of the SSN or CEQ. The time of occurrence of an entry event can best be approximated by the observation of the last bit of the unit of control or user information into the SSN or CEQ.