AMENDMENT

ETS 300 297
A1

March 1996

Source: ETSI TC-TM

Reference: RE/TM-03049

ICS: 33.080

Key words: ISDN, digital, access, basic rate

This amendment A1 modifies
the European Telecommunication Standard ETS 300 297 (1995)

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

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Foreword

This amendment provides a new normative annex C, which defines the conformance test principles for the ISDN basic rate access digital section for ETS 300 297 (1995).

The current informative annex C is reallocated as informative annex D.

Transposition dates	
Date of adoption of this amendment:	25 August 1995
Date of latest announcement of this amendment (doa):	30 June 1996
Date of latest publication or endorsement of this amendment (dop/e):	31 September 1996
Date of withdrawal of any conflicting National Standard (dow):	31 September 1996

Amendments

Page 10, subclause 3.1

Add the following definitions to subclause 3.1:

access digital section: The whole of the means of digital transmission of 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 access digital section;

- primary rate access digital section;

- Vx digital section.

Conformance Test Adaptor (CTA): A device which is either a local exchange with adaption functions providing access to the required functions or an adaptor able to provide these functions and to simulate the required functionality of the local exchange.

simulator (terminal equipment, exchange): A device generating a stimulus signal conforming to this ETS to bring the Implementation Under Test (IUT) into the required operational state and monitoring the receive signal from the IUT. It can either be a simulator for the user side at the T reference point or the exchange side of the V1 reference point.

Page 10, subclause 3.2

Add the following abbreviations to subclause 3.2:

CTA	Conformance Test Adaptor
DLL	Digital Line Loop
IUT	Implementation Under Test
PRBS	Pseudo Random Bit Sequence
Rx	signal Receiver
Tx	signal Transmitter

Page 39, new annex C

Add the following annex C:

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

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

This ETS does not specify:

- 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 are not a subject of this annex. Where such details are provided, they are considered as being an "informative" addition to the test description.

The test configurations given do not imply a specific realization 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.

Functions described in annex A are implemented in the local exchange. They are defined to ensure the correct interworking between the local exchange and the access digital section. Testing of these functions is outside the scope of this ETS.

C.1 General

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

- the T reference point covered by ETS 300 012 [6];
- the V1 reference point.

This document is applicable to interface points T and V1 as appropriate. The field of application is given at the beginning of each test.

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

C.2 Additional information to support the test

As the V1 reference point is specific to the system under test and is not a standardized electrical 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-channels and D-channel need to be provided by the manufacturers.

The following facilities need to be provided by the CTA:

- monitoring of the FEs sent to and from the ET across the V1 reference point;

- the ability to transmit and receive test patterns to and from B-channel and D-channel.

Stimuli are provided either:

- at the V1 reference point, by the means described in this subclause; or

- at the T reference point, by the simulator at the T reference point.

If the equipment to be tested does not provide access to the B-channels and D-channel, the apparatus supplier needs to additionally provide a test equipment using the same chip set and interface components as in the equipment to be tested. This test equipment shall provide either access to the B-channels and D-channel to allow insertion of specific test patterns so that the necessary tests can be carried out or else implementation of a test pattern generator providing the necessary test patterns and a monitor point for monitoring the FEs sent to and from the ET across the V1 reference point.

C.3 Connection of the simulator to the IUT

For testing the characteristics of the IUT, the simulator at the T reference point, or its relevant part, is to be connected to the IUT as described in ETS 300 012 [6]. Because the V1 reference point may be inside the CTA as described in subclause C.2, the connection is dependent on the configuration of the test equipment.

C.4 Allocation of test

One test definition may cover more than one requirement for one or both interface points (interface T or V1). Requirements which do not need specific test definition are indicated by "not relevant" (N/R). Requirements which are not relevant for this normative and which require to be tested as defined by other ETSs are indicated by "not applicable" (N/A).

C.4.1 General

Table C.1

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Scope	1	N/R	
Normative references	2	N/R	
Definitions and abbreviations	3	N/R	
Partial activation	3.1	N/R	
Full activation	3.2	N/R	

C.4.2 Type of configuration and applications requirements

Table C.2

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	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 digital section and the ET	4.3	N/R	

C.4.3 Functional characteristics requirements

Table C.3

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Functions	5	N/R	
B-channel	5.1	T, V1	C.5.1.1
D-channel	5.2	T, V1	C.5.1.2
Bit timing	5.3	T, V1	C.5.1.1, C.5.1.2
Octet timing	5.4	T, V1	C.5.3.1
Activation	5.5	T	C.7.1
Activation from ET	5.5.1	V1	C.7.1
Request for activation from TE	5.5.2	V1	C.7.1
Deactivation	5.6	T, V1	C.7.1
Power feeding	5.7	T	C.5.6.1
Operation and maintenance	5.8	T, V1	C.8.1.1, C.8.1.2, C.8.1.3, C.8.3.1

C.4.4 Signal transfer delay and jitter requirements

Table C.4

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Signal transfer delay	6	T, V1	C.6.1
Jitter	7	N/R	
Output/input jitter at T reference point	7.1	T	C.6.2.1.2, ETS 300 012 [6]
Jitter at V1 reference point	7.2	N/A	

C.4.5 Activation/deactivation

Table C.5

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Activation/ deactivation	8	N/R	
Functional capabilities	8.1	N/R	
Customer installation at the user side of reference point T	8.1.1	N/R	
Installation at the network side of V1 reference point	8.1.2	N/R	
Modelling	8.2	N/R	
General	8.2.1	N/R	
Partitioning of functions	8.2.2	N/R	
Location of timer T2	8.2.3	N/R	
Activation/deactivation procedure	8.3	T, V1	C.7.1
Basic characteristics of the procedures	8.3.1	T, V1	C.7.1
Priority	8.3.1.1	N/A	
System management	8.3.1.2	N/R	
Loopbacks	8.3.1.3	T, V1	C.7.1, C.8.1.1, C.8.1.2, C.8.1.3
Protection of layer 2 frames	8.3.1.4	N/R	
Structure of the tables	8.3.1.5	N/R	
Description of the state transition table	8.4	N/R	
Access digital section state (DS states)	8.4.1	N/R	
State DS 1.0 (Access deactivated)	8.4.1.1	N/R	
State DS 1.1 (Access activation initiated)	8.4.1.2	N/R	
State DS 1.2 (Access activation: DS synchronized LT $\rightarrow$ NT	8.4.1.3	N/R	
State DS 1.3 (Access activation: DS activated)	8.4.1.4	N/R	
State DS 1.4 (Access activated)	8.4.1.5	N/R	
State DS 1.5 (LOS/LFA at T)	8.4.1.6	N/R	
State DS 1.6 (Access deactivation initiated)	8.4.1.7	N/R	
State DS 1.7 (Defect condition)	8.4.1.8	N/R	
State DS 2.0 (Loopback 1 or 1a initiated)	8.4.1.9	N/R	
State DS 2.1 (Loopback 1 or 1a activated)	8.4.1.10	N/R	
State DS 2.2 (Loopback 2 initiated)	8.4.1.11	N/R	
State DS 2.3 (DS synchronized LT $\rightarrow$ NT)	8.4.1.12	N/R	
State DS 2.4 (DS activated)	8.4.1.13	N/R	
State DS 2.5 (Loopback 2 activated)	8.4.1.14	N/R	

(continued)

Table C.5 (concluded)

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Repertoire of signals sent across the T reference point	8.4.2	N/R	
Repertoire of function elements sent across the V1 reference point	8.4.3	N/R	
Assumptions made in specifying the procedures in table 2	8.4.4	N/R	
Activation time	8.5	T, V1	C.7.2
Warm start time	8.5.1	T, V1	C.7.2.1, C.7.2.3
Cold start time	8.5.2	T, V1	C.7.2.2

C.4.6 Operation and maintenance

Table C.6

Functions	Clause/ subclause	Relevant interface or reference point T, V1, or T and V1	Test defined in
Operation and maintenance	9	N/R	
Control facilities	9.1	N/R	
Loopbacks	9.1.1	V1	C.5.1
Loopback implementation	9.1.1.1	N/R	
Loopback procedure	9.1.1.2	V1	C.8.1.1, C.8.1.2, C.8.1.3, C.7.1
Information request	9.1.2	N/R	
Power switch on/off the line	9.1.3	N/R	
Continuity test	9.1.4	T, V1	C.7.1
Monitoring	9.2	N/R	
Functions	9.2.1	N/R	
Defect conditions and consequent actions	9.2.2	T, V1	C.8.3.1
Detection of defect conditions	9.2.2.1	N/R	
Consequent actions	9.2.2.2	T, V1	C.8.3.1
Error detection and reporting	9.2.3	N/R	
Status report functions	9.2.4	N/R	
System dependent status report functions	9.2.5	N/R	

C.5 Functional characteristics tests

When the access digital section is implemented using a copper transmission system as defined in ETR 080 [8], then the test loop 1 given in ETR 080 [8] shall be used for carrying out the functional characteristics tests.

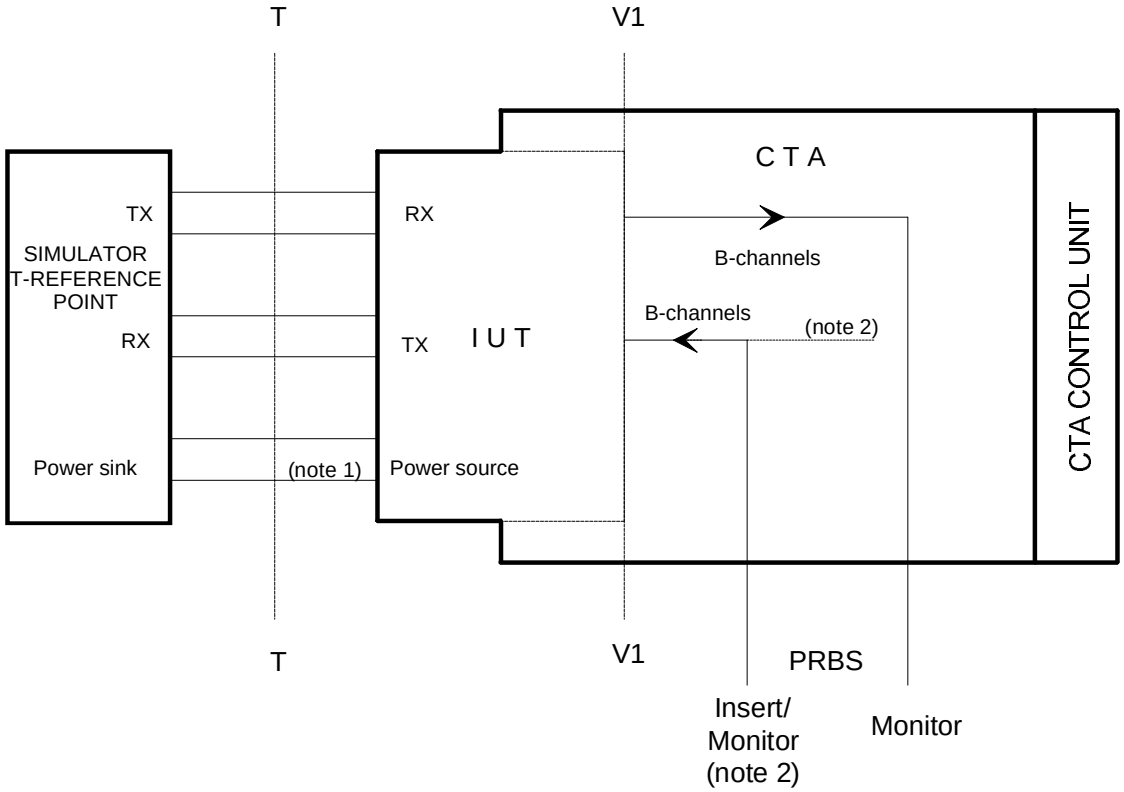
C.5.1 Digital section transparent signal transfer

Test applicable at the T and the V1 reference points.

C.5.1.1 B-channels

Purpose: To test the transparency and independence of the B-channels.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

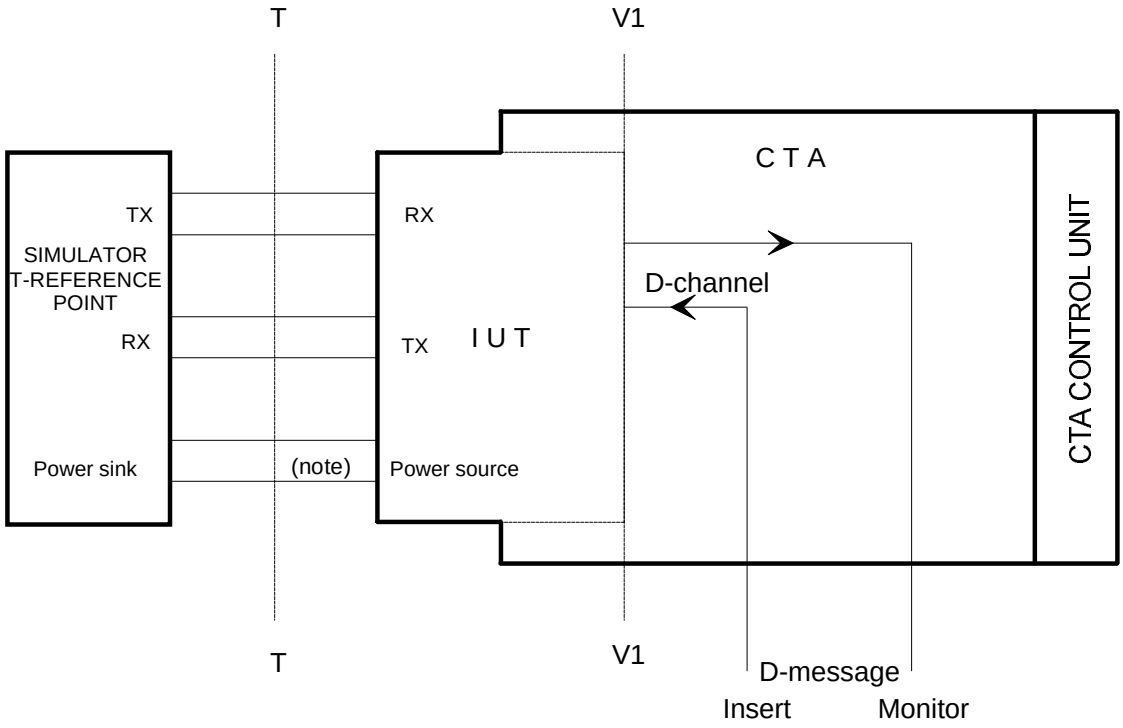
Figure C.1

System state: Access activated. DS 1.4.
Stimulus 1: Different PRBSs in the B1-channel and the B2-channel applied to the T reference point.
Monitor 1: The PRBSs at the V1 reference point.
Result: No bit errors.
Stimulus 2: Different PRBSs in the B1-channel and the B2-channel applied to the T reference point.
Monitor 2: The PRBSs at the V1 reference point.
Result: No bit errors.

C.5.1.2 D-channel

Purpose: To test the transparency of the D-channel.

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.2

System state: Access activated. DS 1.4.
Stimulus 1: Message in the D-channel applied to the T reference point.
Monitor 1: The message at the V1 reference point.
Result: No bit errors.
Stimulus 2: Message in the D-channel applied to the V1 reference point.
Monitor 2: The message at the T reference point.
Result: No bit errors.

C.5.2 Bit timing

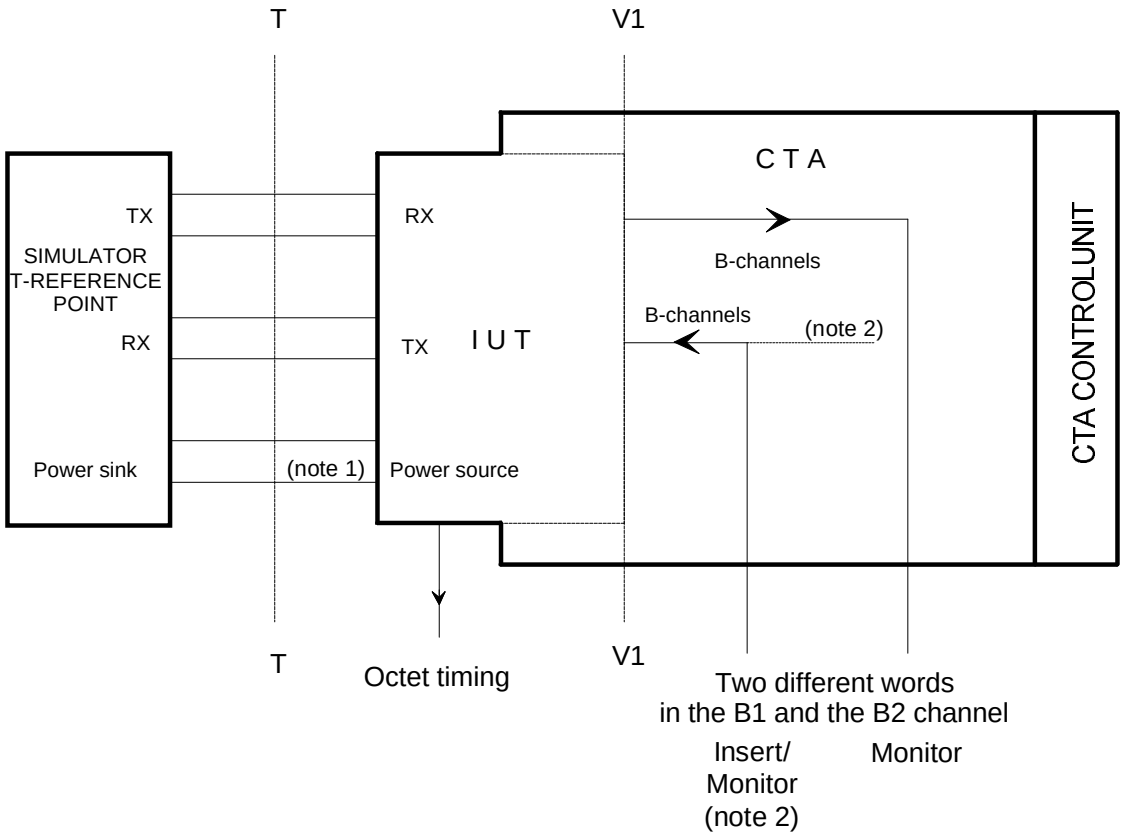
This test is not relevant, because the bit timing is tested by testing the transparency of the B-channels as described in subclause C.5.1.1.

C.5.3 Octet timing

C.5.3.1 B-channel octet transparency

Purpose: To test the octet organization and transparency.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

Figure C.3

Stimulus 1: Different words in the B1-channel and the B2-channel applied to the T reference point.
EXAMPLE 1: B1 00001111, B2 11110000.
The words used for this test must allow the observation of octets and the phase relationship between the signals in the B-channels.
Monitor 1: The words in the B-channels at the V1 reference point.
Result: No bit errors.
Stimulus 2: Different words in the B1-channel and the B2-channel applied to the V1 reference point.
EXAMPLE 2: B1-channel 00001111, B2-channel 11110000.
The words used for this test must allow the observation of octets and the phase relationship between the signals in the B-channels.
Monitor 2: The words in the B-channels at the T reference point.
Result: No bit errors.

C.5.4 Activation

The test of the activation procedure is covered by the tests as described in clause C.7.

C.5.5 Deactivation

The test of the deactivation procedure is covered by the tests as described in clause C.7.

C.5.6 Power feeding

This function is provided for remote power feeding of the NT1 and one TE in restricted power condition as described in ETS 300 012 [6]. The function is dependent on the transmission medium used.

If remote power feeding is provided, the power feeding through the interface at the T reference point has to be tested in restricted power condition.

C.5.6.1 Restricted power condition

Purpose: To ensure that the access digital section is feeding enough power through the interface at the T reference point to the S bus in restricted power condition and to test the open circuit voltage.

Test configuration:

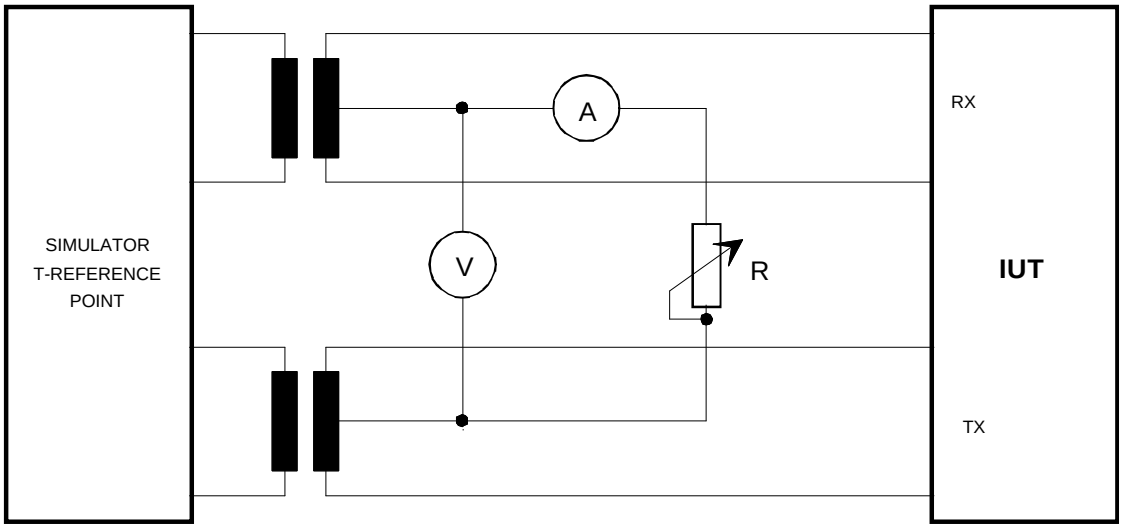


Figure C.4

System state: Any state.
Stimulus: Drawing zero power and maximum power provided by power source 1 as declared by the supplier of the NT. Reduce the resistance from infinity Ω to a value such that the maximum power is available.
Monitor: DC voltage and current.
Results: The voltage at the output of the source shall be 40 V (+5 / -15 %), reversed polarity.

C.5.7 Operation and maintenance

The test of these functions is covered by the tests as described in clause C.8.

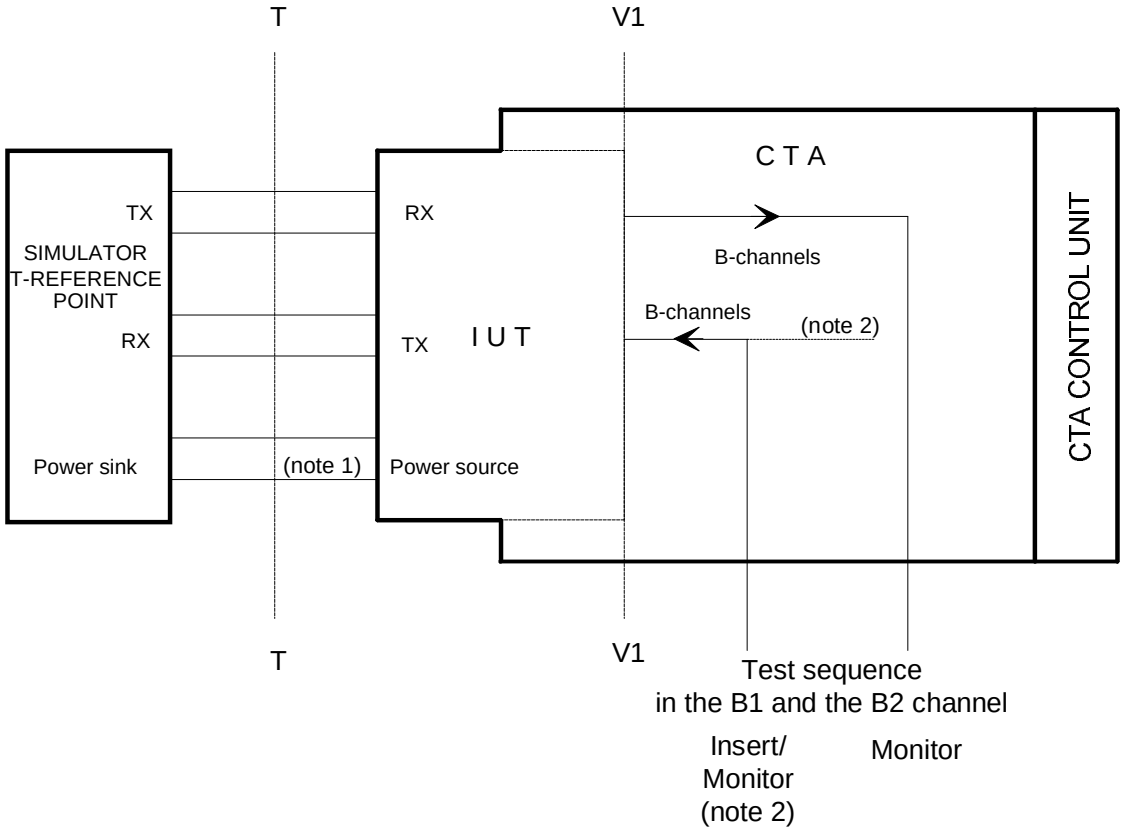
C.6 Signal transfer and jitter tests

C.6.1 Signal transfer delay

Test applicable to the V1 and the T reference points.

Purpose: To test the mean one way delay between the T and the V1 reference points in both directions of transmission without regenerators in the access digital section.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

Figure C.5

System state: Access activated. DS 1.4.
Stimulus: Appropriate sequences sent in the B-channels.
Monitor: Measure the delay to receive these sequences in the B-channels at the reception side.
Result: Mean value < 1 250 µs.

C.6.2 Jitter

C.6.2.1 Jitter at T reference point

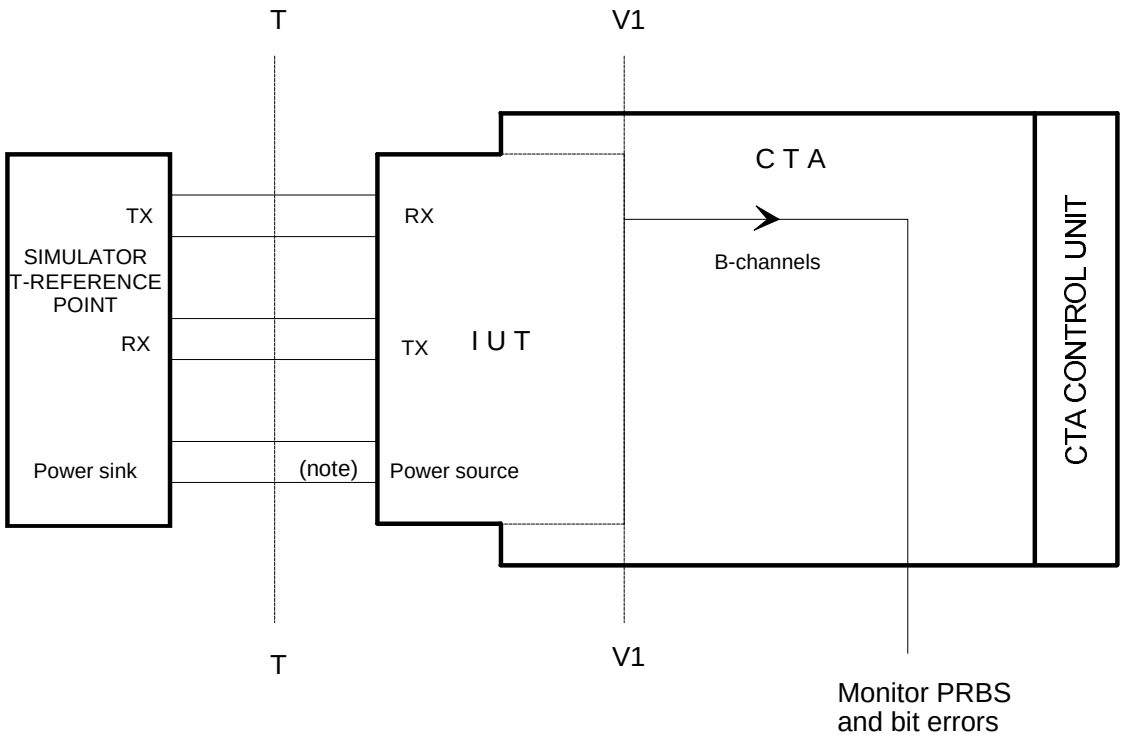
C.6.2.1.1 Output jitter at T reference point

Output jitter at the T reference point is not applicable as this is tested in ETS 300 012 [6].

C.6.2.1.2 Tolerable input jitter at T reference point

Purpose: To test the tolerable input jitter at the T reference point.

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.6

System state: Access activated. DS 1.4.
Stimulus: PRBS 2^{11}-1 with maximum output jitter of the TE sent in the B-channels.
Monitor: Measure bit errors at the reception side.
Result: No bit errors.

C.6.2.2 Jitter at V1 reference point

The test of the output jitter of the ET is not applicable. The test of the tolerable input jitter at the V1 reference point is not relevant.

C.7 Activation and deactivation

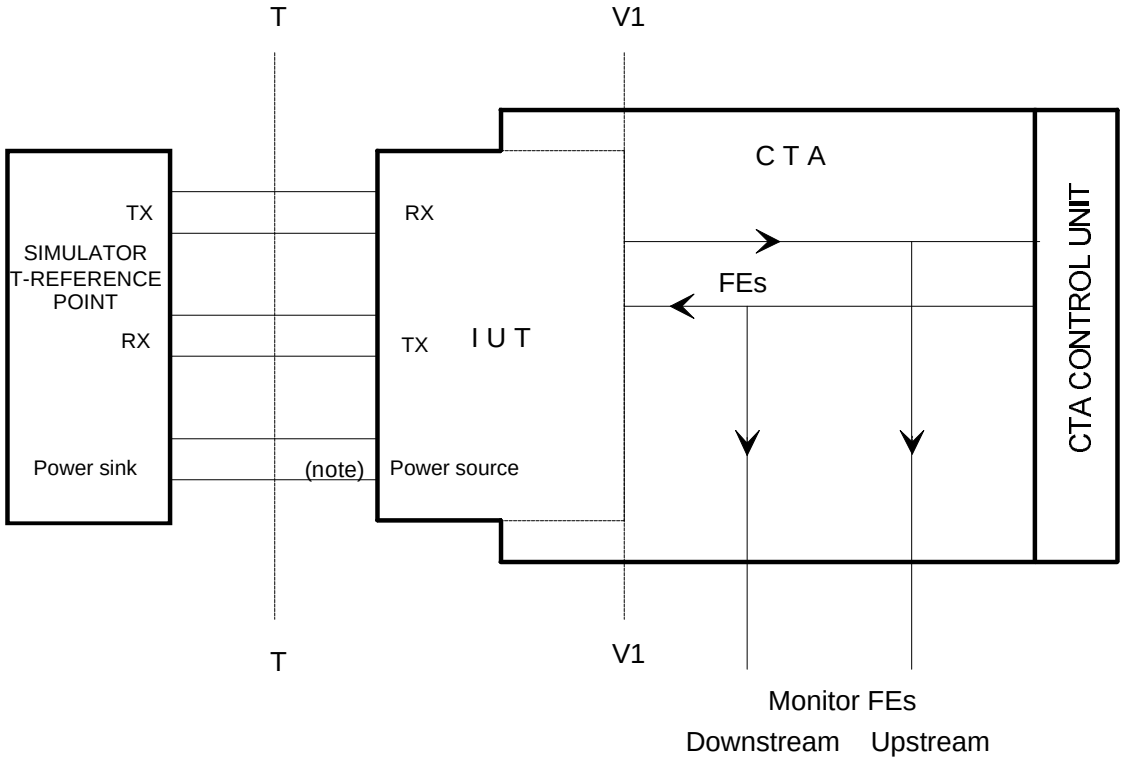
These tests are designed to test conformance to the specification of the activation/deactivation and the loopback procedures. The tests are performed by stimulating and monitoring the access digital section (DS state machine) by appropriate messages (INFOs and FEs) applied to the T and the V1 reference points.

C.7.1 DS state table

The state transitions as described in table C.7 have to be tested.

Purpose: To check that the access digital section correctly executes the activation/deactivation procedures and the loopback procedures.

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.7

System state: Access deactivated. DS 1.0.
Stimulus: INFOs 0, 1 and 3 applied from the TE simulator to the T reference point and FEs applied from the CTA to the V1 reference point in the sequence described in table C.7 (stimulus).
Monitor: INFOs at the T and FEs at the V1 reference points.
Results: INFOs and FEs as described in table C.7 (monitor).

Table C.7: Results of DS state table tests

Stimulus		Current state	Monitor		Comments
T	V1	(Monitored)	T	V1	
		DS 1.0	INFO 0	FE 6	Access deactivated
INFO 0	**FE 1**	DS 1.1	INFO 0	FE 2	Activation initiated by ET
Any signal	FE 1	DS 1.2	INFO 2	FE 2	DS synchronized LT to NT
Any signal	FE 1	DS 1.3	INFO 2	FE 3	DS activated
INFO 3	FE 1	DS 1.4	INFO 4	FE 4	Access activated
INFO 3	**FE 5**	DS 1.6	INFO 0	FE 4	ET issues deactivation (no expiry of T 2) (note 1)
INFO 0	FE 5	DS 1.0	INFO 0	FE 6	Access deactivated
INFO 1		DS 1.1	INFO 0	FE 2	Subscriber requests activation
INFO 1	FE 1	DS 1.2	INFO 2	FE 2	DS synchronized LT to NT
INFO 1/3	FE 1	DS 1.3	INFO 2	FE 3	DS activated
INFO 3	FE 1	DS 1.4	INFO 4	FE 4	Access activated
INFO 0	FE 1	DS 1.5	INFO 2	FE 4/FE 12 (note 2)	Deactivation request from user
INFO 0	**FE 5**	DS 1.6	INFO 0	FE 4/FE 12 (note 2)	ET issues deactivation
INFO 0	FE 5	DS 1.0	INFO 0	FE 6	Access deactivated
Any Signal	**FE 8**	DS 2.2	INFO 0	FE 2	Loopback 2 initiated
Any Signal	FE 8	DS 2.3	INFO 2	FE 2	DS synchronized LT to NT
Any Signal	FE 8	DS 2.4	INFO 2	FE 3	DS activated
INFO 3	FE 8	DS 2.5	(note 3)	FE 4	Loopback 2 activated
Any Signal	**FE 5**	DS 1.6	(note 3)	FE 4	Loopback deactivation request
Any Signal (note 4)	FE 5	DS 1.0	INFO 0	FE 6	Access deactivated
Any Signal	**FE 9**	DS 2.0	INFO 0	FE 2	Loopback 1 initiated
Any Signal	FE 9	DS 2.1	Any Signal (note 5)	FE 4	Loopback 1 activated
Any Signal	**FE 5**	DS 1.6	INFO 0	FE 4	Loopback deactivation request
Any Signal (note 4)	FE 5	DS 1.0	INFO 0	FE 6	Access deactivated
Any Signal	**FE 10**	DS 2.0	INFO 0	FE 2	Loopback 1A initiated
Any Signal	FE 10	DS 2.1	Any Signal (note 5)	FE 4	Loopback 1A activated
Any Signal	**FE 5**	DS 1.6	INFO 0	FE 4	Loopback deactivation request
Any Signal (note 4)	FE 5	DS 1.0	INFO 0	FE 6	Access deactivated

NOTE 1: The simulator at the T reference point must react with INFO 0 within 25 ms on the occurrence of INFO 0 at the T reference point as a reaction to FE 5 at the V1 reference point.
NOTE 2: Dependent on national implementation.
NOTE 3: See subclause 8.3.1.3 of ETS 300 012 [6] for the description of the INFO sent to the user across the T reference point.
NOTE 4: In fact INFO 0 would cause a direct transition to state DS 1.0. INFO 1 and INFO 3 cause no action and no state change.
NOTE 5: Not to be defined. The INFO sent to the subscriber depends on the NT state.
NOTE 6: Stimuli in **bold** indicate a state transition.

C.7.2 Activation time

For activation from the user side the activation time is measured at the T reference point between the initiation of the sending of INFO 1 to the interface at the T reference point and the receipt of INFO 4 from the access digital section.

For activation from the network side the activation is defined between FE 1 and FE 4 at the V1 reference point.

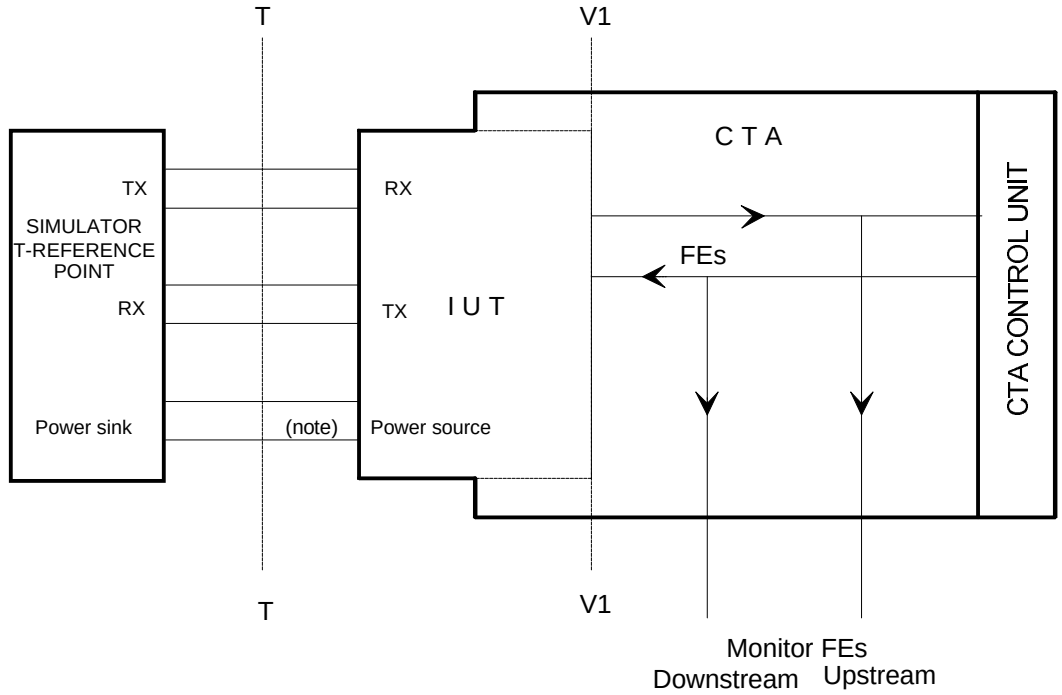
The values do not take into account the response time of the TE for sending INFO 3 on receipt of INFO 2.

When the access digital section is implemented using a copper transmission system as defined in ETR 080 [8], then the test loops (with appropriate noise, see subclause 4.2.4) given in ETR 080 [8] shall be used for the purpose of measuring the activation times.

C.7.2.1 Activation time after deactivation

Purpose: To test the warm start time as described above.

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

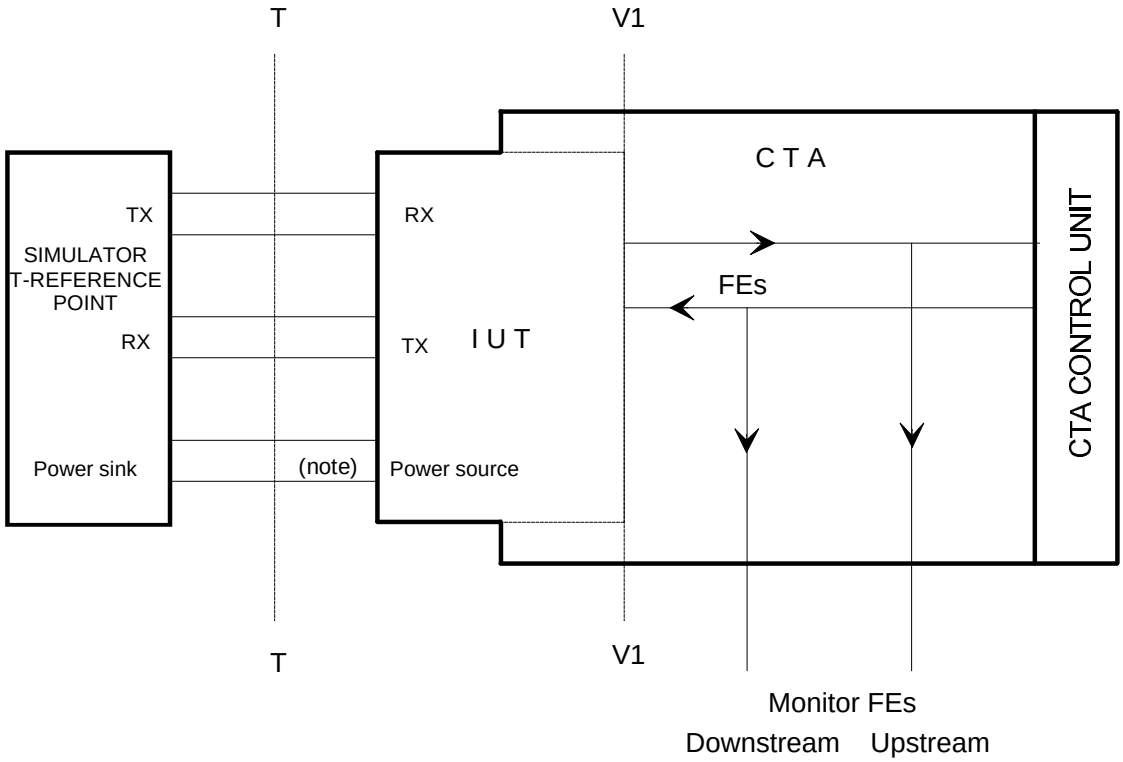
Figure C.8

System state: Access deactivated. DS 1.0.
Stimulus 1: When testing the activation from the network side: FE 1 at the V1 reference point.
Monitor 1: FE 4 at the V1 reference point.
Stimulus 2: When testing the activation from the user side: INFO 1 at the T reference point.
Monitor 2: INFO 4 at the T reference point.
Result: Activation time elapsing between stimulus and monitor
with regenerator $\leq$ 600 ms
without regenerator $\leq$ 300 ms
The value is a 95 % value according to subclause 8.5 of this ETS. Two consecutive warm starts are not allowed to fail.

C.7.2.2 Activation after the first powering on

Purpose: To test the cold start time as described above.

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.9

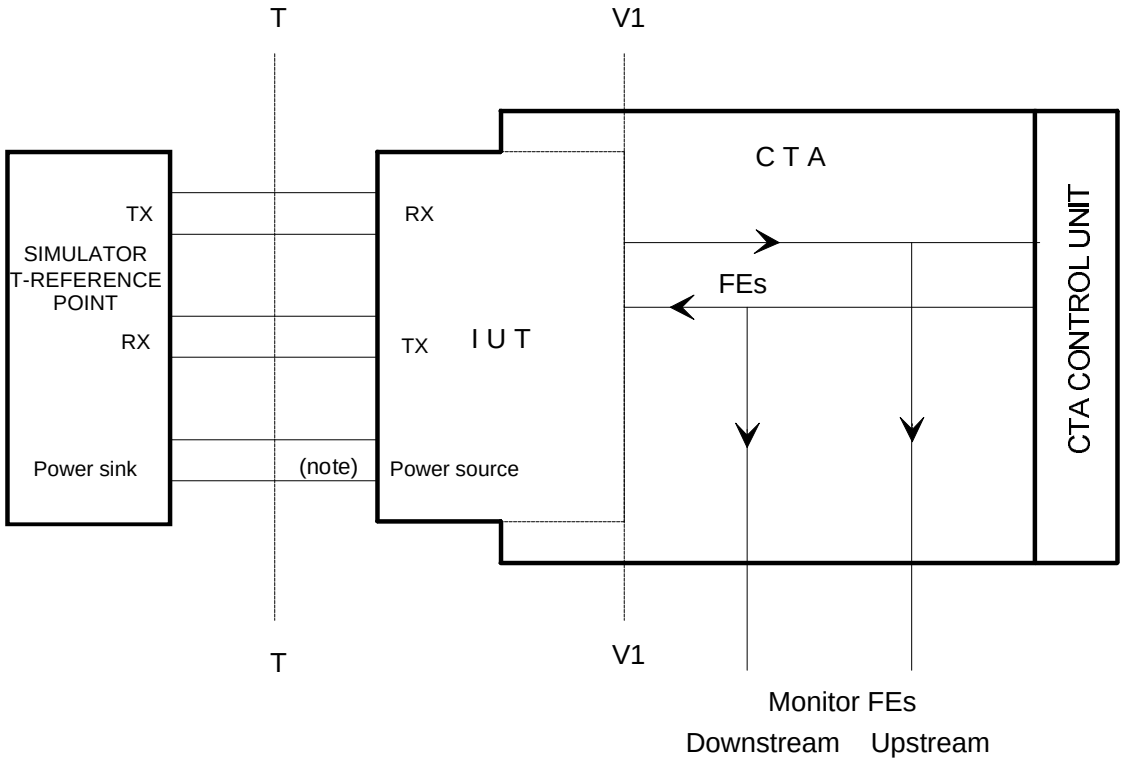
System state: Access deactivated. DS 1.0.
Stimulus 1: When testing the activation from the network side: FE 1 at the V1 reference point.
Monitor 1: FE 4 at the V1 reference point.
Stimulus 2: When testing the activation from the user side: INFO 1 at the T reference point.
Monitor 2: INFO 4 at the T reference point.
Result: Activation time elapsing between stimulus and monitor
with regenerator $\leq$ 20 s
without regenerator $\leq$ 15 s
The value is a 95 % value according to subclause 8.5 of this ETS. Two consecutive cold starts are not allowed to fail.

C.7.2.3 Testing the activation time with loopback 2

According to subclause 8.5 of this ETS, an activation request with loopback 2 is appropriate for conformance testing.

Purpose: To test the activation times as described above.

Test configuration:



NOTE: If remote power feeding is provided; in pr actical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.10

System state: Access deactivated. DS 1.0.
Stimulus: FE 8, FE 4 applied to the V1 reference point.
Monitor: INFO 4 at the T reference point.
Result: Activation time elapsing between stimulus and monitor.

C.8 Operation and maintenance

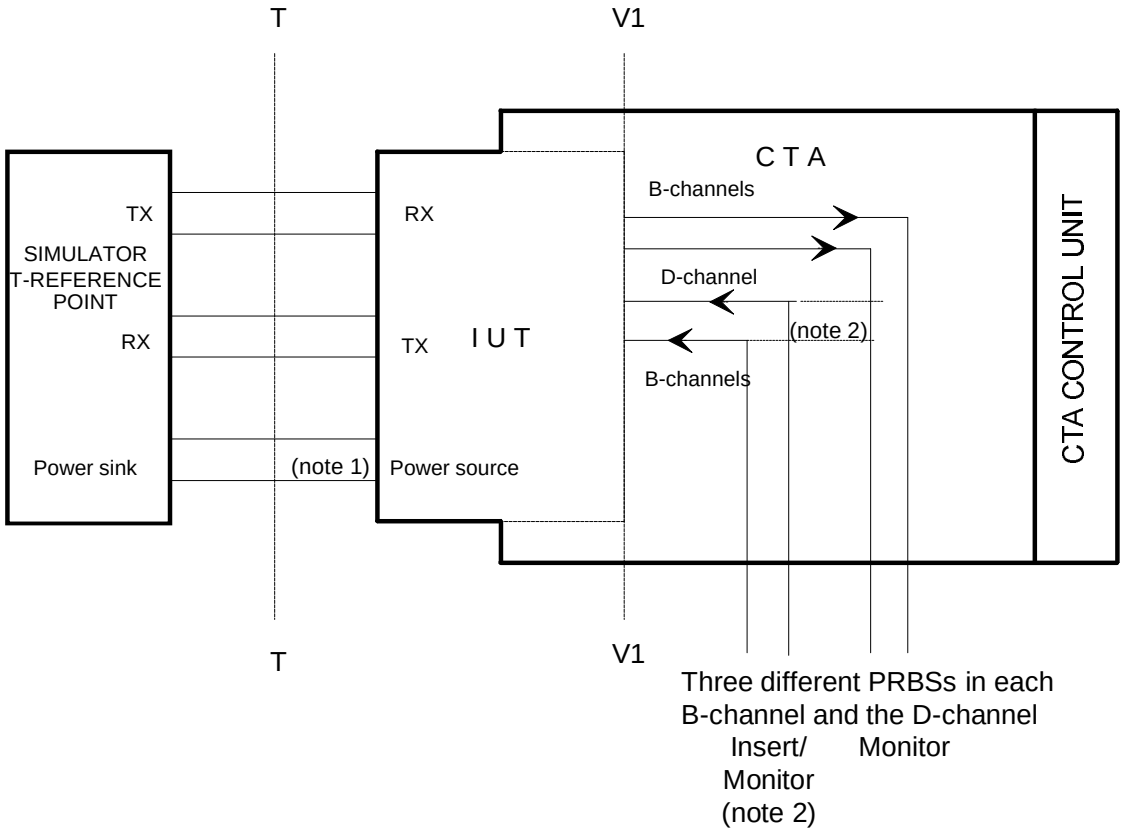
C.8.1 Loopbacks

Test applicable at the V1 reference point: when the access digital section is implemented using a copper transmission system as defined in ETR 080 [8], then the test loop 1 given in ETR 080 [8] shall be used for carrying out the functional characteristics tests.

C.8.1.1 Function of the loopbacks

Purpose: To test the correct function of the loopbacks.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

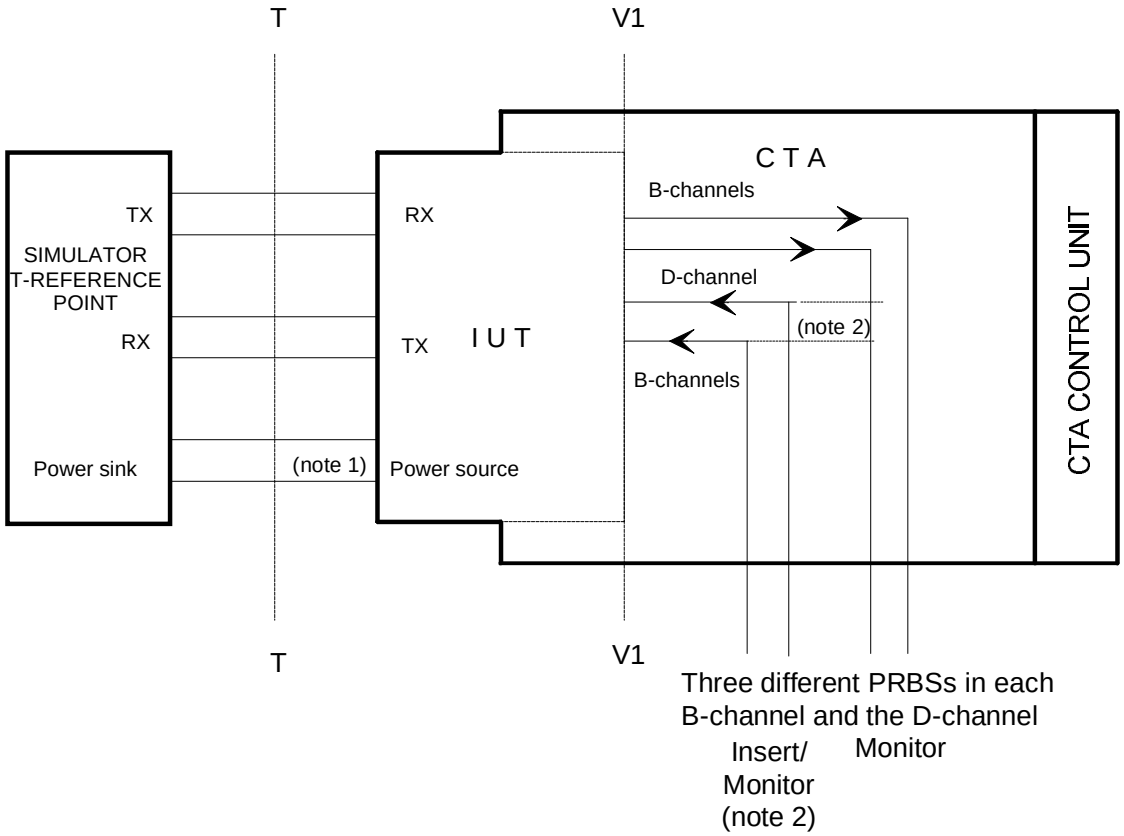
Figure C.11

System state: Loopback states as defined in table 2, subclause 8.4.
Stimulus: Different PRBSs in the B1-channel and the B2-channel and a PRBS or a message in the D-channel.
Monitor: The signals received in the B1-channel, the B2-channel and the D-channel.
Result: No bit errors.

C.8.1.2 Protection of the loopbacks against activation request

Purpose: To test that an activation request can not override a loopback.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical rea lizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

Figure C.12

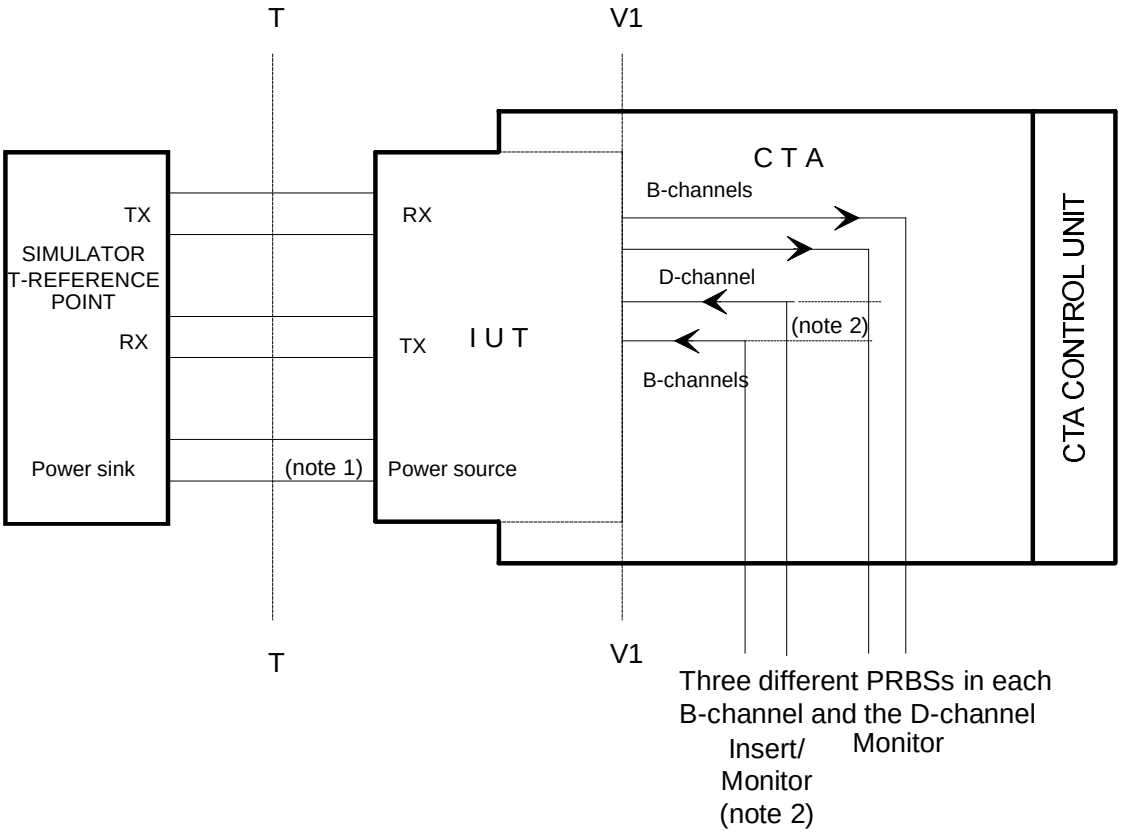
System state: Loopback states as defined in table 2, subclause 8.4
Stimulus 1: Different PRBSs in the B1-channel and the B2-channel and a PRBS or a message in the D-channel applied to the V1 reference point; INFO 1 applied to the T reference point as an activation request from the user side.
Monitor 1: The signals received in the B1-channel, the B2-channel and the D-channel.
Stimulus 2: Different PRBSs in the B1-channel and the B2-channel and a PRBS or a message in the D-channel applied to the V1 reference point; FE 1 applied to the V1 reference point as an activation request from the network (ET) side.
Monitor 2: The signals received in the B1-channel, the B2-channel and the D-channel.
Result: No bit errors.

C.8.1.3 Test of the D-echo-channel

Test applicable at the T reference point.

Purpose: To test the state of the D-echo-channel during loopback.

Test configuration:



NOTE 1: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

NOTE 2: If test signals provided by the ET:
- monitor downstream.

Figure C.13

System state: Loopback states as defined in table 2, subclause 8.4.
Stimulus: Different PRBSs in the B1-channel and the B2-channel and a PRBS or a message in the D-channel.
Monitor: State of the D-echo-channel.
Result: D-echo-channel set to ZERO and INFO 4 frames sent toward the user according subclause 8.3.1.3 of this ETS.

C.8.2 Power switch on/off to the line

This test is not relevant, because the line power switch on/off is not a function of the access digital section.

C.8.3 Monitoring

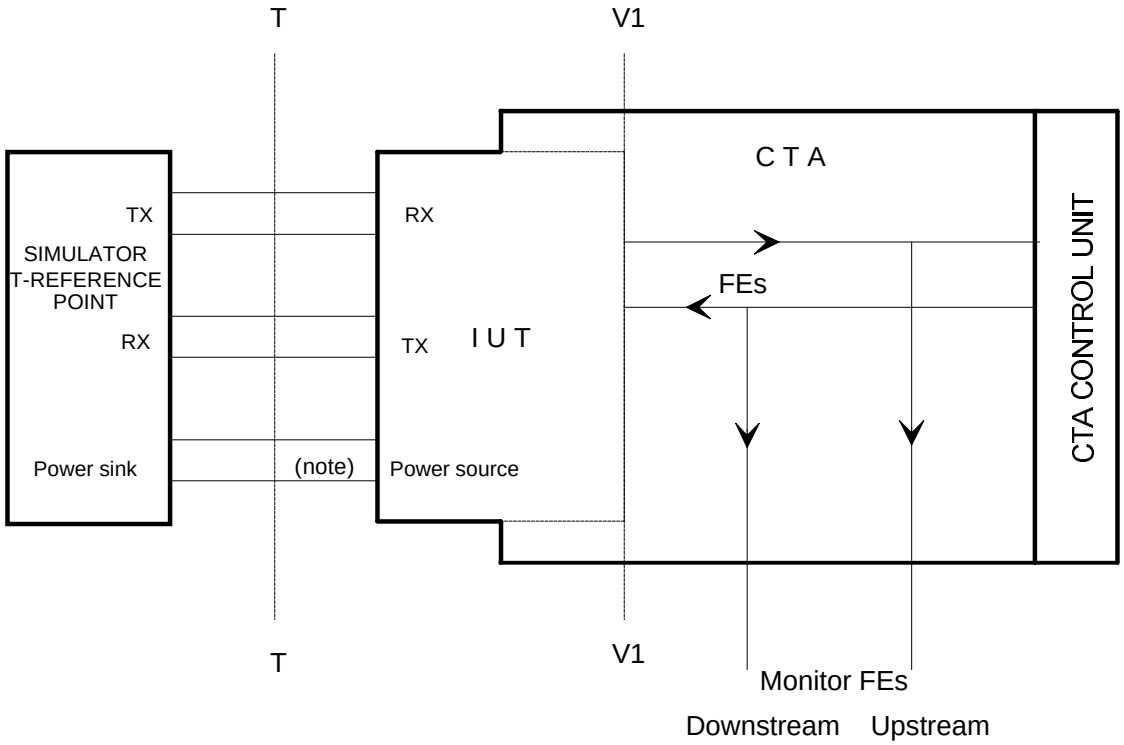
C.8.3.1 Defect conditions and consequent actions

Tests applicable at the T reference point.

Purpose: To test the consequent actions according to defect conditions as described in table 3, subclause 9.2.2.2.

C.8.3.1.1 LOS/LFA at the line side of the LT

Test configuration:



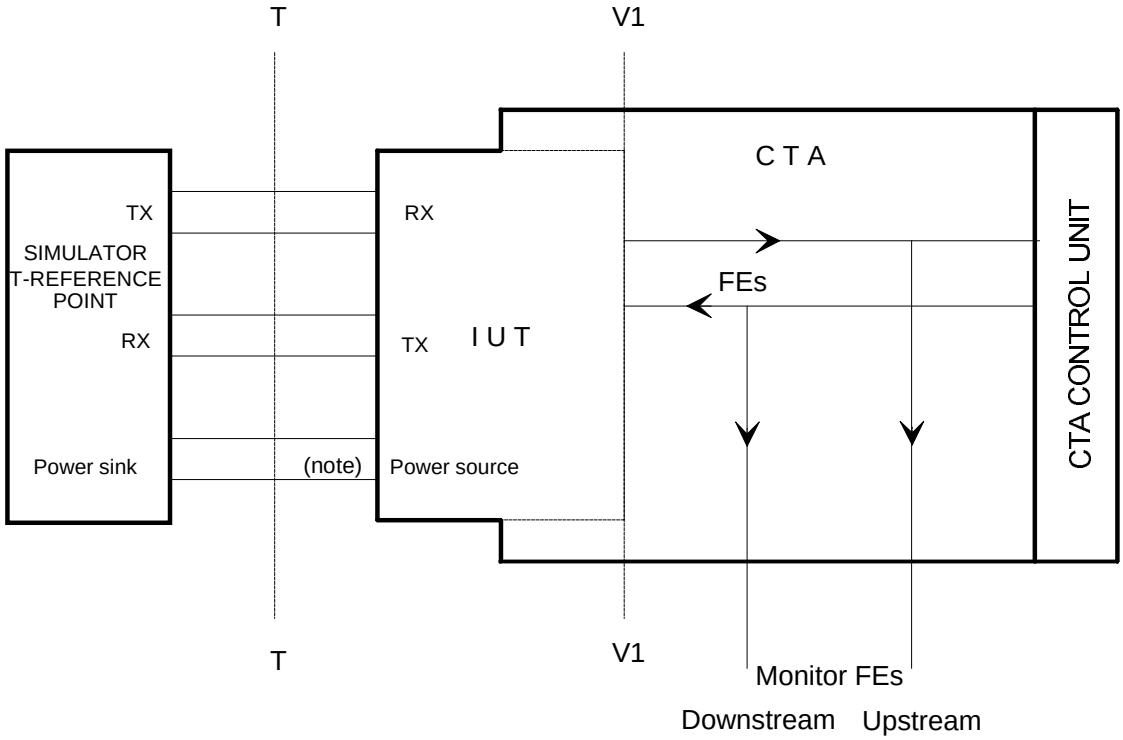
NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.14

System state: Access activated DS 1.4.
Stimulus: LOS/LFA at the line side of the LT; interrupting the line signal inside the access digital section between the LT and the DLL.
Monitor: State at the V1 reference point; downstream signal at the T reference point.
Result: FE 7 at the V1 reference point;
the INFO sent at the T reference point depends on the NT state.

C.8.3.1.2 LOS/LFA at the line side of the NT1

Test configuration:



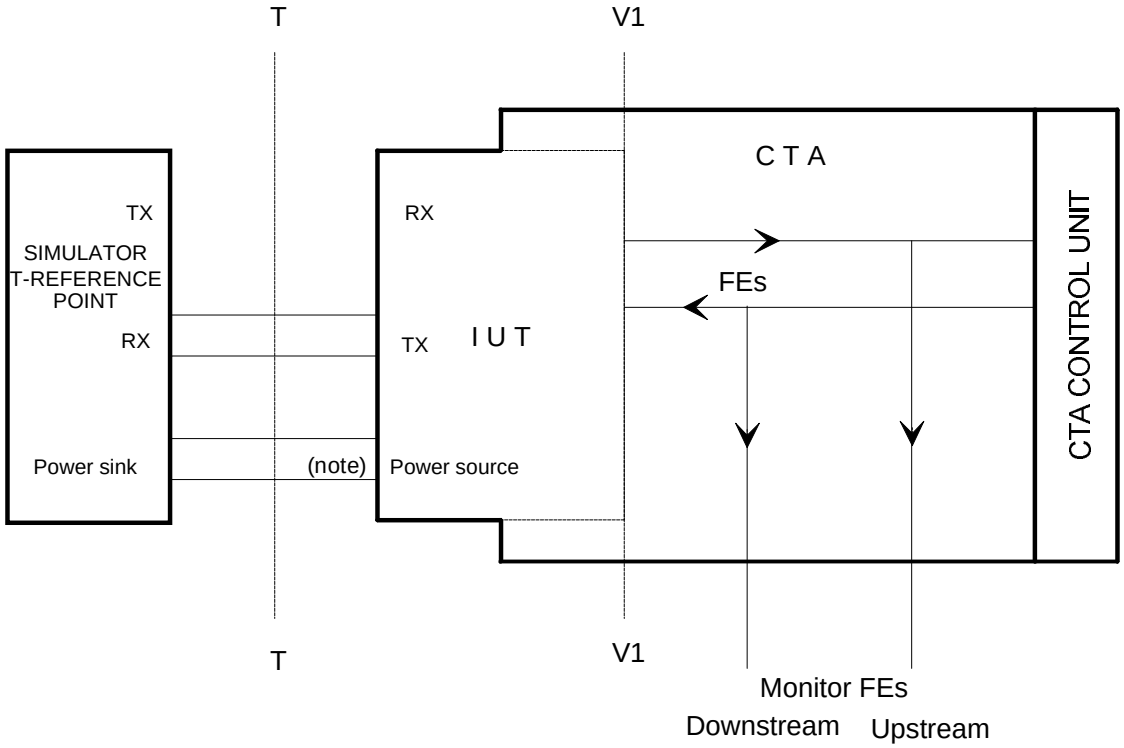
NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.15

System state: Access activated DS 1.4.
Stimulus: LOS/LFA at the line side of the NT1; interrupting the line signal inside the access digital section between the NT and the DLL.
Monitor: State at the V1 reference point; downstream signal at the T reference point.
Result: FE 7 at the V1 reference point;
INFO 0 at the T reference point.

C.8.3.1.3 LOS/LFA at the T reference point of the NT1

Test configuration:



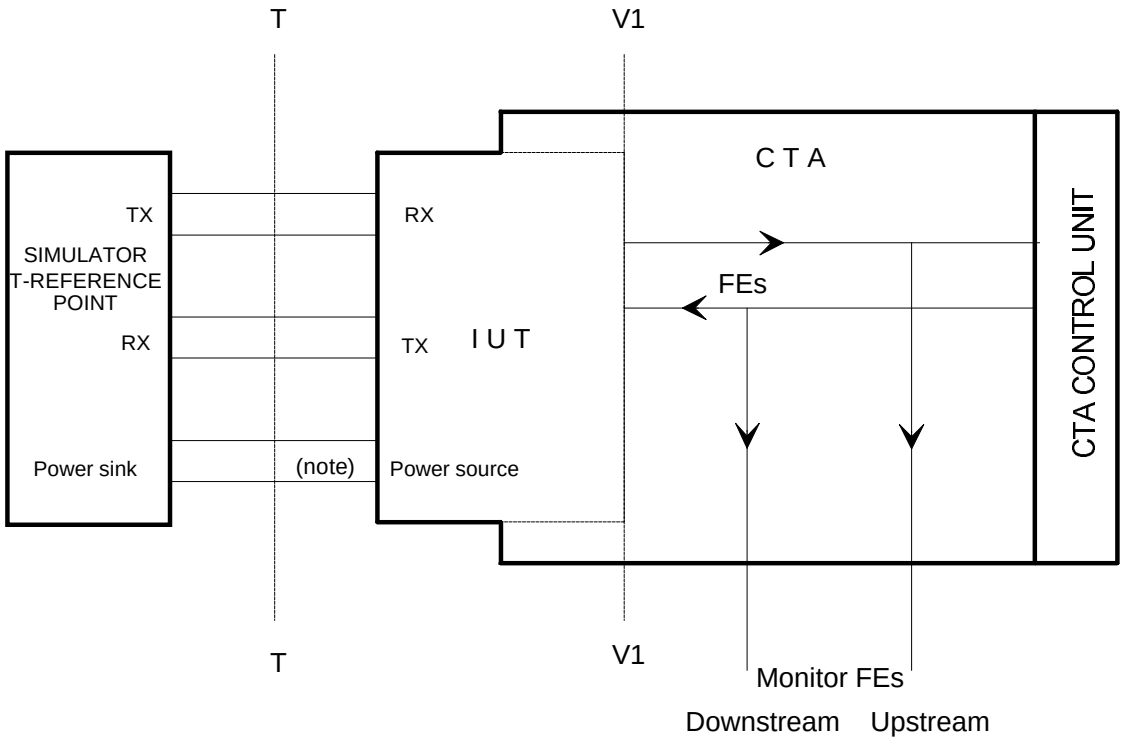
NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.16

System state: Access activated DS 1.4.
Stimulus: LOS/LFA at the T reference point; interrupting the signal between the access digital section and the simulator at the T reference point.
Monitor: State at the V1 reference point; downstream signal at the T reference point.
Result: FE 12 or FE 4 (depending on national implementations) at the V1 reference point;
INFO 2 at the T reference point.

C.8.3.1.4 Loss of power for the NT1 functionality

Test configuration:



NOTE: If remote power feeding is provided; in practical realizations power feeding may be done by a phantom mode (ITU-T Recommendation I.430 [9]).

Figure C.17

System state: Access activated DS 1.4.
Stimulus: Removing the power sources of the NT1.
Monitor: State at the V1 reference point; downstream signal at the T reference point.
Result: FE 7 at the V1 reference point;
INFO 0 at the T reference point.

Page 39, annex C

Replace the current annex C by the following annex D:

Annex D (informative): Bibliography

The following documents are referenced informatively within this ETS.

- ITU-T Recommendation G.801 (1988): "Digital transmission models".

- ITU-T Recommendation G.821 (1988): "Error performance of an international digital connection forming part of an integrated services digital network".

- ITU-T Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".

- ITU-T Recommendation I.350 (1988): "General aspects of quality of service and network performance in digital networks, including ISDNs".

- ITU-T Recommendation Q.940 (1988): "ISDN user-network interface protocol for management - General aspects".

- ITU-T Recommendation I.441, Appendix III: "ISDN user-network interface - data link layer specification".

History

Document history			
May 1995	First Edition		
March 1995	Unified Approval Procedure	UAP 27:	1995-03-27 to 1995-08-18
March 1996	Amendment 1 to First Edition of ETS 300 297		

ISBN 2-7437-0131-5
ISBN 2-7437-0493-4 - Amendement 1
Dépôt légal : Mars 1996