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Digitalno omrežje z integriranimi storitvami (ISDN) – Dostopovni digitalni oddelek za primarne funkcije ISDN

Integrated Services Digital Network (ISDN); Access digital section for ISDN primary rate; Conformance Testing Principles

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AMENDMENT

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Integrated Services Digital Network (ISDN); Access digital section for ISDN primary rate

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New presentation - see History box

Foreword

This amendment to ETS 300 233 (1994) has been produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This amendment provides the annex C, which was left "To be provided" in ETS 300 233 (1994).

Amendment

Page 74, annex C

Replace the current annex C "To be provided" with the following annex C.

Annex C (normative): Conformance test principles for the ISDN primary rate access digital section

C.1 Scope and general information

C.1.1 Scope of this annex

This annex provides the test principles for the requirements of this ETS used to determine the compliance of an implementation under test to this ETS.

This annex does not specify test related to:

- safety requirements;
- interface or equipment overvoltage protection requirements;
- immunity requirements against electromagnetic interferences;
- emission limitation requirements.

Detailed test equipment accuracy and the specification tolerance of the test devices is not a subject of this annex. Where such details are provided then those test details are considered as being an informative addition to the test description.

The test configurations given do not imply a specific realisation of test equipment, or arrangement, or the use of specific test devices for conformance testing. However, any test configuration used shall provide those test conditions specified under "system state", "stimulus" and "monitor" for each individual test.

C.1.2 General information

For conformance test of the access digital section two relevant test points have to be identified:

- the T reference point covered by ETS 300 011 [1];
- the V3 reference point.

This annex is applicable to interfaces T and V3 as appropriate. The field of application is given at the beginning of each test.

As the transmission system is not specified in this ETS, only relevant signals inside the primary rate stream need to be checked. The coding and the frame organization of this bit stream is outside the scope of this ETS.

C.1.2.1 Additional information to support the test

The V3 interface is required to be a standard CCITT Recommendation G.703 [8] interface (either 120 Ω balanced or 75 Ω unbalanced) according to CCITT Recommendation Q.512 [4].

If the V3 reference point is not implemented as an interface, a suitable means such as either a local exchange or a Conformance Test Adaptor (CTA) enabling the monitoring of the V1 reference point and giving access to the B and D channels shall be provided by the manufacturer.

C.1.2.2 Abbreviations

For the purpose of this annex the following additional abbreviations apply:

FAS	Frame Alignment Signal
IUT	Item Under Test
MF	Multiframe
MFAS	Multiframe Alignment Signal
PRBS	Pseudo Random Bit Sequence
Rx	interface signal Receiver (of the IUT or simulator)
SMF	Sub-Multiframe
Tx	interface signal Transmitter of the IUT or simulator

C.1.2.3 Definitions

For the purpose of this annex the following additional definitions apply:

Primary rate access Digital Section (DS): the provision to transmit a digital signal of specified rate between two consecutive reference points. The term should be qualified by the type of access supported, or by a prefix denoting the V interface at the digital section boundaries. For example:

- basic rate access digital section;
- primary rate access digital section;
- V_5 digital section.

Item Under Test (IUT): Implementation of interfaces related functions for:

- the user side interface (T), i.e. NT1; and
- the exchange side interface (V_3), i.e. LT.

Simulator (terminal equipment, exchange): device generating a stimulus signal conforming to this ETS to bring the IUT into the required operational state and monitoring the receive signal from the IUT. It can either be a simulator for the user side or the exchange side of the interface.

C.1.3 Connection of the simulator to the IUT

For testing the electrical characteristics of the IUT, the simulator, or its relevant part, shall be connected directly to the interconnecting points for the interface wiring at the IUT unless otherwise stated.

All other tests may be performed with interface wiring complying with the requirements given in CCITT Recommendation G.703 [8] and in ETS 300 011 [1], table 1, clause 7.

C.1.4 Allocation of test

One test definition may cover more than one requirement for one or both interface points (interface T or V3). Requirements which do not need specific test definition are indicated by "N/R" (Not Relevant). Requirements which are not relevant for this ETS and which require testing defined by other ETSs are indicated by "N/A" (Not Applicable).

C.1.4.1 General

Table C.1: General requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Scope	1	N/R	
Normative references	2	N/R	
Definitions and abbreviations	3	N/R	
Definitions	3.1	N/R	
Abbreviations	3.2	N/R	

C.1.4.2 Type of configuration and applications requirements

Table C.2: Type of configuration and applications requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Configuration and application	4	N/R	
Configuration	4.1	N/R	
Application	4.2	N/R	
Modelling and relationship between the access DS and the ET	4.3	N/R	

C.1.4.3 Functional characteristics requirements

Table C.3: Functional characteristics requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Function	5	N/R	
B-channel	5.1	T and V3	C.2.1 and C.2.5.5
H0-channel	5.2	T and V3	C.2.1 and C.2.5.5
H1-channel	5.3	T and V3	C.2.1 and C.2.5.5
D-channel	5.4	T and V3	C.2.1
Bit timing	5.5	T and V3	C.2.5
Octet timing	5.6	T and V3	C.2.3, C.2.3.3, and C.2.5.5
Frame alignment	5.7	T and V3	C.4.1
CRC-4 procedure	5.8	T and V3	C.4.2
M channel	5.9	T and V3	C.2.1
Power feeding	5.10	T	C.5.1
Operation and maintenance of access digital section	5.11	T and V3	C.3.1

C.1.4.4 Signal delay and jitter requirements

Table C.4: Signal delay and jitter requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Signal transfer delay	6	T and V3	C.2.4
Jitter	7	N/R	
Output/Input jitter at T reference point	7.1	T	C.2.6.1 and C.2.6.3
Jitter at V3 reference point	7.2	V3	C.2.6.2

C.1.4.5 Operation and maintenance

Table C.5: Operation and maintenance requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Operation and maintenance	8	N/R	
Control facilities	8.1	N/R	
Loopbacks	8.1.1	N/R	
Loopbacks implementation	8.1.1.1		
i)		V3	C.7.1
ii)		V3	C.7.2
Loopback procedure	8.1.1.2		C.7
Monitoring	8.2	N/R	
Functions	8.2.1	N/R	
Defect conditions and consequent action	8.2.2	N/R	
Detection of defect conditions	8.2.2.1	N/R	

(continued)

Table C.5 (continued): Operation and maintenance requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Definition of defect indication signals	8.2.2.2		
- NF		T and V3	C.2.2
- Frames		T and V3	C.6
- Substituted frames		V3	C.3.1 and C.6.4
- LFA		T and V3	C.3.1
- Loss of power in NT1 or LT		T and V3	C.3.1 and C.6.6
- AUXP		T and V3	C.6.8
Detection of defect indication signals	8.2.2.3		
- LOS or LFA at line side of NT1		V3	C.8.3
- LOS at line side of LT		V3	C.8.8
- Loss of power at NT1		V3	C.8.6
- AIS at line side of NT1		V3	C.2.5.1
- LOS at V3		V3	C.6.3
- LOS at T		T and V3	C.6.2
- Loss of power at T		T and V3	C.3.1
Definition of detection algorithm	8.2.2.4		
- NOF		T and V3	C.2.1
- LFA		T and V3	C.4.3
- Loss of signal at T and V3		T and V3	C.3.1 and C.6.1
- AIS		T and V3	C.3.1
- Loss of power in the NT1		T and V3	C.3.1 and C.6.6
- Loss of power in the LT		T and V3	C.3.1
Consequent action	8.2.2.5	T and V3	C.6
Error performance monitoring	8.3	V3	C.4.2 and C.4.3
Operation and maintenance procedures	9	N/R	
Partitioning of function	9.1	N/R	
Definitions of signals at T reference point	9.2	N/R	
Definitions of signals at V3 reference point	9.3	N/R	

(continued)

Table C.5 (continued): Operation and maintenance requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
FEs related to operation and maintenance	table 2		
- normal DS->ET		V3	C.2.2 and C.6
- normal DS<-ET		N/A	
- unintentional loopback		V3	C.3.1 and C.6
- LOS/LFA at TE (FC2)		T and V3	C.3.1, C.4.1, and C.6.2
- LOS at line side of NT1 or at V3 (FC3)		T and V3	C.3.1 and C.6.3
- LOS/LFA at V3 of ET (FCL)		N/A	
- LOS/LFA at T (FC4)		T and V3	C.3.1 and C.6.4
- FC3 and FC4 simultaneously		T and V3	C.3.1 and C.6.5
- Loss of power at NT1		T and V3	C.3.1 and C.6.6
- Loss of power at NT1 and LOS/LFA at TE simultaneously		T and V3	C.6.7 and C.6.2
- LOS at line side of LT		V3	C.6.8 and C.3.1
- Reception of AIS at V3 of LT (reaction to FCDL or FCET)		V3	C.3.1 and C.2.5.1
- Reception of AIS at V3 of LT and FC4 simultaneously		V3	C.2.5.1
- Defect FCET in ET or FCDL between V3 and V3'		N/A	
- Defect FCDLu between V3 and V3'		N/A	
FEs related to loopback operation	table 3		
- loopback 1 command		V3	C.7
- loopback 2 command		V3	C.7
- loopback acknowledge		V3	C.7
- loopback release command		V3	C.7

(continued)

Table C.5 (concluded): Operation and maintenance requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
FEs related to CRC-4 error detection	table 4		
- CRC error report from NT1		V3	C.4.3
- CRC error information from ET		V3	C.4.3
- CRC error report from TE		V3	C.4.3
- CRC error detection at T of NT1		V3	C.4.3
- Simultaneously occurrence of FE W and FE X		V3	C.4.3
Definition of ET layer 1 state machine	9.5	N/R	
DS states	9.5.1	N/R	
DS states trans. table	9.5.2	N/R	
Assumptions	9.5.2.1	N/R	
Classification of DS states	9.5.2.2	N/R	
Definition of notations	9.5.2.3	N/R	
Notes to DS state table	9.5.2.4	N/R	

C.1.4.6 System management requirements

Table C.6: System management requirements

Functions	Clause/ subclause	Relevant interface T, V3, or T and V3	Test defined in
Introduction	A.1	N/A	
System management requirements	A.2	N/A	
General	A.2.1	N/A	
Error indications	A.2.2	N/A	
Loopback operations	A.2.3	N/A	
Information to be sent in the D channel during loopback operation	A.2.4	N/A	
Configuration control	A.2.5	N/A	
Handling of CRC error information in the ET	A.3	N/A	
Definition of ET layer 1 state machine	A.4	N/A	
ET layer 1 states	A.4.1	N/A	
PH and MPH primitives	A.4.2	N/A	
The repertoire of PH and MPH primitives	A.4.2.1	N/A	
ET layer 1 state transition table	A.4.3	N/A	
Definition of notations	A.4.3.1	N/A	
Classification of ET states	A.4.3.2	N/A	