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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

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Foreword

This Technical Basis for Regulation (TBR) has been produced by the Terminal Equipment (TE) Technical Committee 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 Directive 91/263/EEC.

Annex F provides information relating to the articles of the Directive 91/263/EEC.

Annexes A, B, C, D and G are normative whereas annexes E, F and H are informative.

The machine processable ATS

The electronic forms of the machine processable files (TTCN MP format) corresponding to the ATS for Layers 1, 2 and 3 are contained in ASCII text files (DBV00031.MP (Layer 1), DBV00032.MP (Layer 2) and DBV00033.MP (Layer 3)) on the diskette included as a part of this TBR.

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1 Scope

This TBR specifies the technical requirements under articles 4(c) to 4(f) of Directive 91/263/EEC for Terminal Equipment (TE) to be attached to the pan-European Integrated Services Digital Network (ISDN) at an interface at the T reference point or coincident S and T reference point for a basic access. These requirements are intended to ensure that the essential requirements of Directive 91/263/EEC continue to be met when up to eight Terminal Equipments are simultaneously connected at the coincident S and T reference point. These requirements are taken from ETS 300 012, ETS 300 125, ETS 300 102, ETS 300 267 and ETS 300 047. This TBR does not contain the essential requirements of Article 4 (g) for interworking via the public network, and so does not provide any guarantee of correct terminal-to-terminal operation.

NOTE 1: Under Article 4 (g) additional TBRs may apply, and may restrict options or extend requirements in this TBR.

NOTE 2: Although this TBR provides the technical attachment requirements in full text, it does not contain the full specification of the user side of the ISDN user-network interface. Important information necessary for correct working can be found only in the base standards mentioned above.

This TBR specifies these requirements for TE that:

a) is intended for participation in calls that use those on-demand circuit mode basic services and those supplementary services that are specified in annex G; and

b) is capable of handling both incoming and outgoing calls.

This TBR applies to all TE that is intended for connection to the forms of ISDN access referred to above, irrespective of whether the TE provides additional interfaces, telecommunications services or functions. Additional TBRs or, where appropriate TBRs do not exist, national approval requirements may apply to telecommunications services or functions outside the scope of this TBR.

NOTE 3: This TBR is not applicable to TE which may be supplied in some countries for connection to an ISDN telecommunications service corresponding to, but not compatible with, the ISDN basic access standards.

2 Normative references

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

[1] CCITT Recommendation I.430 (1988): "Basic user-network interface - Layer 1 specification".

[2] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces - Reference configurations".

[3] ETS 300 047-3 (1992): "Integrated Services Digital Network (ISDN); Basic access - safety and protection; Part 3: Interface I_a - protection".

[4] EN 60603-7 (1993): "Connectors for frequencies below 3 MHz for use with printed boards; Part 7: Detail specification for connectors, 8-way, including fixed and free connectors with common mating features; (IEC 603-7:1990)".

[5] CCITT Recommendation G.117 (1988): "Transmission aspects of unbalance about earth (Definitions and methods)".

[6] ISO/IEC DIS 9646-2 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".

[7] ISO/IEC DIS 9646-1 (1992): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General Concepts".

[8] ISO/IEC DIS 9646-3 (1991): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this TBR the following definitions, together with those given in annex E of CCITT Recommendation I.430 [1] and in CCITT Recommendation I.411 [2] apply:

basic access: A user-network access arrangement that corresponds to the interface structure composed of two B-channels and one D-channel. The bit rate of the D-channel for this type of access is 16 kbit/s [CCITT Recommendation I.430 [1].

basic telecommunications service: A telecommunications service which is either a teleservice or a bearer service.

B-channel: This function provides for the bidirectional transmission of independent B-channel signals each having a bit rate of 64 kbit/s.

bearer service: A type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces [CCITT Recommendation I.112].

NOTE: The ISDN connection type used to support a bearer service may be identical to that used to support other types of telecommunication service.

connection management entity: An entity for the purpose of management of resources that have an impact on an individual data link connection.

D-channel: This function provides for bidirectional transmission of one D-channel signal at a bit rate of 16 kbit/s.

designated terminal: A terminal which is permitted to draw power from power source 1 under both normal and restricted power conditions.

frame alignment: This function provides information to enable the TE or Network Termination (NT) to recover the time-division multiplexed channels.

Integrated Services Digital Network (ISDN): A network that provides or supports a range of different telecommunications services and provides digital connections between user-network interfaces.

Interface I_a: User side of the ISDN user-network interface for the basic access.

Interface I_b: Network side of the ISDN user-network interface for the basic access.

layer management entity: An entity for the purpose of management of resources that have layer-wide impact.

Network Termination (NT): An equipment providing Interface I_b.

NOTE: This term is used in this TBR to indicate network-terminating aspects of Network Termination type 1 (NT1), Network Termination type 2 (NT2) and Power Source 1 (PS1) functional groups where these have an I_b Interface.

Network Termination type 1 (NT1): This functional group includes functions broadly equivalent to Layer 1 (physical) of the Open Systems Interconnection (OSI) reference model. These functions are associated with the proper physical and electromagnetic termination of the network. NT1 functions are:

- line transmission termination;
- layer 1 maintenance functions and performance monitoring;
- timing;
- power transfer;
- layer 1 multiplexing;
- interface termination, including multidrop termination;
- employing Layer 1 contention resolution.

Network Termination type 2 (NT2): This functional group includes functions broadly equivalent to Layer 1 and higher layers of the CCITT Recommendation X.200 reference model. Private Automatic Branch Exchanges (PABXs), Local Area Networks (LANs), and terminal controllers are examples of equipment or combinations of equipment that provide NT2 functions. NT2 functions include:

- layer 2 and 3 protocol handling;
- layer 2 and 3 multiplexing;
- switching;
- concentration;
- maintenance functions;
- interface termination and other Layer 1 functions.

non-designated terminal: A terminal which is only permitted to draw power from Power Source 1 (PS1) under normal power conditions.

normal power condition: The condition indicated by the normal polarity of the phantom voltage at the access leads, i.e. where the voltage of the transmit leads c and d on the TE is positive with respect to the voltage on the receive leads e and f.

outside the scope: There is no requirement within this TBR concerning the value of any parameter or the provision of any function described as being "outside the scope" of the TBR. Thus any value may occur, or the function concerned may either be provided in any form consistent with the rest of the TBR, or not be provided. However, requirements under the essential requirements of Directive 91/263/EEC may apply to such parameters or functions under other TBRs or national approval requirements.

Point of Control and Observation (PCO): A point, defined for an abstract test method, at which the occurrence of test events is controlled and observed, as specified in test cases for that test method.

Power Source 1 (PS1): Power Source for the provision of remote power feeding of TE via a phantom circuit of the interface wires.

reserved: There is no requirement within this TBR concerning the use of a reserved value of any parameter provided that its use is consistent with the rest of the TBR.

NOTE: The objective of reserving particular values of parameters is to enable them to be used for a purpose either defined elsewhere or to be defined in the future. Therefore, it is strongly recommended that manufacturers take proper account of values assigned to the parameters concerned in national, European and international standards. Terminals that use values that result in violations of the essential requirements are liable to be disconnected or required to be withdrawn from the market. Where the word "reserved" is used in this TBR, additional information may be given on the purpose of the reservation.

restricted power condition: The condition indicated by the reversed polarity of the phantom voltage at the access leads, i.e. where the voltage of the receive leads e and f on the TE is positive with respect to the voltage on the transmit leads c and d.

service; telecommunications service: That which is offered by an Administration to its customers in order to satisfy a specific telecommunication requirement [CCITT Recommendation I.112, §2.2, definition 2a].

NOTE: Bearer service and teleservice are types of telecommunications services other types of telecommunication services may be identified in the future.

supplementary service: See CCITT Recommendation I.210, §2.4.

Terminal Adapter (TA): An equipment with Interface I_a and one or more auxiliary interfaces that allow non-ISDN terminals to be served by an ISDN user-network interface.

Terminal Equipment (TE): An equipment with Interface I_a and consisting of one or more functional blocks.

NOTE: This term is used in this TBR to indicate terminal-terminating aspects of TE1, TA and NT2 functional groups, where these have an I_a Interface.

Terminal Equipment type 1 (TE1): A functional group which includes functions belonging to the functional group TE, and with an interface that complies with the ISDN user-network interface standard.

3.2 Abbreviations

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

ABM	Asynchronous Balanced Mode
ADPCM	Adaptive Differential Pulse Code Modulation
AFI	Authority and Format Identifier
Ai	Action Indicator
ARM	Asynchronous Response Mode
ASP	Assignment Source Point
BCD	Binary Coded Decimal
CES	Connection Endpoint Suffix
C/R	Command/Response field bit
dc	Direct Current
DLCI	Data Link Connection Identifier
DISC	Disconnect
DM	Disconnected Mode
DSP	Domain Specific Part
DTE	Data Terminating Equipment
EA	Address Field Extension bit
EMC	Electro-Magnetic Compatibility
ETS	European Telecommunication Standard
FCS	Frame Check Sequence
HDLC	High level Data Link Control
I_a	Interface point a
I_b	Interface point b
IDI	Initial Domain Identifier
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
LAN	Local Area Network
LAPB	Link Access Procedure - Balanced
LAPD	Link Access Procedure on the D-channel
LCL	Longitudinal Conversion Loss
LLI	Logical Link Identifier
MHS	Message Handling System
MPH-II(c)	MPH-INFORMATION INDICATION (connected)

MPH-II(d)	MPH-INFORMATION INDICATION (disconnected)
NIC	Network Independent Clock
NRM	Normal Response Mode
NSAP	Network Service Access Point
NT	Network Termination
OSI	Open Systems Interconnection
PABX	Private Automatic Branch eXchange
PH-AI	PH-ACTIVATE INDICATION
PH-AR	PH-ACTIVATE REQUEST
PH-DI	PH-DEACTIVATE INDICATION
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
ppm	parts per million
PS1	Power Source 1
RDTD	Restricted Differential Time Delay
REJ	Reject
Ri	Reference number
rms	root mean square
RNR	Receiver Not Ready
RR	Receiver Ready
Rx	Receive
SABME	Set Asynchronous Balanced Mode Extended
SAP	Service Access Point
SAPI	Service Access Point Identifier
SCR	Static Conformance Requirement
SLP	Single Link Procedure
TA	Terminal Adapter
TBR	Technical Basis for Regulation
TBR-RT	TBR Requirements Table
TC	Test Case
TE	Terminal Equipment
TEI	Terminal Endpoint Identifier
TR	Terminating resistor
TS	Test Suite
TTCN	Tree and Tabular Combined Notation
Tx	Transmit
UA	Unnumbered Acknowledgement
UI	Unit Interval (Layer 1)
UI	Unnumbered Information (Layer 2)

4 General

Each requirement in this TBR is either applicable to all TE within the scope of this TBR, or only applicable to certain TE, depending on the functions implemented within the TE. Annex A specifies the relationship between the requirements and the terminal. The supplier shall provide information on the functions implemented in the terminal and this information shall be used to determine which requirements apply and the manner in which the tests are performed. This information may be provided in the form of a complete TBR Requirements Table (TBR-RT) proforma (a blank TBR-RT proforma is provided in annex A).

This TBR contains references to communications, called primitive procedures, between adjacent layers and between layers and their associated layer management entities. These primitive procedures are conceptual and allow the description of interactions between functions dedicated to different layers within the TE. Primitive procedures do not constrain implementation, are system internal and therefore cannot be tested in isolation. However, as seen from the Point of Control and Observation (PCO), the behaviour of the TE shall be such that the sequence of events is consistent with the primitives being implemented as described in this TBR.

The user-network interface at the T reference point, or coincident S and T reference point, provides the only test access for the purpose of performing attachment tests. However, actions at other ports or interfaces of the Implementation Under Test (IUT) (e.g. at the man-machine interface, execution of

higher layer processes, at the interface at the S reference point in the case of NT2s or at the R reference point in the case of Terminal Adapters) shall be used as specified by the supplier to invoke actions at Layers 1, 2 and 3 of the D-channel protocol within the IUT.

Since the verification of a layer protocol normally depends on the proper operation of lower layer services needed for those functions, the verification tests should be performed in a sequential order beginning with the lowest layer. However, this general strategy does not preclude higher layer functions from being essential for the stimulation of lower layer functions under test. Thus, at least, basic functions of each layer in the IUT may be required in order to perform an attachment test for a particular lower layer.

This TBR does not require more than one set of tests to be made on more than one of each type of basic access.

5 Definitions of primitives

Reference: ETS 300 125, Part 2, subclause 4.1.

Definition: Communication between adjacent layers and between each layer and layer management, is accomplished by means of primitives.

Primitives represent, in an abstract way, the logical exchange of information and control between adjacent layers. They do not specify or constrain implementations.

Primitives consist of commands and their respective responses associated with the services requested of a lower layer. The general syntax of a primitive is:

XX-Generic name-Type: Parameters

Where XX designates the interface across which the primitive flows. For this TBR XX is:

- DL for communication between Layer 3 and the data link layer;
- PH for communication between the data link layer and the physical layer;
- MDL for communication between the layer management and the data link layer; or
- MPH for communication between the layer management and the physical layer.

5.1 Generic names

Reference: ETS 300 125, Part 2, subclause 4.1.1.

Definition: The generic name specifies the activity that is performed. Table 5.1 illustrates the primitives defined in this TBR. Note that not all primitives have associated parameters.

The primitive generic names that are defined in this TBR are given in subclauses 5.1.1 to 5.1.11.

5.1.1 DL-ESTABLISH

Reference: ETS 300 125, Part 2, subclause 4.1.1.1.

Definition: The DL-ESTABLISH primitives are used to request, indicate and confirm the outcome of the procedures for establishing multiple frame operation.

5.1.2 DL-RELEASE

Reference: ETS 300 125, Part 2, subclause 4.1.1.2.

Definition: The DL-RELEASE primitives are used to request, indicate and confirm the outcome of the procedures for terminating a previously established multiple frame operation, or for reporting an unsuccessful establishment attempt.

5.1.3 DL-DATA

Reference: ETS 300 125, Part 2, subclause 4.1.1.3.

Definition: The DL-DATA primitives are used to request and indicate Layer 3 messages which are to be transmitted, or have been received, by the data link layer using the acknowledged information transfer service.

5.1.4 DL-UNIT DATA

Reference: ETS 300 125, Part 2, subclause 4.1.1.4.

Definition: The DL-UNIT DATA primitives are used to request and indicate Layer 3 messages which are to be transmitted, or have been received, by the data link layer using the unacknowledged information transfer service.

5.1.5 MDL-ASSIGN

Reference: ETS 300 125, Part 2, subclause 4.1.1.5.

Definition: The MDL-ASSIGN primitives are used by the layer management entity to request that the data link layer associate the Terminal Endpoint Identifier (TEI) value contained within the message portion of the primitive with the specified Connection Endpoint Suffix (CES), across all Service Access Point Identifiers (SAPIs). The MDL-ASSIGN primitive is used by the data link layer to indicate to the layer management entity the need for a TEI value to be associated with the CES specified in the primitive message unit.

5.1.6 MDL-REMOVE

Reference: ETS 300 125, Part 2, subclause 4.1.1.6.

Definition: The MDL-REMOVE primitives are used by the layer management entity to request that the data link layer remove the association of the specified TEI value with the specified CES, across all SAPIs. The TEI and CES are specified by the MDL-REMOVE primitive message unit.

5.1.7 MDL-ERROR

Reference: ETS 300 125, part 2, subclause 4.4.4.7.

Definition: The MDL-ERROR primitives are used to indicate to the connection management entity that an error has occurred, associated with a previous management function request or detected as a result of communication with the data link layer peer entity. The layer management entity may respond with an MDL-ERROR primitive if the layer management entity cannot obtain a TEI value.

5.1.8 MDL-UNIT DATA

Reference: ETS 300 125, Part 2, subclause 4.1.1.8.

Definition: The MDL-UNIT DATA primitives are used to request and indicate layer management entity messages which are to be transmitted, or have been received, by the data link layer using the unacknowledged information transfer service.

5.1.9 PH-DATA

Reference: ETS 300 125, Part 2, subclause 4.1.1.10.

Definition: The PH-DATA primitives are used to request and indicate message units containing frames used for data link layer peer-to-peer communications passed to and from the physical layer.

5.1.10 PH-ACTIVATE

Reference: ETS 300 125, Part 2, subclause 4.1.1.11.

Definition: The PH-ACTIVATE primitives are used to request activation of the physical layer connection or to indicate that the physical layer connection has been activated.

5.1.11 PH-DEACTIVATE

Reference: ETS 300 125, Part 2, subclause 4.1.1.12.

Definition: The PH-DEACTIVATE primitive is used to indicate that the physical layer connection has been deactivated.

5.1.12 MPH-INFORMATION

Reference: ETS 300 125, Part 2, subclause 4.1.1.15.

Definition: The MPH-INFORMATION primitive is for use by the TE management entity, and provides an indication as to whether the terminal is:

- connected; or

- disconnected or unable to provide sufficient power to support the TEI management procedures.

5.2 Primitive types

Reference: ETS 300 125, Part 2, subclause 4.1.2.

Definition: The primitive types defined in this TBR are given in subclauses 5.2.1 to 5.2.4.

5.2.1 REQUEST

Reference: ETS 300 125, Part 2, subclause 4.1.2.1.

Definition: The REQUEST primitive type is used when a higher layer or layer management is requesting a service from the lower layer.

5.2.2 INDICATION

Reference: ETS 300 125, Part 2, subclause 4.1.2.2.

Definition: The INDICATION primitive type is used by a layer providing a service to inform the higher layer or layer management.

5.2.3 RESPONSE

Reference: ETS 300 125, Part 2, subclause 4.1.2.3.

Definition: The RESPONSE primitive type is used by layer management as a consequence of the INDICATION primitive type.

5.2.4 CONFIRM

Reference: ETS 300 125, Part 2, subclause 4.1.2.4.

Definition: The CONFIRM primitive type is used by the layer providing the requested service to confirm that the activity has been completed.

5.3 Parameter definition

5.3.1 Priority indicator

Reference: ETS 300 125, Part 2, subclause 4.1.3.1.

Definition: Since several Service Access Points (SAPs) may exist in the NT or TE, protocol messages units sent by one SAP may contend with those of other SAPs for the physical resources available for message transfer. The priority indicator is used to determine which message unit will have greater priority when contention exists. The priority indicator is only needed at the TE for distinguishing message units sent by the SAP with a SAPI value of 0 from all other message units.

5.3.2 Message unit

Reference: ETS 300 125, Part 2, subclause 4.1.3.2.

Definition: The message unit contains additional layer-to-layer information concerning actions and results associated with requests. In the case of the DATA primitives, the message unit contains the requesting layer peer-to-peer messages. For example, the DL-DATA message unit contains Layer 3 information. The PH-DATA message unit contains the data link layer frame.

NOTE: The operations across the data link layer/Layer 3 boundary are such that the layer sending the DL-DATA or DL-UNIT DATA primitive can assume a temporal order of the bits within the message unit and that the layer receiving the primitive can reconstruct the message with its assumed temporal order.

Table 5.1: Primitives associated with this TBR

Generic name	Type				Parameters		Message unit contents
	Request	Indication	Response	Confirm	Priority indicator	Message unit	
L3 ⇔ L2							
DL-ESTABLISH	X	X	-	X	-	-	
DL-RELEASE	-	X	-	-	-	-	
DL-DATA	X	X	-	-	-	X	Layer 3 peer-to-peer message
DL-UNIT DATA	-	X	-	-	-	X	Layer 3 peer-to-peer message
M ⇔ L2							
MDL-ASSIGN	X	X	-	-	-	X	TEI value, CES
MDL-REMOVE	X	-	-	-	-	X	TEI value, CES
MDL-ERROR	-	X	X	-	-	X	Reason for error message
MDL-UNIT DATA	X	X	-	-	-	X	Management function peer-to-peer message
L2 ⇔ L1							
PH-DATA	X	X	-	-	X	X	Data link layer peer-to-peer message
PH-ACTIVATE	X	X	-	-	-	-	
PH-DEACTIVATE	-	X	-	-	-	-	
M ⇔ L1							
MPH-INFORM-ATION	-	X	-	-	-	X	Connected/ disconnected

L3 ⇔ L2: Layer 3/data link layer boundary.
L2 ⇔ L1: data link layer/physical layer boundary.
M ⇔ L2: management entity/data link layer boundary.
M ⇔ L1: management entity/physical layer boundary.
X: existing.
-: not existing.

6 Safety requirements

There are no safety requirements under this TBR.

NOTE: Safety requirements are imposed under Council Directive 73/23/EEC (known as the Low Voltage Directive) and articles 4(a) and 4(b) of the Directive 91/263/EEC.

7 Electro-Magnetic Compatibility (EMC) requirements

There are no EMC requirements under this TBR.

NOTE: General EMC requirements are imposed under the Council Directive 89/336/EEC (know as the EMC Directive). Requirements for conducted emissions will be added to this TBR when appropriate specifications become available if these requirements are not imposed under the EMC Directive.

8 Overvoltage protection requirements

For the purpose of the following subclauses on protection, the term referred to as I_a in ETS 300 047-3 [3] shall be deemed to be the connection point described in subclause 9.1.

8.1 Impulse transfer from mains, common mode

Requirement: If the interface is supplied from the mains, it shall transfer less than 1 kV common mode voltage and less than 250 V transverse voltage to the TE interface when a common mode surge of either polarity and of 2,5 kV (10/700 µs) is applied to the mains supply port.

Test: The test shall be conducted according to subclause 5.7.1 of ETS 300 047-3 [3].

8.2 Impulse transfer from mains, transverse mode

Requirement: If the interface is supplied from the mains, it shall transfer less than 1 kV common mode voltage and less than 250 V transverse voltage to the TE interface when a transverse mode surge of either polarity and of 2,5 kV (10/700 µs) is applied to the mains supply port.

Test: The test shall be conducted according to subclause 5.7.1 of ETS 300 047-3 [3].

8.3 Conversion of common mode to transverse mode

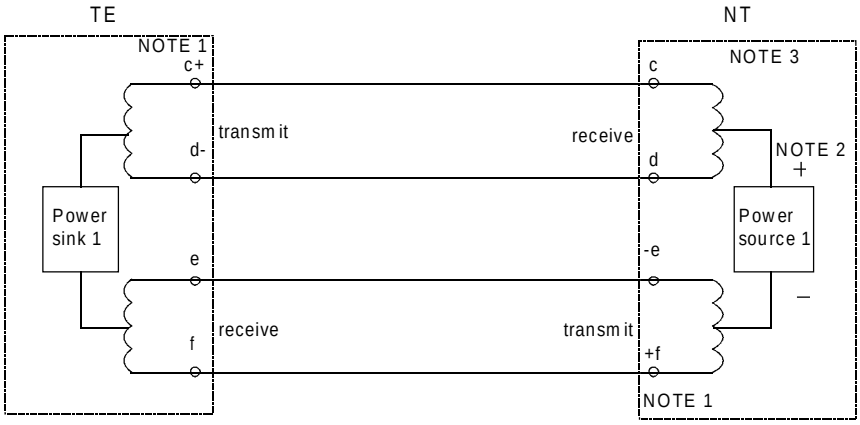
Requirement: The transverse mode voltage shall not be more than 250 V peak when 2 common mode surges of 1 kV (1,2/50 µs) (one of each polarity) are applied to the TE interface.

Test: The test shall be conducted according to subclause 5.7.3 of ETS 300 047-3 [3].

9 Layer 1 requirements

9.1 Physical characteristics

Reference: ETS 300 012, annex A, subclause A.9.1 and clause A.10.



NOTE 1: This symbol refers to the polarity of framing pulses.

NOTE 2: This symbol refers to the polarity of power during normal power conditions (reversed for restricted conditions).

NOTE 3: The access lead assignments indicated in this figure are intended to provide for direct interface cable wiring, i.e., each interface pair is connected to a pair of access leads having the same letters at TEs and NTs.

Figure 9.1: Reference configuration for signal transmission and power-feeding in normal operating mode

9.1.1 Case A

Requirement: The TE shall provide an 8-contact plug of the type specified in EN 60603-7 [4] with contact assignments as specified in table 9.1 and figure 9.1. Where the connector is at the end of a cord, the cord shall not exceed 10 m in length and shall be either:

a) permanently connected to the TE (i.e. not detachable without the use of tools); or

b) connected to the TE via a plug and socket such that an ISDN reference cord cannot be attached to the TE.

The requirements of the remainder of clause 9 shall apply at the contacts of the EN 60603-7 [4] specified plug.

Test: There shall be a visual inspection that the plug is of the correct type. The length of any cord shall be measured. In the case of b), there shall be a visual inspection that an ISDN reference cord cannot be connected. The contact pin assignments are tested indirectly through the other tests.

Table 9.1: Contact assignment

Pin number	Contact	Terminal interface	Polarity
1	a	Not used (see note)	
2	b	Not used (see note)	
3	c	Transmit	+
4	f	Receive	+
5	e	Receive	-
6	d	Transmit	-
7	g	Not used (see note)	
8	h	Not used (see note)	
NOTE: The use of contacts a, b, g and h for Power Sources 2 and 3 is outside the scope of this TBR.			

9.1.2 Case B

Requirement: Where the TE is capable of having a standard ISDN basic access TE cord connected to it, any cord supplied shall have an 8-contact connector of the type specified in EN 60603-7 [4] and with contact assignments as specified in table 9.1. The cord shall not exceed 10 m in length. The supplier shall declare whether the cord conforms to the characteristics of the standard ISDN basic access TE cord.

If either the supplier has declared that any cord supplied conforms to the characteristics of the standard ISDN basic access TE cord, or the supplier does not provide a cord for use with the TE, the requirements of the remainder of clause 9 shall apply at the end of an ISDN reference cord connected in place of the cord supplied.

If the supplier has not declared that any cord supplied conforms to the characteristics of the standard ISDN basic access TE cord, the requirements of the remainder of clause 9 shall apply both:

a) at the contacts of the plug on the end of an ISDN reference cord connected in place of the cord supplied; and

b) at the contacts of the plug on the end of the cord supplied.

In order to test compliance with the requirements using both cords, the electrical tests of annex B, clause B.2 shall be performed using both cords.

Test: There shall be a visual inspection of the connection arrangements.

9.1.3 Case C

Requirement: Where the TE is intended to be permanently connected to the network without the use of a cord, the TE shall provide a means suitable for connecting wires with conductors having diameters of 0,4 mm to 0,6 mm. The supplier shall provide information on the signal identification, and on the location of the interface point I_a.

For test purposes, in order to provide a means of connecting the interface point I_a to the test equipment, the supplier shall provide a cord terminated in an 8-contact connector of the type specified in EN 60603-7 [4], with contact assignments as specified in table 9.1 and with a length not less than 2 m. The requirements of the remainder of clause 9 shall apply at the contacts of the plug on the end of the cord supplied for test purposes.

Test: There shall be a visual inspection of the connection arrangements.

9.1.4 Standard ISDN basic access TE cord

Reference: ETS 300 012, annex A, subclause A.8.9.

Definition: A connection cord for use with a TE designed for connection with a "Standard ISDN basic access TE cord" has a maximum length of 10 m and conforms to the following:

a) Cords having a maximum length of 7 m:

- the maximum capacitance of pairs for transmit and receive functions is less than 300 pF;
- the characteristic impedance of pairs used for transmit and receive functions is greater than 75 Ω at 96 kHz;
- the crosstalk loss, at 96 kHz, between any pair and a pair to be used for transmit or receive functions is greater than 60 dB with terminations of 100 Ω;
- the resistance R of an individual conductor shall not exceed 3 Ω. The difference in the resistance of the conductors of a pair shall not exceed 60 mΩ + 0,04 R;
- the cord is terminated at both ends in identical 8-contact connectors of the type specified in EN 60603-7 [4] and with contact assignments as specified in table 9.1 (individual conductors are connected to the same contact in the plug at each end).

b) Cords having a length greater than 7 m:

- cords conform to the above description except that a capacitance of 350 pF is permitted.

9.1.5 ISDN reference cord

Definition: The ISDN reference cord, used for test purposes as described in subclause 9.1.2, is terminated at both ends in identical 8-contact connectors of the type specified in EN 60603-7 [4] and with contact assignments as specified in table 9.1 (individual conductors are connected to the same contact in the plug at each end), and has electrical characteristics as described in table 9.2.

Table 9.2: Electrical characteristics of the ISDN reference cord

Parameter	C	Z	CL	R	D
Value	350 pF	> 75 Ω	> 60 dB	3 Ω	< 0,5 %
Tolerance	+ 0 % - 10 %	-	-	+ 0 % - 10 %	-

C: capacitance of pairs for transmit and receive functions;

Z: characteristic impedance of pairs used for transmit and receive functions;

CL: crosstalk loss at 96 kHz between any pair and a pair used for transmit and receive functions with terminations at 100 ohms;

R: resistance of an individual conductor;

D: difference of the ohmic resistance in each pair (percentage of the ohmic resistance).

NOTE: The total length of the cord depends on the parameters shown above. Nevertheless, this length should preferably be 7 m and in any case shall be less than 10 m.

9.2 Electrical characteristics

9.2.1 Bit rate

Reference: ETS 300 012, annex A, subclauses A.8.1.1 and A.8.1.2.

Requirement: The bit rate when transmitting INFO 1 frames shall be 192 kbit/s ± 100 ppm.

Test: The test shall be conducted according to annex B, subclauses B.2.1 and B.3.1.2.

9.2.2 Jitter and bit-phase relationship between TE input and output

9.2.2.1 Test configurations

Reference: ETS 300 012, annex A, subclause A.8.2.1.

Definition: The jitter and phase deviation measurements are carried out with the following configurations:

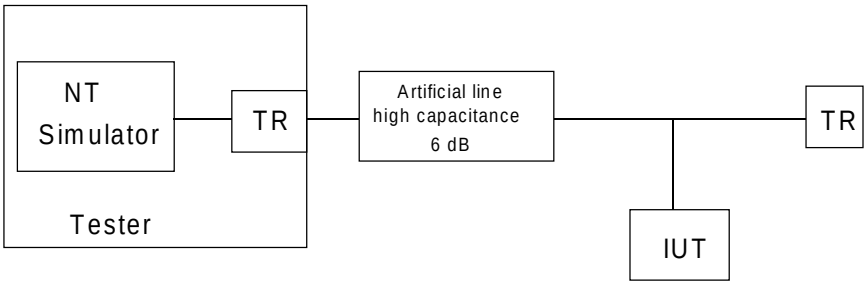
1) point-to-point configuration with 6 dB attenuation measured between the two terminating resistors at 96 kHz (high capacitance cable);

2) short passive bus with the TE under test and seven TE equivalent impedances, each having a characteristic between the two limits of figure 9.4, clustered at the far end from the signal source (high capacitance cable);

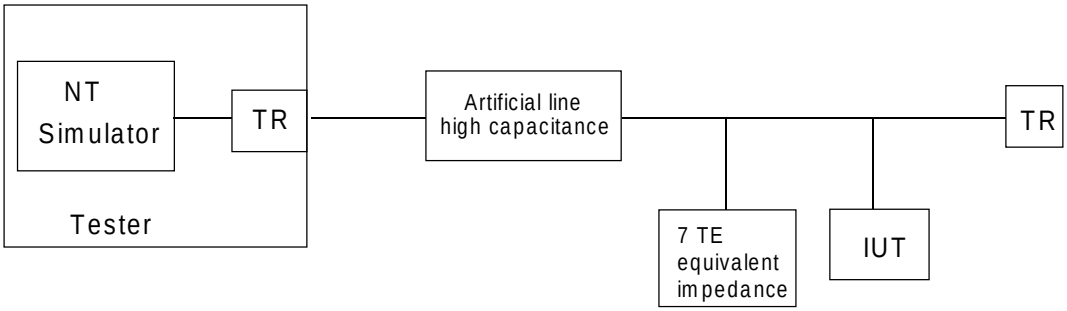
3) short passive bus with the TE under test adjacent to the signal source and seven TE equivalent impedances, each having a characteristic between the two limits of figure 9.4, clustered at the far end from the signal source. Configuration a) high capacitance cable ; configuration b) low capacitance cable;

4) ideal test signal condition, with one source connected directly to the receiver of the TE under test (i.e., without artificial line).

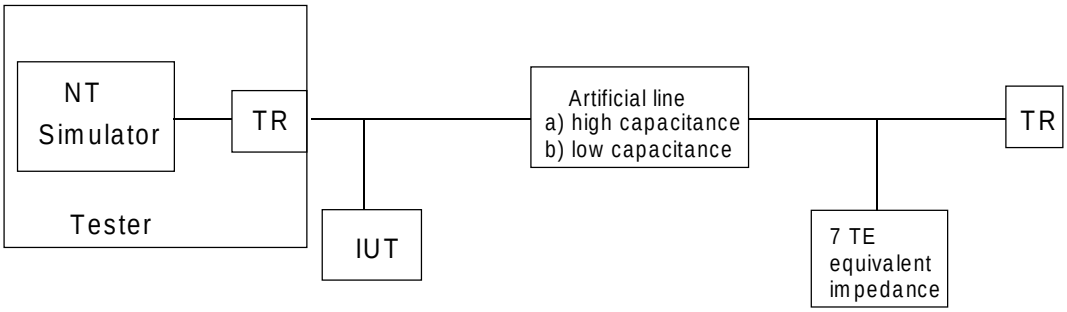
The test configurations are shown in figure 9.2. The artificial line referred to has characteristics as described in table 9.3.



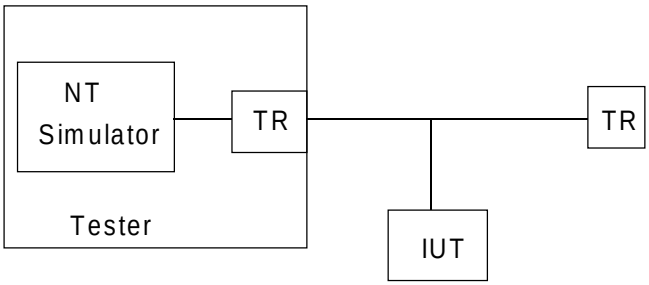
Configuration 1): Point-to-point



Configuration 2): Short passive bus



Configuration 3a), 3b): Short passive bus



Configuration 4): Ideal test signal

Figure 9.2: Test configurations

Table 9.3: Parameters for the artificial lines

Parameters	High capacitance cable	Low capacitance cable
R (96 kHz)	160 Ω/km	160 Ω/km
C (1 kHz)	120 nF/km	30 nF/km
Zo (96 kHz)	75 Ω	150 Ω
Wire diameter	0,6 mm	0,6 mm

9.2.2.2 Timing extraction jitter

Reference: ETS 300 012, annex A, subclause A.8.2.2.

Requirement: Timing extraction jitter, as observed at the TE output, shall be within - 7 % to + 7 % of a bit period, when the jitter is measured using a high pass filter with a cut-off frequency (3 dB point) of 30 Hz and an asymptotic roll off of 20 dB per decade under the test conditions described in subclause 9.2.2.1. The requirement applies with an output data sequence having binary ZEROs in both B-channels and with input data sequences described in a) to c) below. The requirement applies to the phase of all zero-volt crossings of all adjacent binary ZEROs in the output data sequence.

a) A sequence consisting of continuous frames with all binary ONEs in D-, D-echo and both B-channels;

b) a sequence, repeated continuously for at least 10 seconds, consisting of:

   40 frames with continuous octets of "10101010" (the first bit to be transmitted is binary ONE) in both B-channels and continuous binary ONEs in D- and D-echo-channels, followed by

   40 frames with continuous binary ZEROs in D-, D-echo and both B-channels;

c) a sequence consisting of a pseudo random pattern with a length of 2^{19}-1 in D-, D-echo, and both B-channels.

Test: The test shall be conducted according to annex B, subclause B.2.2.1.

9.2.2.3 Total phase deviation input to output

Reference: ETS 300 012, annex A, subclause A.8.2.3.

Requirement: The total phase deviation (including effects of timing extraction jitter in the TE), between the transitions of signal elements at the output of the TE and the transitions of signal elements associated with the signal applied to the TE input, should not exceed the range of - 7 % to + 15 % of a bit period. This requirement applies with an output data sequence having binary ZERO in both B-channels to the output signal transitions of each frame with the phase reference defined as the average phase of the crossing of zero, which occurs between the framing pulse and its associated balance pulse at the start of the frame and corresponding crossings at the start of the three preceding frames of the input signal.

The requirement applies under all test conditions described in subclause 9.2.2.1, with the input signal conditions specified in a) to d) below, and with the superimposed jitter as specified in figure 9.3 over the range of frequencies from 5 Hz to 2 kHz. The limitation applies for input bit rates of 192 kbit/s ± 1 ppm.

a) A sequence consisting of continuous frames with all binary ONEs in the D-, D-echo and both B-channels;

b) a sequence consisting of continuous frames with the octet "10101010" (the first bit to be transmitted is binary ONE) in both B-channels and binary ONEs in D- and D-echo-channels;

c) a sequence of continuous frames with binary ZEROs in D, D-echo and both B-channels;

d) a sequence consisting of continuous frames with a pseudo random pattern with a length of 2^{19}-1 in D-, D-echo, and both B-channels.

Test: The test shall be conducted according to annex B, subclause B.2.2.2.

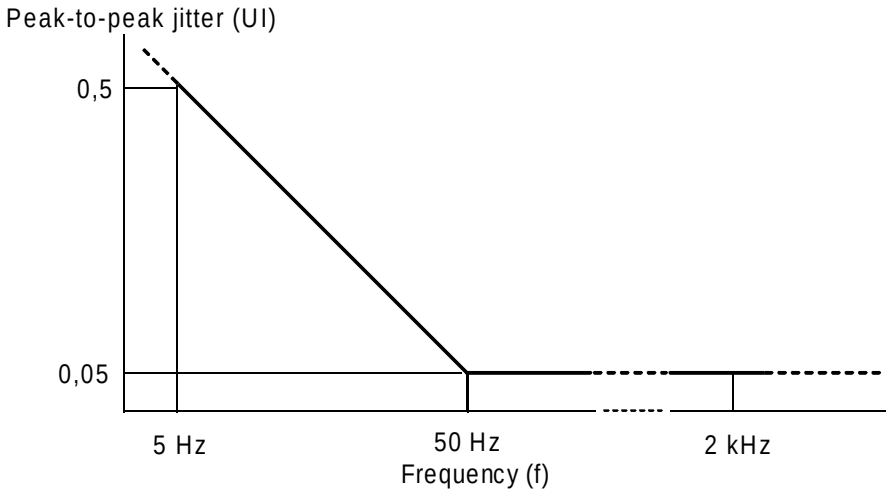


Figure 9.3: Lower limit of maximum tolerable jitter at TE input (log-log scale)

9.2.3 TE transmitter output impedance

Reference: ETS 300 012, annex A, subclause A.8.5.1.2.

Requirement:

a) At all times except when transmitting a binary ZERO, the following requirements apply:

1) the output impedance, in the frequency range of 2 kHz to 1 MHz, shall exceed the impedance indicated by the lower limit of figure 9.4. This requirement is applicable with applied sinusoidal voltage of 100 mV (rms value);

Test: The test shall be conducted according to annex B, subclauses B.2.3.1 and B.2.3.4.

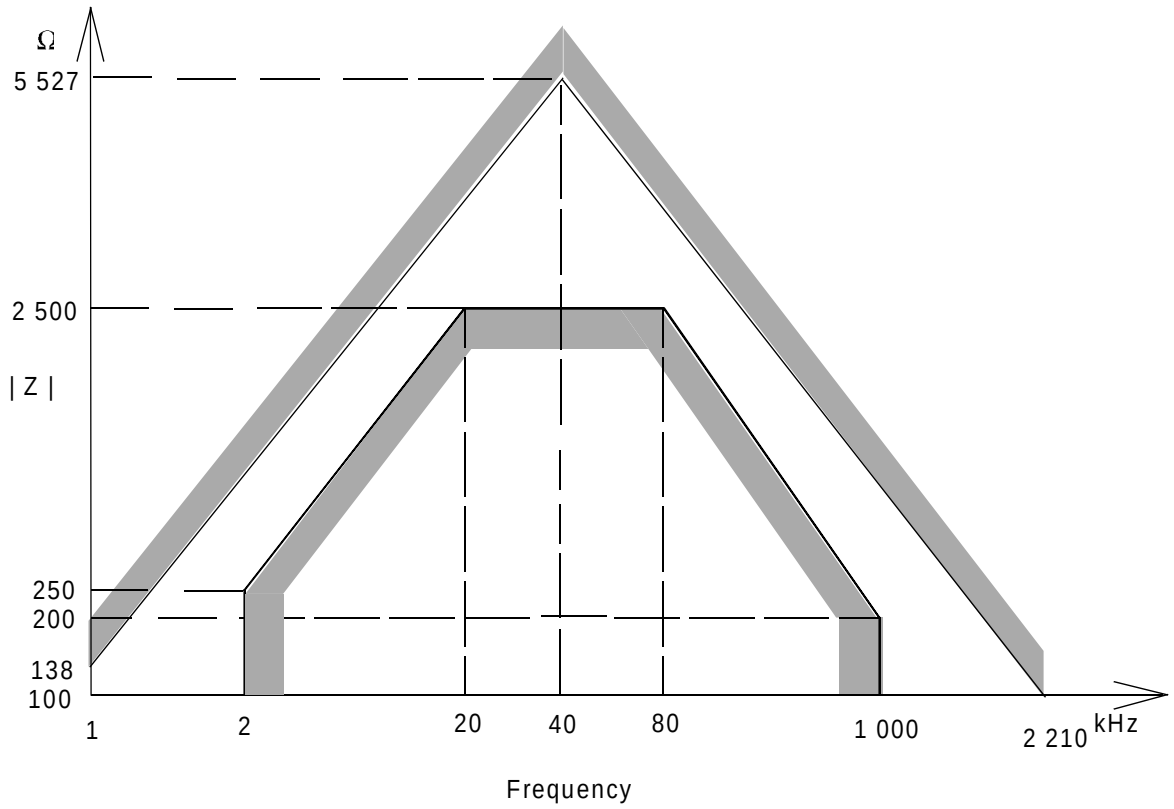
2) at a frequency of 96 kHz, the peak current which results from an applied voltage of up to 1,2 V (peak value) shall not exceed 0,6 mA (peak value).

Test: The test shall be conducted according to annex B, subclauses B.2.3.3 and B.2.3.5.

b) When transmitting a binary ZERO, the output impedance shall be $\geq 20\ \Omega$.

The output impedance limit shall apply for two nominal load impedance (resistive) conditions: 50 Ω and 400 Ω. The output impedance for each nominal load shall be defined by determining the peak pulse amplitude for loads equal to the nominal value ± 10 %. The peak amplitude shall be defined as the amplitude at the midpoint of a pulse. The limitation applies for pulses of both polarities.

Test: The test shall be conducted according to annex B, subclause B.2.3.2.



NOTE: The lower limit gives the requirement applicable to the TE. The range between the lower and upper limits is used to define the "TE equivalent impedance" described in subclause 9.2.2.1.

Figure 9.4: TE impedance template (log-log scale)

9.2.4 Pulse shape and amplitude (binary ZERO)

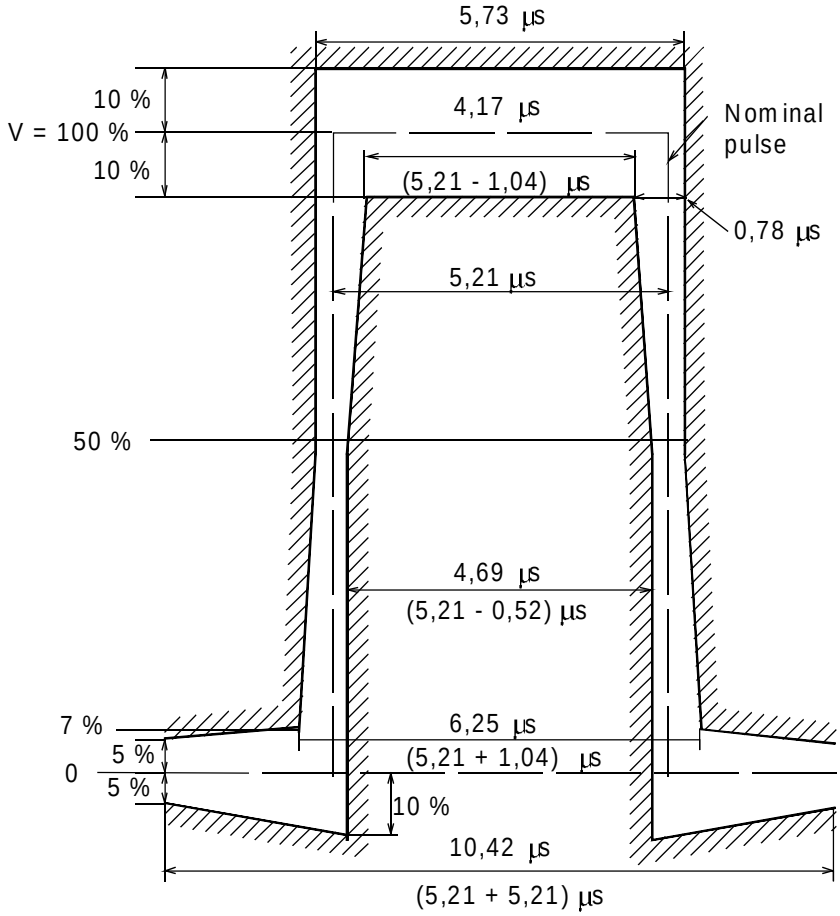
Reference: ETS 300 012, annex A, subclause A.8.5.3.1 and A.8.5.3.2.

Requirement: Pulses within a “101” bit sequence shall be within the mask of figure 9.5. Overshoot at the leading edge shall only be present where it does not exceed 0,25 µs duration at 50 % of its amplitude and where it does not exceed 5 % of the pulse amplitude at the middle of the signal element.

The nominal pulse amplitude shall be 750 mV, zero to peak.

A positive pulse (in particular, a framing pulse) at the output port of the TE is defined as a positive polarity of the voltage of access lead c with respect to d (see figure 9.1). See table 9.1 for the relationship to connector pins.

Test: The test shall be conducted according to annex B, subclause B.2.4.



NOTE: For clarity of presentation, the above values are based on a pulse width of 5,21 µs. See subclause 9.2.1 for a precise specification of the bit rate.

Figure 9.5: Transmitter output pulse mask

9.2.5 Pulse unbalance

9.2.5.1 Pulse amplitude when transmitting a high density pattern

Reference: ETS 300 012, annex A, subclause A.8.5.4.1.

Requirement: For both positive and negative pulses, 2 thresholds are set, corresponding to the minimum and maximum amplitude defined by the pulse mask (nominal amplitude ± 10 %).

When transmitting 40 frames with continuous binary ZERO in at least both B-channels into a test load of 50 Ω the pulse amplitude in the middle of the pulse shall be within the threshold as given in figure 9.5.

Test: The test shall be conducted according to annex B, subclause B.2.5.1.

9.2.5.2 Pulse unbalance of an isolated couple of pulses

Reference: ETS 300 012, annex A, subclause A.8.5.4.2.

Requirement: The absolute sum of $\int U(t)dt$ for a positive pulse (one bit) and of $\int U(t)dt$ for a negative pulse (one bit) shall be < 5 % of the nominal pulse. The reference voltage is given by the signal when transmitting INFO 0. The edge between two adjacent pulses shall be the crossing of the zero voltage. From this edge the integral shall be defined for a time period of 1,5 UI in each direction.

Test: The test shall be conducted according to annex B, subclause B.2.5.2.

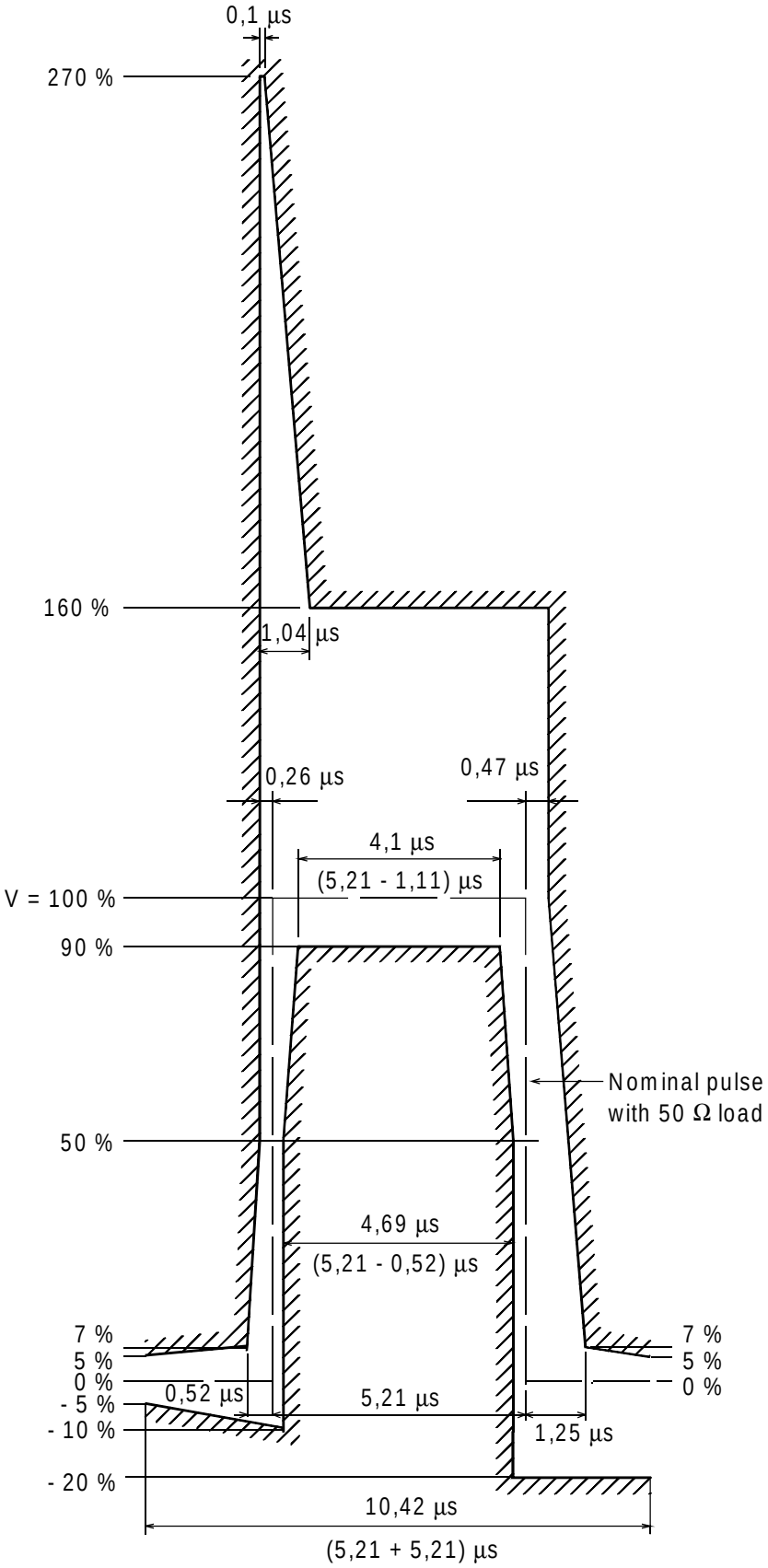
9.2.6 Voltage on other test loads

9.2.6.1 400 Ω load

Reference: ETS 300 012, annex A, subclause A.8.5.5.1.

Requirement: A pulse (binary ZERO) shall conform to the limits of the mask shown in figure 9.6 when the transmitter is terminated in a 400 Ω load.

Test: The test shall be conducted according to annex B, subclause B.2.6.1.



NOTE: For clarity of presentation, the above values are based on a pulse width of 5,21 µs. See subclause 9.2.1 for a precise specification of the bit rate.

Figure 9.6: Voltage for an isolated pulse with a test load of 400 Ω

9.2.6.2 5,6 Ω load

Reference: ETS 300 012, annex A, subclause A.8.5.5.2.

Requirement: To limit the current flow with two drivers having opposite polarities, the pulse amplitude (peak) with a 5,6 Ω load shall be ≤ 20 % of the nominal pulse amplitude.

Test: The test shall be conducted according to annex B, subclause B.2.6.2.

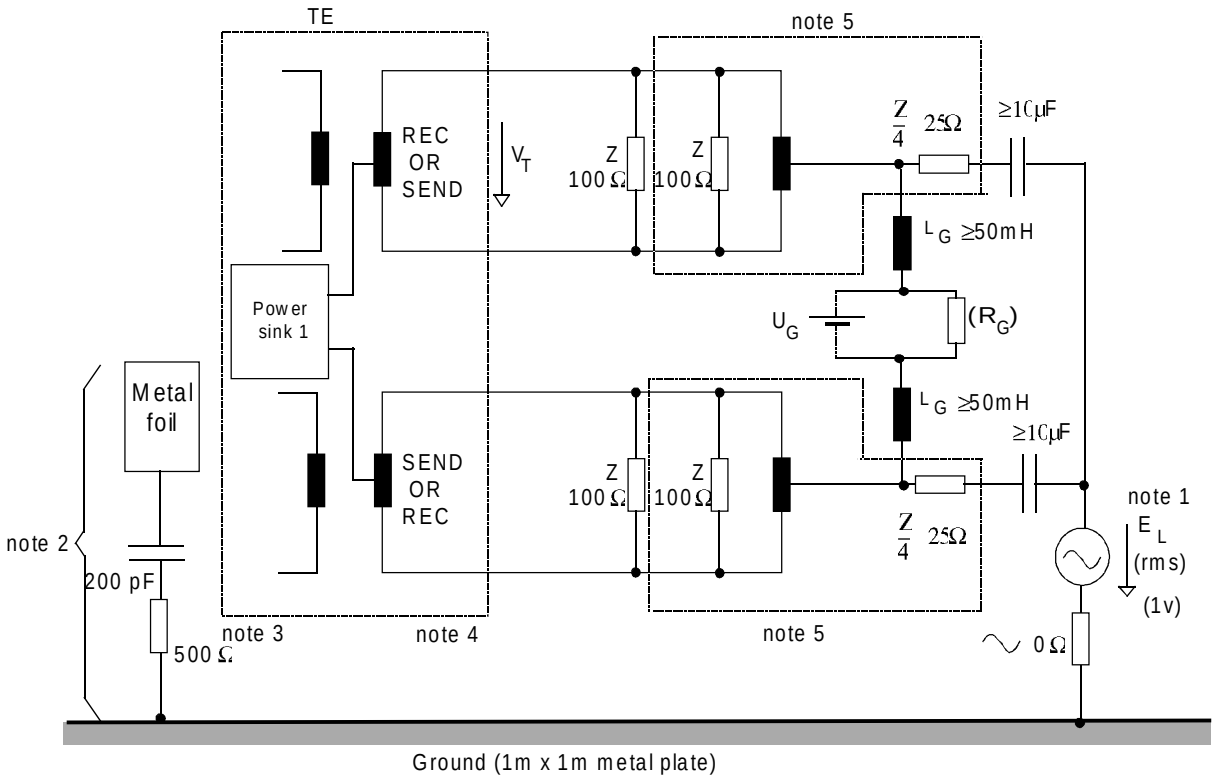
9.2.7 Longitudinal conversion loss of the transmitter output

Reference: ETS 300 012, annex A, subclause A.8.5.6.1.

Requirement: The Longitudinal Conversion Loss (LCL) of the transmitter output, as defined in CCITT Recommendation G.117 [5], subclause 4.1.3 (see figure 9.7), shall meet the following requirement:

- 10 kHz ≤ f ≤ 300 kHz: ≥ 54 dB;

Test: The test shall be conducted according to annex B, subclause B.2.7.



The Longitudinal Conversion Loss: LCL = 20 $\log_{10}$ $|E_L/V_T|$ dB

The voltages V_T and E_L should be measured within the frequency range from 10 kHz up to 1 MHz using selective test measuring equipment.

The measurement should be carried out in the states:
deactivated (receive, send),
power off (receive, send),

The interconnecting cord shall lie on the metal plate.

NOTE 1: For separate measurements of input and output the voltage source E_L shall be connected respectively to one port only.

NOTE 2: Hand imitation is a thin metal foil with approximately the size of a hand.

NOTE 3: TE with a metallic housing shall have a galvanic connection to the metal plate. Other TE with non-metallic housing shall be placed on the metal plate.

NOTE 4: The power cord for mains-powered TE shall lie on the metal plate and the earth protective wire of the mains shall be connected to the metal plate.

NOTE 5: This circuit provides a transverse termination of 100 Ω and a balanced longitudinal termination of 25 Ω. Any equivalent circuit is acceptable. However, for equivalent circuits given in CCITT Recommendations G.117 [5] and 0.121, powering cannot be provided.

Figure 9.7: Receiver input or transmitter output unbalance about earth

9.2.8 TE receiver input impedance

Reference: ETS 300 012, annex A, subclause A.8.6.1.1.

Requirement:

a) The input impedance, in the frequency range of 2 kHz to 1 MHz, shall exceed the impedance indicated by the lower limit of figure 9.4. This requirement is applicable with applied sinusoidal voltage of 100 mV (rms value).

Test: The test shall be conducted according to annex B, subclauses B.2.8.1.1 and B.2.8.1.3.

b) At a frequency of 96 kHz, the peak current which results from an applied voltage of up to 1,2 V (peak value) shall not exceed 0,6 mA (peak value).

Test: The test shall be conducted according to annex B, subclauses B.2.8.1.2. and B.2.8.1.4.

9.2.9 Receiver sensitivity - Noise and distortion immunity

Reference: ETS 300 012, annex A, subclause A.8.6.2.1.

Requirement: The receiver shall operate without errors with signals generated by the NT as follows:

a) 750 mV - 1,5 dB, transmitted via test configuration (1) as specified in subclause 9.2.2.1;

b) 750 mV ± 1,5 dB, transmitted via test configurations (2), (3a) and (3b) as specified in subclause 9.2.2.1;

c) 750 mV + 1,5 dB, transmitted via test configuration (4) as specified in subclause 9.2.2.1.

In addition, TEs shall operate when jitter, as specified in figure 9.3, is superimposed over the frequency range 5 Hz to 2 kHz on the input signal.

Additionally, for configuration (1), the TE shall operate with sinusoidal signals having an amplitude of 100 mV (peak-to-peak value) at frequencies of 200 kHz and 2 MHz superimposed individually on the input signals along with jitter.

NOTE: For configurations (2), (3a) and (3b), the variation in the NT signal level combined with the test configurations used means that the input signals received by the TE may have any amplitude in the range of + 1,5 dB to - 3,5 dB relative to a nominal amplitude of the transmitted signal of 750 mV. For configuration (1), the signals received by the TE may have any amplitude in the range of + 1,5 dB to - 7,5 dB relative to the nominal amplitude of the transmitted signal of 750 mV.

Test: The test shall be conducted according to annex B, subclause B.2.8.2.

9.2.10 Longitudinal Conversion Loss (LCL) of the receiver inputs

Reference: ETS 300 012, annex A, subclause A.8.6.4.

Requirement: Longitudinal Conversion Loss (LCL) of the receiver inputs measured in accordance with CCITT Recommendation G.117 [5], subclause 4.1.3, considering the power feeding and two 100-Ω terminations at each port, shall meet the following requirement (see figure 9.7):

- 10 kHz ≤ f ≤ 300 kHz: ≥ 54 dB;

Test: The test shall be conducted according to annex B, subclause B.2.8.3.

9.3 Functional characteristics

9.3.1 Binary organization of the frame

Reference: ETS 300 012, annex A, subclause A.5.4.2.

Definition: The frame structures are different for each direction of transmission. The structures of INFO 2, INFO 3 and INFO 4 are illustrated diagrammatically in figure 9.8.

The first bit of each frame is the framing bit, F is a binary ZERO with positive polarity.

The first binary ZERO following the framing bit-balance bit pair is also represented by a pulse having the same polarity as the preceding pulse (line code violation).

The auxiliary framing bit F_A is represented by a binary ZERO.

NOTE: Although not supported in the Euro-ISDN, an NT offering multiframing may set F_A to binary ONE in some frames. See CCITT Recommendation I.430 [1].

Bit N is always the binary opposite of F_A. This means that there is always a line code violation 14 bits or less from the framing bit F, due to that fact that either F_A or N is a binary ZERO.

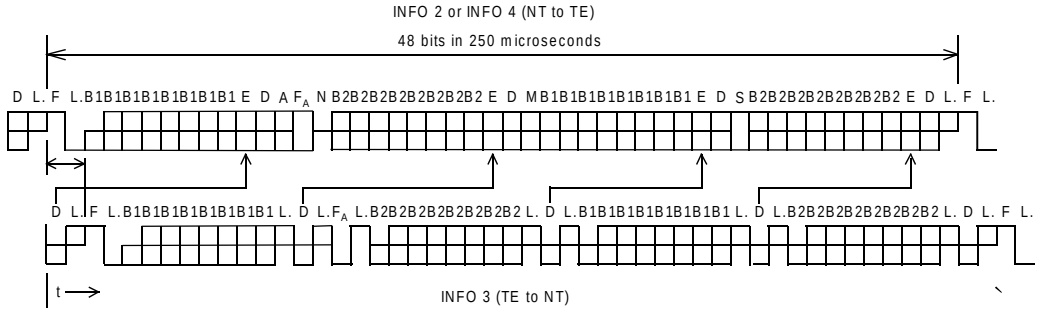


Figure 9.8: Frame structure at reference points S and T

9.3.1.1 TE to NT

Reference: ETS 300 012, annex A, subclause A.5.4.2.1.

Requirement: Each frame shall consist of the groups of bits shown in table 9.4; each individual group shall be dc-balanced by its last bit (L bit). Bit 1 (the F bit) shall have a positive polarity as described in figure 9.1.

Test: The test shall be conducted according to annex B, subclause B.3.1.1.

Table 9.4: Contents of frame in the direction TE to NT

Bit position	Group
1 and 2	Framing signal with balance bit
3 - 11	B1-channel (first octet) with balance bit
12 and 13	D-channel bit with balance bit
14 and 15	F_A auxiliary framing bit with balance bit
16 - 24	B2-channel (first octet) with balance bit
25 and 26	D-channel bit with balance bit
27 - 35	B1-channel (second octet) with balance bit
36 and 37	D-channel bit with balance bit
38 - 46	B2-channel (second octet) with balance bit
47 and 48	D-channel bit with balance bit

9.3.1.2 NT to TE

Reference: ETS 300 012, annex A, subclauses A.5.4.2.2 and A.6.3.

Definition: Frames transmitted by the NT contain an echo channel (E bits) used to retransmit the D bits received from the TEs. The D-echo-channel is used for D-channel access control. The last bit of the frame (L bit) is used for balancing each complete frame.

The bits are grouped as shown in table 9.5.

Table 9.5: Contents of frame in the direction NT to TE

Bit position	Group
1 and 2	Framing signal with balance bit
3 - 10	B1-channel (first octet)
11	E, D-echo-channel bit
12	D-channel bit
13	Bit A used for activation
14	F_A auxiliary framing bit
15	N bit
16 - 23	B2-channel (first octet)
24	E, D-echo-channel bit
25	D-channel bit
26	M, multiframing bit
27 - 34	B1-channel (second octet)
35	E, D-echo-channel bit
36	D-channel bit
37	S, reserved for further standardization
38 - 45	B2-channel (second octet)
46	E, D-echo-channel bit
47	D-channel bit
48	Frame balance bit
NOTE: S is set to binary ZERO.	

9.3.1.3 Relative bit positions

Reference: ETS 300 012, annex A, subclause A.5.4.2.3.

Requirement: At the TE, timing in the direction TE to NT shall be derived from the frames received from the NT.

The first bit of each frame transmitted from a TE towards the NT shall be delayed, nominally, by two bit periods with respect to the first bit of the frame received from the NT. Figure 9.8 illustrates the relative bit positions for both transmitted and received frames.

Test: The test shall be conducted according to annex B, subclause B.3.1.1.

9.3.2 Line code

Reference: ETS 300 012, annex A, subclause A.5.5.

Requirement: For both directions of transmission, pseudo-ternary coding shall be used with 100 % pulse width as shown in figure 9.9. Coding shall be performed in such a way that a binary ONE is represented by no line signal; whereas, a binary ZERO is represented by a positive or negative pulse. The first binary ZERO following the frame bit-balance bit shall be of the same polarity as the framing bit-balance bit. Subsequent binary ZEROs shall alternate in polarity. A balance bit shall be a binary ZERO if the number of binary ZEROs following the previous balance bit was odd. A balance bit shall be a binary ONE if the number of binary ZEROs following the previous balance bit was even.

Test: The test shall be conducted according to annex B, subclause B.3.1.1.

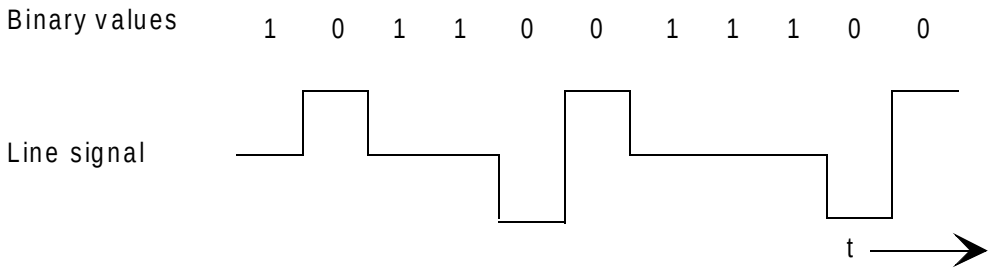


Figure 9.9: Pseudo-ternary code - example of application

9.4 Interface procedure

9.4.1 D-channel access procedure

9.4.1.1 Interframe (Layer 2) time fill

Reference: ETS 300 012, annex A, subclause A.6.1.1.

Requirement: When a TE has no Layer 2 frames to transmit, it shall send binary ONEs on the D-channel.

Test: The test shall be conducted according to annex B, TTCN test case DCBinaryOneCL1.

9.4.1.2 Multipoint contention resolution mechanism

Reference: ETS 300 012, annex A, subclauses A.6.1.3 and A.6.1.4.

Requirement: The TE shall not start Layer 2 frame transmission until the number of consecutive binary ONEs in the D-echo-channel is equal to, or exceeds, the value X_1 for priority class 1. The value of X_1 shall be eight for the normal level and nine for the lower level of priority.

In a priority class the value of the normal level of priority shall be changed into the value of the lower level of priority (i.e. higher number of ONEs) when a TE has successfully transmitted a Layer 2 frame of that priority class.

The value of the lower level of priority is changed back to the value of the normal level of priority when the number of consecutive binary ONEs in the D-echo-channel equals the value of the lower level of priority (i.e. higher value).

The TE shall use priority class 1 for all Layer 2 frames transmitted with SAPI = 0.

NOTE: The use of priority class 2 as described in ETS 300 012 is not a requirement under this TBR. There may be essential requirements that are not contained within this TBR for the use of priority class 2 with SAPI values other than 0.

Test: The test shall be conducted according to annex B, TTCN test cases DCPriorityClass1, DCNormtoLowPLCL1 and DCLowtoNormPLCL1.

9.4.1.3 Collision detection

Reference: ETS 300 012, annex A, subclause A.6.1.5.

Requirement: While transmitting information in the D-channel, the TE shall monitor the received D-echo-channel and compare the last transmitted bit with the next available D-echo bit. If the transmitted bit is the same as the received echo, the TE shall continue its transmission. If, however, the received echo is different from the transmitted bit, the TE shall cease transmission immediately and not attempt to

retransmit the frame until the number of consecutive binary ONEs received in the D-echo-channel is equal to X_1 according to subclause 9.4.1.2.

Test: The test shall be conducted according to annex B, TTCN test cases DCNormalPL1CL1 and DCNormalPL0CL1.

9.4.2 Activation/deactivation

9.4.2.1 TE states

9.4.2.1.1 State F1 (Inactive)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.1.

Definition: In this inactive (powered off) state, the TE is not transmitting and cannot detect the presence of any input signals. In the case of locally powered TEs which cannot detect the appearance/disappearance of PS1, this state is entered when local power is not present. For locally powered TEs that can detect PS1, state F1.0 is entered whenever loss of local power (required to support all TEI functions) is detected, and state F1.1 is entered when the absence of power from PS1 is detected and local power is available.

9.4.2.1.2 State F2 (Sensing)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.2.

Definition: This state is entered after the TE has been powered on but has not determined the type of signal (if any) that the TE is receiving. When in this state, a TE may go to a low-power consumption mode.

9.4.2.1.3 State F3 (Deactivated)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.3.

Definition: This is the deactivated state of the physical protocol. The TE transmits INFO 0 and receives neither INFO 2 nor INFO 4.

9.4.2.1.4 State F4 (awaiting signal)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.4.

Definition: When the TE is requested to initiate activation by means of a PH-ACTIVATE REQUEST primitive, it transmits a signal (INFO 1) and waits for a response from the NT.

9.4.2.1.5 State F5 (identifying input)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.5.

Definition: At the first receipt of any signal from the NT, the TE ceases to transmit INFO 1 and waits identification of signal INFO 2 or INFO 4.

9.4.2.1.6 State F6 (synchronized)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.6.

Definition: When the TE receives an activation signal (INFO 2) from the NT, it responds with a signal (INFO 3) and waits for normal frames (INFO 4) from the NT.

9.4.2.1.7 State F7 (activated)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.7.

Definition: This is the normal active state with the protocol activated in both directions. Both the NT and TE are transmitting normal frames. This is the only state where B and D-channels may contain operational data.

9.4.2.1.8 State F8 (lost framing)

Reference: ETS 300 012, annex A, subclause A.6.2.1.1.8.

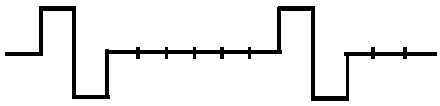
Definition: This is the condition when the TE has lost frame synchronization and is awaiting re-synchronization by receipt of INFO 2 or INFO 4 or deactivation by receipt of INFO 0.

9.4.2.2 Signals

Reference: ETS 300 012, annex A, subclause A.6.2.2.

Definition: The identifications of specific signals across the coincident S and T reference point are given in table 9.6. Also included is the coding for these signals.

Table 9.6: Definition of INFO signals

Signals from NT to TE		Signals from TE to NT	
INFO 0	No signal	INFO 0	No signal
		INFO 1	A continuous signal with the following pattern: Positive ZERO, negative ZERO, six ONEs.
INFO 2	Frame with all bits of B; D-and D-echo channels set to binary ZERO. Bit A set to binary ZERO. N and L bits set according to the normal coding rules.		 Nominal bit rate = 192 kbit/s
		INFO 3	Synchronised frames with operational data on B and D-channel
INFO 4	Frames with operational data on B-, D-and D-echo-channels. Bit A set to binary ONE.		

9.4.2.3 Activation/deactivation procedure for TEs

9.4.2.3.1 Specification of the procedure

Reference: ETS 300 012, annex A, subclauses A.5.3.1, A.5.3.2 and A.6.2.3.2.

Requirement: A TE which is powered from PS1 shall follow the procedures described in the finite state matrix table shown in table 9.7.

A TE which is locally powered and does not have a connection detector capable of detecting the presence of PS1 shall follow the procedures described in the finite state matrix table shown in table 9.8.

A TE which is locally powered and has a connection detector capable of detecting the presence of PS1 shall follow the procedures described in the finite state matrix table shown in table 9.9.

Test: The test shall be conducted according to annex B, TTCN test cases AD1aF1_PS&LP-on, AD1bF10_LP-on, AD1cF11_LP-off, AD1dF11_PS-on, AD2F11_CHK_T3, AD3aF2_PS-off, AD3bF2_LP-off, AD4F2_RX-I0, AD5F2_RX-I2, AD6F2_RX-I4, AD7F2_RX-IX, AD8F2_CHK_T3, CPF2PHAI, AD9aF3_PS-off, AD9bF3_LP-off, AD10F3_PH-AR, AD11F3_RX-I0, AD12F3_RX-I2, AD13F3_RX-I4, AD14F3_RX-IX, AD15F3_CHK_T3, CPF3MPHIID, CPF3PHAI, AD16aF4_PS-off, AD16bF4_LP-off, AD17F4_RX-I0, AD18F4_RX-I2, AD19F4_RX-I4, AD21F4_CHK_T3, CPF4MPHIID, CPF4PHAI, CPF4PHDI_T3exp, CPF4Tlayer2, AD22aF5_PS-off, AD22bF5_LP-off, AD23F5_RX-I0, AD24F5_RX-I2, AD25F5_RX-I4, AD26F5_RX-IX, AD27F5_CHK_T3, CPF5MPHIID, CPF5PHAI, CPF5PHDI_I0T3, CPF5PHDI_T3expa, CPF5PHDI_T3expb, AD28aF6_PS-off, AD28bF6_LP-off, AD28cF6_PS-off, AD29F6_Lostfr, AD30F6_PH-AR, AD31F6_RX-I0, AD32F6_RX-I2, AD33F6_RX-I4, AD34F6_CHK_T3, CPF6PHAIa, CPF6PHAIb, CPF6PHDI_T3exp, CPF6PHDI_I0T3, CPF6PHDI_I0, CPF6PHARa, CPF6PHARb, AD35aF7_PS-off, AD35bF7_LP-off, AD35cF7_PS-off, AD36F7_Lostfr, AD37F7_RX-I0, AD38F7_RX-I2, AD39F7_RX-I4, CPF7PHDI_I0, AD40aF8_PS-off, AD40bF8_LP-off, AD41F8_PH-AR, AD42F8_RX-I0, AD43F8_RX-I2, AD44F8_RX-I4, AD45F8_RX-IX, AD46F8_CHK_T3, CPF8MPHIIDa, CPF8MPHIIDb, CPF8PHAIb, CPF8PHAIc, CPF8PHDI_T3exp, CPF8PHDI_I0T3, CPF8PHDI_I0b, CPF8PHARa and CPF8PHARb.

Table 9.7: Activation/deactivation Layer 1 finite state matrix table for TEs powered from PS1

State Name	Inactive	Sensing	Deactiv-ated	Awaiting signal	Identifying input	Synchro-nized	Activated	Lost Framing
State Number	F1	F2	F3	F4	F5	F6	F7	F8
INFO Sent	INFO 0	INFO 0	INFO 0	INFO 1	INFO 0	INFO 3	INFO 3	INFO 0
Detection of PS1 (note 2)	F2	---	---	---	---	---	---	---
Disappearance of PS1 for at least 500 ms (note 2)	---	F1	MPH-II(d) F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1
PH-ACTIVATE REQUEST	/	|	ST. T3 F4	|	|	---	|	---
Expiry T3	/	/	---	PH-DI F3	PH-DI F3	PH-DI ---	/	PH-DI F3
Receive INFO 0 (noteS 4 and 5)	/	MPH-II(c) F3	---	---	---	PH-DI F3	PH-DI F3	PH-DI F3
Receive any signal (note 1)	/	---	---	F5	---	/	/	---
Receive INFO 2	/	MPH-II(c) F6	F6	(note 3)	F6	---	F6	F6
Receive INFO 4	/	MPH-II(c) PH-AI F7	PH-AI S/ R T3 F7	(note 3)	PH-AI S/R T3 F7	PH-AI S/R T3 F7	---	PH-AI S/R T3 F7
Lost Framing	/	/	/	/	/	F8	F8	---

---	No change, no action.	PH-AI	Primitive PH-ACTIVATE INDICATION.
|	Impossible by the definition of the Layer 1 service.	PH-DI	Primitive PH-DEACTIVATE INDICATION.
/	Impossible situation.	ST. T3	Start timer T3.
a, b; Fn	Issue primitives "a" and "b" and then go to state "Fn".	S/R T3	Stop and reset timer T3.
MPH-II(c)	Primitive MPH-INFORMATION INDICATION (connected).		
MPH-II(d)	Primitive MPH-INFORMATION INDICATION (disconnected).		

(continued)

Table 9.7 (concluded): Activation/deactivation Layer 1 finite state matrix table for TEs powered from PS1

NOTE 1: This event reflects the case where a signal is received which is not INFO 2 or INFO 4. To ensure that a TE takes appropriate action when receiving a signal to which it cannot synchronize, operation of TEs should be verified where the received signal is any bit pattern (containing at least three ZEROs in each frame interval) to which TEs conforming to subclause 9.4.3 are not able to synchronize. In the TTCN test cases in annex B, clause B.4, this signal is called INFO X.

NOTE 2: If more than one power feeding source can be used as declared in items 1 and 2 of annex A, table A.1, the reaction of the TE may be different from that described. It may be necessary then to analyse the behaviour of the TE, when tested according to annex B, clause B.4, and when powered as declared by the supplier (see annex E, table E.2).

NOTE 3: Two responses are possible. Either:

a) the TE shall enter state F5 within 5 ms. Where this option is implemented by the TE, the requirements associated with state F5 are applicable;

or

b) on receipt of INFO 2, the TE shall enter state F6 within 5 ms; and on receipt of INFO 4, the TE shall enter state F7 within 5 ms, stop and reset timer T3, and send PH-AI. Where this option is implemented by the TE, the requirements associated with state F5 are not applicable.

NOTE 4: The timer T4 shall be started when leaving state F7 or F8 upon the reception of INFO 0. The corresponding PH-DI will be delivered to Layer 2 only, if Layer 1 does not re-enter an active state before expiry of this timer. The value of this timer is in the range of 500 ms to 1 000 ms. This prevents the loss of an on-going communication caused by spurious effects.

NOTE 5: INFO 0 shall be detected when 48 or more contiguous binary ONEs have been received and the TE shall perform the actions specified in table 9.7. Conformance shall be tested with a sinusoidal signal having a voltage of 100 mV peak-to-peak (with a frequency in the range of 2 kHz to 1 000 kHz, preferably 100 kHz). TE being in state F6 or F7 shall react on receipt of this signal by transmitting INFO 0 within a period of time 250 µs to 25 ms.

Table 9.8: Activation/deactivation Layer 1 finite state matrix table for locally powered TEs unable to detect PS1

State Name	Inactive	Sensing	Deactiv-ated	Awaiting signal	Identifying input	Synchro-nized	Activated	Lost Framing
State Number	F1	F2	F3	F4	F5	F6	F7	F8
INFO Sent	INFO 0	INFO 0	INFO 0	INFO 1	INFO 0	INFO 3	INFO 3	INFO 0
Loss of power	/	F1	MPH-II(d) F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1	MPH-II(d) PH-DI F1
Application of power (note 2)	F2	---	---	---	---	---	---	---
Detect PS1	Not applicable to this type of terminal							
PH-ACTIVATE REQUEST	/	|	ST. T3 F4	|	|	---	|	---
Expiry T3	/	/	---	PH-DI F3	PH-DI F3	PH-DI ---	/	PH-DI F3
Receive INFO 0 (notes 4 and 5)	/	MPH-II(c) F3	---	---	---	PH-DI F3	PH-DI F3	PH-DI F3
Receive any signal (note 1)	/	---	---	F5	---	/	/	---
Receive INFO 2	/	MPH-II(c) F6	F6	(note 3)	F6	---	F6	F6
Receive INFO 4	/	MPH-II(c) PH-AI F7	PH-AI S/R T3 F7	(note 3)	PH-AI S/R T3 F7	PH-AI S/R T3 F7	---	PH-AI S/R T3 F7
Lost Framing	/	/	/	/	/	F8	F8	---

---	No change, no action.	PH-AI	Primitive PH-ACTIVATE INDICATION.
|	Impossible by the definition of the Layer 1 service.	PH-DI	Primitive PH-DEACTIVATE INDICATION.
/	Impossible situation.	ST. T3	Start timer T3.
a, b; Fn	Issue primitives "a" and "b" and then go to state "Fn".		
MPH-II(c)	Primitive MPH-INFORMATION INDICATION (connected).	S/R T3	Stop and reset timer T3.
MPH-II(d)	Primitive MPH-INFORMATION INDICATION (disconnected).		

(continued)

Table 9.8 (concluded): Activation/Deactivation Layer 1 finite state matrix table for locally powered TEs unable to detect PS1

NOTE 1: This event reflects the case in which a signal is received which is not INFO 2 or INFO 4. To ensure that a TE takes appropriate action when receiving a signal to which it cannot synchronize, operation of TEs should be verified where the received signal is any bit pattern (containing at least three ZEROs in each frame interval) to which TEs conforming to subclause 9.4.3 are not able to synchronize. In the TTCN test cases in annex B, clause B.4, this signal is called INFO X.

NOTE 2: The term power could be the full operational power or backup power. Backup power is defined such that it is enough to hold the TEI values in memory and maintain the capability of receiving and transmitting Layer 2 frames associated with the TEI procedures. If more than one power feeding source can be used as declared in items 1 and 2 of annex A, table A.1, the reaction of the TE may be different from that described. It may be necessary then to analyse the behaviour of the TE, when tested according to annex B, clause B.4, and when powered as declared by the supplier (see annex E, table E.2).

NOTE 3: Two responses are possible. Either:

a) the TE shall enter state F5 within 5 ms. Where this option is implemented by the TE, the requirements associated with state F5 are applicable;

or

b) on receipt of INFO 2, the TE shall enter state F6 within 5 ms; and on receipt of INFO 4, the TE shall enter state F7 within 5 ms, stop and reset timer T3, and send PH-AI. Where this option is implemented by the TE, the requirements associated with state F5 are not applicable.

NOTE 4: The timer T4 shall be started when leaving the states F7 or F8 upon reception of INFO 0. The corresponding PH-DI will be delivered to Layer 2 only, if Layer 1 does not re-enter state F7 before expiry of this timer. The value of this timer is in the range of 500 ms to 1 000 ms. This prevents the loss of on-going communication caused by spurious effects.

NOTE 5: INFO 0 shall be detected when 48 or more contiguous binary ONEs have been received and the TE shall perform the actions specified in table 9.8. Conformance shall be tested with a sinusoidal signal having a voltage of 100 mV peak-to-peak (with a frequency in the range 2 kHz to 1 000 kHz, preferably 100 kHz). TE being in state F6 or F7 shall react on receipt of this signal by transmitting INFO 0 within a period of time 250 μs to 25 ms.

Table 9.9: Activation/deactivation Layer 1 finite state matrix table for locally powered TEs able to detect PS1

State Name	Inactive Power off	Inactive Power on	Sensing	Deactiv-ated	Awaiting signal	Identify-ing input	Synchro-nized	Activated	Lost Framing
State Number	F1.0	F1.1	F2	F3	F4	F5	F6	F7	F8
INFO Sent	INFO 0	INFO 0	INFO 0	INFO 0	INFO 1	INFO 0	INFO 3	INFO 3	INFO 0
Loss of power (note 2)	/	F1.0	F1.0	MPH-II(d) F1.0	MPH-II(d) PH-DI F1.0	MPH-II(d) PH-DI F1.0	MPH-II(d) PH-DI F1.0	MPH-II(d) PH-DI F1.0	MPH-II(d) PH-DI F1.0
Application of power (note 2)	F1.1	---	---	---	---	---	---	---	---
Detect PS1	/	F2	/	/	/	/	---	---	/
Disappearance of PS1 for at least 500 ms	/	/	F1.1	MPH-II(d) F1.1	MPH-II(d) PH-DI F1.1	MPH-II(d) PH-DI F1.1	---	---	MPH-II(d) PH-DI F1.1
PH-ACTIVATE REQUEST	/	|	|	ST. T3 F4	|	|	---	|	---
Expiry T3	/	---	---	---	PH-DI F3	PH-DI F3	PH-DI ---	/	PH-DI F3
Receive INFO 0 (notes 4 and 5)	/	/	MPH-II(c) F3	---	---	---	PH-DI F3	PH-DI F3	PH-DI F3
Receive any signal (note 1)	/	/	---	---	F5	---	/	/	---
Receive INFO 2	/	(note 6)	MPH-II(c) F6	F6	(note 3)	F6	---	F6	F6
Receive INFO 4	/	(note 6)	MPH-II(c) PH-AI S/R T3 F7	PH-AI S/R T3 F7	(note 3)	PH-AI S/R T3 F7	PH-AI S/R T3 F7	---	PH-AI S/R T3 F7
Lost Framing	/	/	/	/	/	/	F8	F8	---

---	No change, no action.	PH-AI	Primitive PH-ACTIVATE INDICATION.
|	Impossible by the definition of the Layer 1 service.	PH-DI	Primitive PH-DEACTIVATE INDICATION.
/	Impossible situation.	ST. T3	Start timer T3.
a, b; Fn	Issue primitives "a" and "b" and then go to state "Fn".		
MPH-II(c)	Primitive MPH-INFORMATION INDICATION (connected).	S/R T3	Stop and reset timer T3.
MPH-II(d)	Primitive MPH-INFORMATION INDICATION (disconnected).		

(continued)

Table 9.9 (concluded): Activation/Deactivation Layer 1 finite state matrix table for locally powered TEs able to detect PS1

NOTE 1: This event reflects the case in which a signal is received which is not INFO 2 or INFO 4. To ensure that a TE takes appropriate action when receiving a signal to which it cannot synchronize, operation of TEs shall be verified where the received signal is any bit pattern (containing at least three ZEROs in each frame interval) to which TEs conforming to subclause 9.4.3 are not able to synchronize. In the TTCN test cases in annex B, clause B.4, this signal is called INFO X.

NOTE 2: The term power could be the full operational power or backup power. Backup power is defined such that it is enough to hold the TEI values in memory and maintain the capability of receiving and transmitting Layer-2 frames associated with the TEI procedures. If more than one power feeding source can be used as declared in item O.1.2 of annex A, table A.3.2, the reaction of the TE may be different from that described. It may be necessary then to analyse the behaviour of the TE, when tested according to annex B, clause B.4, and when powered as declared by the supplier (see annex E, table E.2).

NOTE 3: Two responses are possible. Either:

a) the TE shall enter state F5 within 5 ms. Where this option is implemented by the TE, the requirements associated with state F5 are applicable;

or

b) on receipt of INFO 2, the TE shall enter state F6 within 5 ms; and on receipt of INFO 4, the TE shall enter state F7 within 5 ms, stop and reset timer T3, and send PH-AI. Where this option is implemented by the TE, the requirements associated with state F5 are not applicable.

NOTE 4: The timer T4 shall be started when leaving the states F7 or F8 upon reception of INFO 0. The corresponding PH-DI shall be delivered to Layer 2 only, if Layer 1 does not re-enter state F7 before expiry of this timer. The value of this timer is in the range of 500 ms to 1 000 ms. This prevents the loss of on-going communication caused by spurious effects.

NOTE 5: INFO 0 shall be detected when 48 or more contiguous binary ONEs have been received and the TE shall perform the actions specified in table 9.8. Conformance shall be tested with a sinusoidal signal having a voltage of 100 mV peak-to-peak (with a frequency in the range 2 kHz to 1 000 kHz, preferably 100 kHz. TE being in state F6 or F7 shall react on receipt of this signal by transmitting INFO 0 within a period of time 250 μs to 25 ms.

NOTE 6: Two possibilities exist for the reaction in these cases.

Case 1: PH-AI, stop reset T3, send MPH-II(c), F7. This reaction is appropriate when INFO 4 is detected to supplement the connection status.

Send MPH-II(c), F6. This reaction is appropriate when INFO 2 is detected to supplement the connection status.

Case 2: "/" (impossible); this reaction is to be applied when the connection status is determined by the presence or absence of power.

9.4.2.3.2 Timer values

Reference: ETS 300 012, annex A, subclause A.6.2.5.

Requirement: Timer T3 shall be less than 30 s.

Test: The test shall be conducted according to annex B, TTCN test case TItimerT3.

9.4.2.4 TE activation times

Reference: ETS 300 012, annex A, subclauses A.4.3 and A.6.2.6.1.

Requirement: A TE in the deactivated state (F3) shall, upon the receipt of INFO 2 or INFO 4, establish frame synchronization and initiate the transmission of INFO 3 within 100 ms.

In state F6, a TE shall recognise the receipt of INFO 4 within two frames (in the absence of errors).

A TE in the "awaiting signal" state (F4) shall, upon the receipt of INFO 2 or INFO 4, cease the transmission of INFO 1 and initiate the transmission of INFO 0 within 5 ms and then respond to INFO 2 or INFO 4, within 100 ms, as above.

Test: The test shall be conducted according to annex B, TTCN test cases TIF3info2, TIF3info4, TIF4info2 and TIF4info4.

9.4.2.5 Deactivation times

Reference: ETS 300 012, annex A, subclause A.6.2.7.

Requirement: A TE shall respond to the receipt of INFO 0 by initiating the transmission of INFO 0 within 25 ms.

Test: The test shall be conducted according to annex B, TTCN test cases TIF7compdeact1, TIF8compdeact1, TIF6physdeact and TIF7physdeact.

9.4.3 Frame alignment procedures

Reference: ETS 300 012, annex A, subclause A.6.3.1.1 and A.6.3.1.2.

Requirement: Loss of frame alignment:

- shall not be assumed when a time period equivalent to one 48-bit frame has elapsed without having detected valid pairs of line code violations obeying the $\leq$ 14 bit criterion as described in subclause 9.3.1.2; and

- shall be assumed when a time period equivalent to "n" 48-bit frames has elapsed without having detected valid pairs of line code violations obeying the $\leq$ 14 bit criterion as described in subclause 9.3.1.2, where "n" is a value between 2 and 20.

The TE shall cease transmission within the same frame in which loss of frame alignment was identified.

Frame alignment:

- shall not be assumed to occur when two consecutive pairs of line code violations obeying the $\leq$ 14 bit criterion as described in subclause 9.3.1.2 have been detected; and

- shall be assumed to occur when "m" consecutive pairs of line code violations obeying the $\leq$ 14 bit criterion as described in subclause 9.3.1.2 have been detected, where "m" is a value between 3 and 100.

  NOTE: There is no requirement for "m" and "n" to remain constant under all circumstances of loss and recovery of frame alignment. The recommended values for "m" and "n" are 5.

Test: The test shall be conducted according to annex B, TTCN test cases FAinfA_1fr, FAinfB_1fr, FAinfD_1fr, FAinfA_kfr, FAinfB_kfr, FAinfD_kfr and FAregain.

9.4.4 Multiframing

Reference: ETS 300 012, annex A, subclause A.6.3.3.

Requirement: When the TE receives an F_A bit which is a binary ZERO, it shall send a binary ZERO in the corresponding F_A bit position of the frame transmitted to the NT.

NOTE: No requirement applies when the F_A bit received is a binary ONE. It is recommended that the TE echoes the binary value of the received F_A bit in the corresponding F_A bit position of the frame transmitted to the NT.

Test: The requirement is tested implicitly through the tests for subclause 9.4.3.

9.4.5 Idle Channel Code on the B-Channels

Reference: ETS 300 012, annex A, subclause A.6.4.

Requirement: A TE shall send binary ONEs in any B-channel that is not assigned to it.

Test: The test shall be conducted according to annex B, TTCN test case BCBinaryOne.

9.5 Power feeding

9.5.1 Functions specified at the access leads

Reference: ETS 300 012, annex A, subclauses A.9.1.1, A.9.3.1.1 and A.9.3.1.2.

Definition: The access leads are applied as follows:

Access lead pairs c-d and e-f are for the bi-directional transmission of the digital signal and provide a phantom circuit for power transfer from NT to TE (see figure 9.1).

Under normal power conditions, a voltage of 40 V + 5 %, - 40 % (24 V to 42 V) is provided to the access leads of the TE by PS1.

Under restricted power conditions, a voltage of 40 V + 5 %, - 20 % (32 V to 42 V) with reversed polarity is provided to the access leads of the TE by PS1.

9.5.2 Current transient

Reference: ETS 300 012, annex A, subclause A.9.4.

Requirement: The rate of change of current drawn by the TE shall not exceed 5 mA/µs. This requirement shall not be applicable until 100 ms or a time C according to subclause 9.5.5.1 has elapsed after the connection of the terminal.

Test: The test shall be conducted according to annex B, subclause B.5.3.

9.5.3 Power Source 1 consumption

9.5.3.1 Normal power conditions

Reference: ETS 300 012, annex A, subclause A.9.5.1.

Requirement: The TE shall draw no more power than the limits given in table 9.10, normal power conditions.

NOTE: A typical example of the use of the local action state is the modification of prestored dialling numbers in the TE.

Test: The test shall be conducted according to annex B, subclause B.5.1.

9.5.3.2 Restricted power conditions

9.5.3.2.1 Power available to the TE "designated" for restricted power operation

Reference: ETS 300 012, annex A, subclause A.9.5.2.1.

Requirement: The TE shall draw no more power than the limits given for a designated terminal in table 9.10, restricted power conditions.

Test: The test shall be conducted according to annex B, subclause B.5.2.

Table 9.10: PS1 consumption limits

TE type and state	Maximum consumption
Normal conditions	
TE drawing power from PS1 Active state	1 W
TE drawing power from PS1 Deactivated state	100 mW
TE drawing power from PS1 Local action state	1 W
Locally powered TE Any state	3 mW
Restricted conditions	
TE drawing power from PS1 Designated TE: Active state	380 mW
TE drawing power from PS1 Designated: Deactivated state	25 mW
TE drawing power from PS1 Not designated	3 mW
TE drawing power from PS1 Designated: Local action state	380 mW
Locally powered TE Any state	3 mW
NOTE. All power limits apply to power integrated over a period of 50 ms.	

9.5.3.2.2 Power available to locally powered and "non-designated" TEs

Reference: ETS 300 012, annex A, subclause A.9.5.2.2.

Requirement: The TE shall draw no more power than the limits given for a locally powered or non-designated terminal in table 9.10, restricted power conditions.

Test: The test shall be conducted according to annex B, subclause B.5.2.

9.5.4 Galvanic isolation

Reference: ETS 300 012, annex A, subclause A.9.6.

Requirement: Where the TE has a galvanic connection to earth, the direct current between PS1 and any earth connection on the TE shall not exceed 100 µA.

NOTE: This provision is intended to preclude earth loops or paths which could result in currents that would interfere with the satisfactory operation of the TE. It is independent of any requirement for such isolation, related to safety and should not be interpreted to require isolation which conflicts with the necessary provisions for safety.

Test: The test shall be conducted according to annex B, subclause B.5.5.

9.5.5 Limitations on power source and sink during transient conditions

9.5.5.1 Current/time limitations for TEs

9.5.5.1.1 Current/time limitations for remotely powered TEs in normal mode

Reference: ETS 300 012, subclause 7.1.1 and ETS 300 012, annex C.

Requirement: To limit the instantaneous current that each terminal can sink from the phantom circuit when connected to PS1 in the normal condition, or when PS1 changes from restricted to normal condition, the terminal shall conform to the limits given in either:

a) figure 9.11, with the values given in table 9.11, when tested in accordance with figure 9.10; or

b) figure 9.12, with the values for A, X and Y given in table 9.11, when tested in accordance with figure 9.10.

Test: The test shall be conducted according to annex B, subclause B.5.4.1.

Table 9.11: Parameters for the normal condition

A	5 µs	Y	55 mA
C	100 ms	X	Current equivalent to 1 W never exceeding 55 mA independent of the input voltage.

9.5.5.1.2 Current/time limitations for designated TEs in restricted mode

Reference: ETS 300 012, subclause 7.1.1 and ETS 300 012, annex C.

Requirement: To limit the instantaneous current that a designated terminal can sink from the phantom when connected to PS1 in the restricted condition, a designated terminal shall conform to the limits given in either:

a) figure 9.11, with the values given in table 9.12, when tested in accordance with figure 9.10;

or

b) figure 9.12, with the values for A, X and Y given in table 9.12, when tested in accordance with figure 9.10.

Test: The test shall be conducted according to annex B, subclause B.5.4.1.

Table 9.12: Parameters for the restricted condition

A	5 µs	Y	55 mA
C	100 ms	X	Current equivalent to 380 mW never exceeding 55 mA independent of the input voltage

9.5.5.1.3 Current/time limitations for non-designated and locally powered TEs in restricted mode

Reference: ETS 300 012, subclause 7.1.1 and ETS 300 012, annex C.

Requirement: To limit the instantaneous current that a non-designated or locally powered TE can sink from the phantom when connected to PS1 in the restricted condition. These TEs shall conform to the values given below, when tested in accordance with figure 9.10.

The power consumption for these TEs when measured 100 µs after closing the switch shall be ≤ 3 mW.

Test: The test shall be conducted according to annex B, subclause B.5.4.2.

9.5.5.1.4 Protection against PS1 interruption

Reference: ETS 300 012, subclause 7.1.1 and ETS 300 012, annex C.

Requirement: Locally powered TEs with a connection detector shall not assume disconnection (transition from any of the states F2 to F8 to state F1.1) until the voltage of the interface has remained below 24 V for at least 500 ms.

Test: The test shall be conducted according to annex B, subclause B.5.4.3.

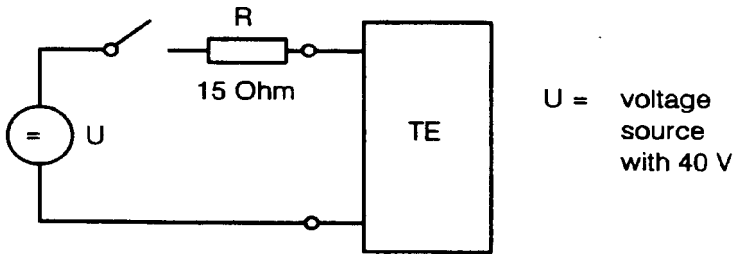


Figure 9.10: Test circuit to figure 9.11

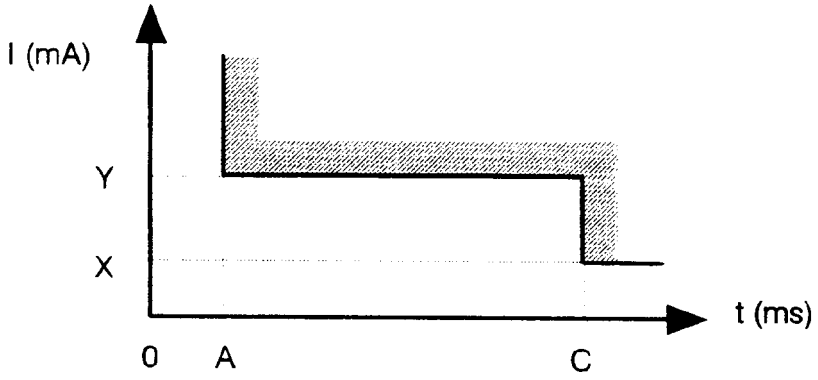
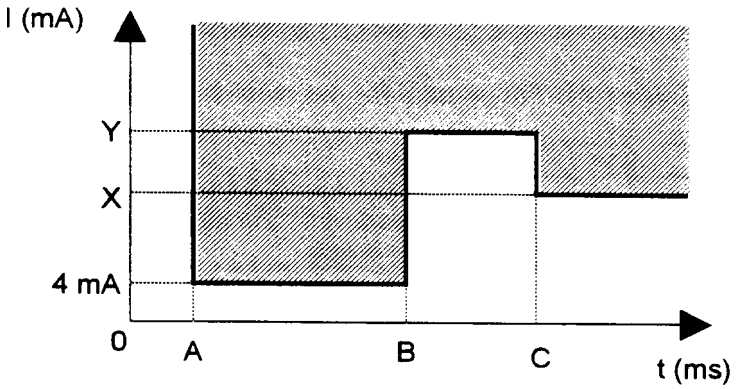


Figure 9.11: Current/time limitation for TEs



A = 5µs
5µs ≤ B≤ 900 ms
C = B + 100 ms
X, Y: see tables 9.11 and 9.12 of this TBR

Figure 9.12: Alternative current/time limitation for TEs

9.5.5.2 Other TE requirements

9.5.5.2.1 Minimum TE start up current

Reference: ETS 300 012, subclause 7.1.3.1.

Requirement: A TE designed to operate in restricted power mode shall be able to reach the operational condition. In order to check the operational condition INFO 2 is fed permanently at the input of the TE. Operational condition is considered to be reached when the TE starts to send INFO 3. This shall occur when connected to the test circuit given in figure 9.13, using the parameters given in table 9.13.

A TE designed to operate in normal power mode shall be able to reach operational condition. In order to check the operational condition INFO 2 is fed permanently at the input of the TE. Operational condition is considered to be reached when the TE starts to send INFO 3. This shall occur when connected to the test circuit given in figure 9.13, using the parameters given in table 9.14.

The test shall be performed with the parameters given in table 9.13 and table 9.14 for the restricted and the normal mode respectively, if applicable. Before starting each test, capacitor C2 shall be discharged and switch S shall be closed.

The switch is then opened to allow the TE to power up.

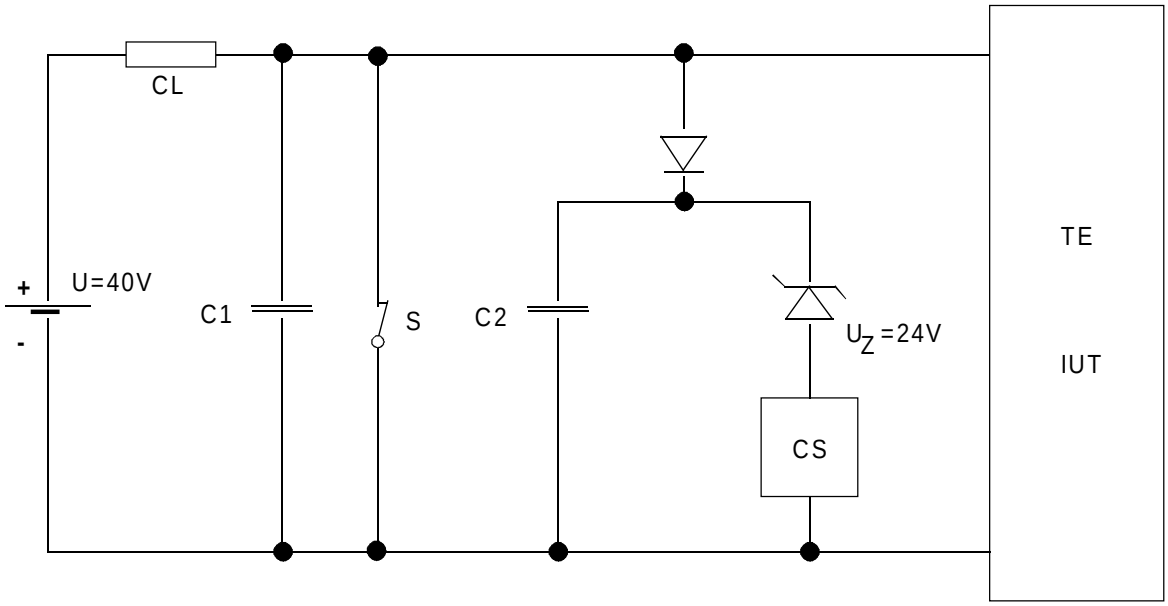
Test: The test shall be conducted according to annex B, subclause B.5.4.4.

Table 9.13: Parameters for restricted mode

Test a	CL = 9 mA	CS = 0 mA
	C1 = 0 µF	C2 = 0 µF
Test b	CL = 11 mA	CS = 0 mA
	C1 = 300 µF	C2 = 0 µF

Table 9.14: Parameters for normal mode

Test a	CL = 72 mA	CS = 45 mA
	C1 = 0 µF	C2 = 300 µF
Test b	CL = 72 mA	CS = 45 mA
	C1 = 300 µF	C2 = 300 µF



U_Z: zener voltage

CS: Current sink

CL: Current limitation

Figure 9.13: Test principle for power start up test for TE

9.5.5.2.2 Protection against short term interruptions

Reference: ETS 300 012, subclause 7.1.3.2.

Requirement: A TE shall not lose an on-going communication when the provision of power in normal or restricted power mode is interrupted for less than, or equal to, 5 ms.

Test: The test shall be conducted according to annex B, subclause B.5.4.5.

9.5.5.2.3 Behaviour at the switch-over

Reference: ETS 300 012, subclause 7.1.3.3.

Requirement: A designated TE being in normal mode may change to the restricted mode condition including power consumption limitation immediately after detection of an interruption of power (in order to protect an on-going communication by reducing its power consumption).

When the change from normal mode with 32 V to the restricted mode occurs, the designated TE shall not lose an established call when the power source for the restricted mode provides an open circuit voltage of 40 V with a limited current of 11 mA. The TE shall be able to reach the steady state which allows the power source to leave the current limiting condition.

A designated and activated TE being in restricted mode and detecting transition to normal mode shall not change its power consumption limit (380 mW) to 1 W before 500 ms after detection of the reversed polarity.

Test: The test shall be conducted according to annex B, subclause B.5.4.6.

9.5.5.3 Current unbalance

9.5.5.3.1 DC unbalance of power sink 1

Reference: ETS 300 012, subclause 7.2.1.2.

Requirement: The direct current unbalance (X) of the power sink 1 shall be less than 3 % of the current I (I_1+I_2) flowing through both phantom pairs.

Conformance shall be demonstrated with a test circuit as shown in figure 9.14.

The resistors R (2 Ω) represent the TE cord equivalent. When the TE under test is not provided with a cord, in order not to influence the results, a cord having a maximum resistance of 0,2 Ω per conductor shall be used.

Test: The test shall be conducted according to annex B, subclause B.5.4.7.

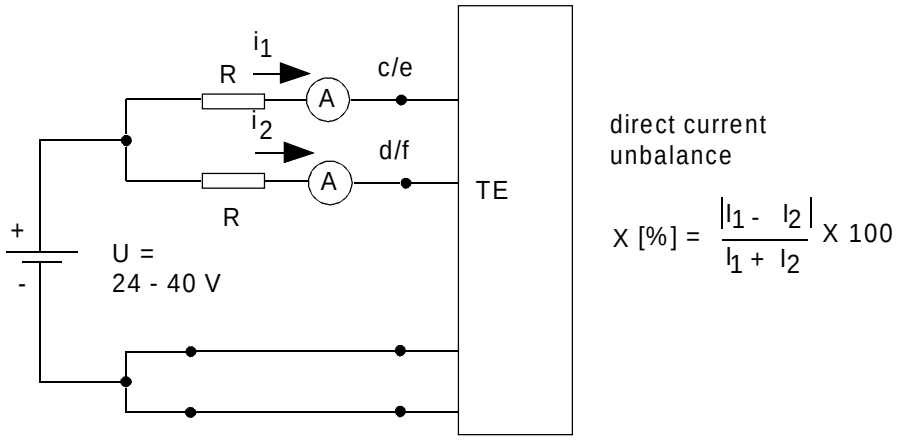


Figure 9.14: Test circuit for power sink 1 DC unbalance measurement

9.5.5.3.2 Current unbalance in a pair

Reference: ETS 300 012, subclause 7.2.2.

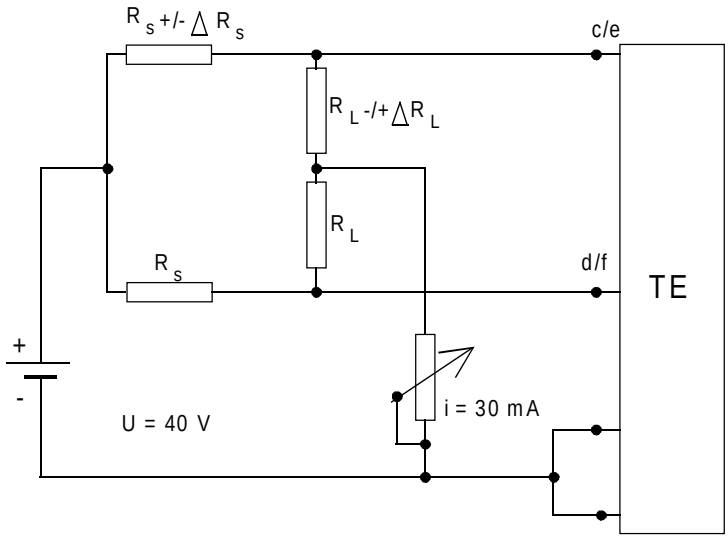
Requirement: A TE shall meet the specified electrical characteristics when an external current unbalance of X = 3 % is applied to its transformer.

Conformance shall be demonstrated with the test configuration as given in figure 9.15.

The impedance of the receiver and transmitter shall exceed the impedance indicated by the template in figure 9.4 in the frequency range of 2 kHz to 20 kHz.

NOTE: Wiring with different resistance unbalance (e.g. the use of existing wiring) may impose constraints on the application of the interface (i.e. limitation of the maximum number of Watts available from PS1 via the interface).

Test: The test shall be conducted according to annex B, subclause B.5.4.8.



$R_s = 6\,\Omega$	$\Delta R_s = 360\ m\Omega$
$R_L = 5\Omega$	$\Delta R_L = 300\ m\Omega$

$$X = \frac{\Delta R_s}{2 R_s} = \frac{\Delta R_L}{2 R_L}$$

Figure 9.15: Test circuit for applied current unbalance

10 Layer 2 requirements

The following clauses contain elements of procedure that are expressed in the form of definitions. These elements of procedure do not form requirements in their own right and, therefore, do not have associated conformance tests. However, these elements are used as components for procedures that are requirements. To ensure that the requirements are satisfied, it is necessary for a TE to implement these elements of procedure in the manner specified within the associated definition. The tests for requirements implicitly test the elements of procedure.

10.1 Frame structure for peer-to-peer communication

10.1.1 General

Reference: ETS 300 125, Part 2, subclause 2.1.

NOTE: All data link layer peer-to-peer exchanges are in frames conforming to one of the formats shown in figure 10.1. Two format types are shown in the figure: format A for frames where there is no information field and format B for frames containing an information field.

Format A

8	7	6	5	4	3	2	1	
Flag								Octet 1
0	1	1	1	1	1	1	0	
Address (high order octet)								2
Address (low order octet)								3
Control (note 2)								4
Control (note 2)								5
FCS (first octet)								N-2
FCS (second octet)								N-1
Flag								N
0	1	1	1	1	1	1	0	

Format B

8	7	6	5	4	3	2	1	
Flag								Octet 1
0	1	1	1	1	1	1	0	
Address (high order octet)								2
Address (low order octet)								3
Control (notes 1 & 2)								4
Control (notes 1 & 2)								5
Information								
FCS (first octet)								N-2
FCS (second octet)								N-1
Flag								N
0	1	1	1	1	1	1	0	

NOTE 1: For unacknowledged operation format B applies and one octet control field is used.

NOTE 2: For multiple frame operation frames with sequence numbers contain a two octet control field and frames without sequence numbers contain a one octet control field. Connection management information transfer frames contain a one octet control field.

Figure 10.1: Frame formats

10.1.2 Flag sequence

Reference: ETS 300 125, Part 2, subclause 2.2.

Definition: All frames start and end with the flag sequence consisting of one 0 bit followed by six contiguous 1 bits and one 0 bit. The flag preceding the address field is defined as the opening flag. The flag following the Frame Check Sequence (FCS) field is defined as the closing flag. The closing flag may also serve as the opening flag of the next frame.

10.1.3 Address field

Reference: ETS 300 125, Part 2, subclause 2.3.

Definition: The address field consists of two octets as illustrated in figure 10.1. The address field identifies the intended receiver of a command frame and the transmitter of a response frame.

The format of the address field is defined in subclause 10.2.2.

10.1.4 Control field

Reference: ETS 300 125, Part 2, subclause 2.4.

Definition: The control field consists of one or two octets. Figure 10.1 illustrates the two frame formats (A and B), each with a control field of one or two octets, depending upon the type of operation being used.

The format of the control field is defined in subclause 10.2.4.

10.1.5 Information field

Reference: ETS 300 125, Part 2, subclause 2.5.

Definition: The information field of a frame, when present, follows the control field (see subclause 10.1.4 and table 10.1) and precedes the FCS (see subclause 10.1.7). The contents of the information field consists of an integer number of octets.

The maximum number of octets in the information field is defined in subclause 10.10.3.

10.1.6 Transparency

Reference: ETS 300 125, Part 2, subclause 2.6.

Definition: Prior to transmission over the D-channel a 0 bit is inserted after all sequences of five contiguous 1 bits (including the last five bits of the FCS) to ensure that a flag or an abort sequence is not simulated within the frame. The frame contents between the opening and closing flag sequences are examined on reception of a frame and any 0 bit which directly follows five contiguous 1 bits is discarded.

10.1.7 Frame Check Sequence (FCS) field

Reference: ETS 300 125, Part 2, subclause 2.7.

Definition: The FCS field is a sixteen-bit sequence. It is the ones complement of the sum (modulo 2) of:

a) the remainder of (x raised to k power) $(x^{15}+x^{14}+x^{13}+x^{12}+x^{11}+x^{10}+x^{9}+x^{8}+x^{7}+x^{6}+x^{5}+x^{4}+x^{3}+x^{2}+x^{1}+1)$ divided (modulo 2) by the generator polynomial $x^{16}+x^{12}+x^{5}+1$, where k is the number of bits in the frame existing between, but not including, the final bit of the opening flag and the first bit of the FCS, excluding bits inserted for transparency; and

b) the remainder of the division (modulo 2) by the generator polynomial $x^{16}+x^{12}+x^{5}+1$, of the product of x^{16} by the content of the frame existing between, but not including, the final bit of the opening flag and the first bit of the FCS, excluding bits inserted for transparency.

As a typical implementation at the transmitter, the initial content of the register of the device computing the remainder of the division is preset to all 1s and is then modified by division by the generator polynomial (as described above) on the address, control, and information fields; the 1s complement of the resulting remainder is transmitted as the sixteen-bit FCS sequence.

As a typical implementation at the receiver, the initial content of the register of the device computing the remainder is preset to all 1s. The final remainder after multiplication by x^{16} and then division (modulo 2) by

the generator polynomial $x^{16}+x^{12}+x^5+1$ of the serial incoming protected bits and the FCS, is "0001 1101 0000 1111" (x^{15} through x^0, respectively) in the absence of transmission errors.

10.1.8 Format convention

10.1.8.1 Numbering convention

Reference: ETS 300 125, Part 2, subclause 2.8.1.

Definition: The basic convention used in the Layer 2 requirements of this TBR is illustrated in figure 10.2. The bits are grouped into octets. The bits of an octet are shown horizontally and are numbered from 1 to 8. Multiple octets are shown vertically and are numbered from 1 to n.

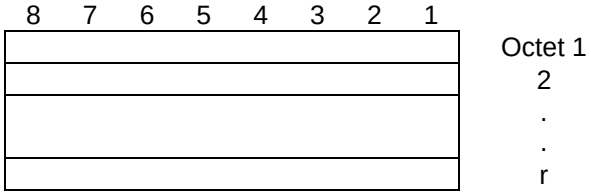


Figure 10.2: Format convention

10.1.8.2 Order of bit transmission

Reference: ETS 300 125, Part 2, subclause 2.8.2.

Definition: The octets are transmitted in ascending numerical order; inside an octet bit 1 is the first bit to be transmitted.

10.1.8.3 Field mapping convention

Reference: ETS 300 125, Part 2, subclause 2.8.3.

Definition: When a field is contained within a single octet, the lowest bit number of the field represents the lowest order value.

When a field spans more than one octet, the order of bit values within each octet progressively decreases as the octet number increases. The lowest bit number associated with the field represents the lowest order value.

For example, a bit number can be identified as a couple (o,b) where o is the octet number and b is the relative bit number within the octet. Figure 10.3 illustrates a field that spans from bit (1,3) to bit (2,7). The high order bit of the field is mapped on bit (1,3) and the low order bit is mapped on bit (2,7).

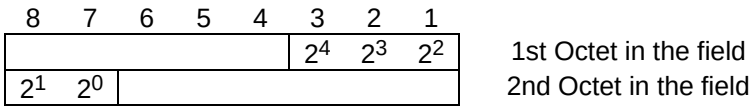


Figure 10.3: Field mapping convention

An exception to the preceding field mapping convention is the data link layer FCS field, which spans two octets. In this case, bit 1 of the first octet is the high order bit and bit 8 of the second octet is the low order bit (see figure 10.4).

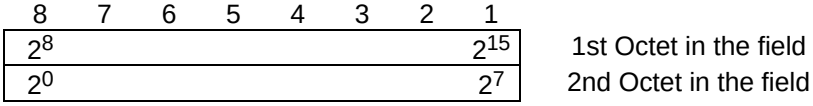


Figure 10.4: FCS mapping convention

10.1.9 Invalid or incompatible frames

Reference: ETS 300 125, Part 2, subclause 2.9.

Definition: An invalid or incompatible frame is a frame which:

a) is not properly bounded by two flags; or

b) contains a FCS error; or

c) contains a single octet address field; or

d) contains a SAPI (see subclause 10.2.3.3) which is not supported by the receiver; or

e) contains a TEI not assigned to the TE.

10.2 Elements of procedures and formats of fields for data link layer peer-to-peer communication

10.2.1 General

Reference: ETS 300 125, Part 2, subclause 3.1.

NOTE: The elements of procedures define the commands and responses that are used on the data link connections carried on the D-channel.

10.2.2 Address field format

Reference: ETS 300 125, Part 2, subclause 3.2.

Definition: The address field format shown in figure 10.5 contains the address field extension bits, a command/response indication bit, a data link layer SAPI subfield, and a TEI subfield.

8	7	6	5	4	3	2	1	
SAPI						C/R	EA 0	Octet 2
TEI							EA 1	3

EA = Address field Extension bit;
C/R = Command/Response field bit;
SAPI = Service Access Point Identifier;
TEI = Terminal Endpoint identifier.

Figure 10.5: Address field format

10.2.3 Address field variables

10.2.3.1 Address field extension bit (EA)

Reference: ETS 300 125, Part 2, subclause 3.3.1.

Definition: The address field range is extended by reserving the first transmitted bit of the address field octets to indicate the final octet of the address field. The presence of a 1 in the first bit of an address field octet signals that it is the final octet of the address field. The double octet address field for Link Access Procedure on the D-channel (LAPD) operation has bit 1 of the first octet set to a 0 and bit 1 of the second octet set to 1.

10.2.3.2 Command/Response field bit (C/R)

Reference: ETS 300 125, Part 2, subclause 3.3.2.

Definition: The C/R bit identifies a frame as either a command or a response. The TE sends commands with the C/R bit set to 0, and responses with the C/R bit set to 1. The NT does the opposite; i.e. commands are sent with C/R set to 1, and responses are sent with C/R set to 0. The combinations for the NT and TE are shown in table 10.1.

Table 10.1: C/R field bit usage

Command/Response	Direction			C/R value
Command	NT	→	TE	1
	TE	→	NT	0
Response	NT	→	TE	0
	TE	→	NT	1

In conformance with High level Data Link Control (HDLC) rules, commands use the address of the peer data link layer entity while responses use the address of the own data link layer entity. According to these rules, both peer entities on a point-to-point data link connection use the same Data Link Connection Identifier (DLCI) composed of a SAPI-TEI where SAPI and TEI conform to the definitions contained in subclauses 10.2.3.3 and 10.2.3.4.

10.2.3.3 Service Access Point Identifier (SAPI)

Reference: ETS 300 125, Part 2, subclause 3.3.3.

Definition: The SAPI identifies a point at which data link layer services are provided by a data link layer entity to a Layer 3 or management entity. Consequently, the SAPI specifies a data link layer entity that should process a data link layer frame and also a Layer 3 or management entity which is to receive information carried by the data link layer frame. The SAPI allows 64 SAPs to be specified, where bit 3 of the address field octet containing the SAPI is the least significant binary digit and bit 8 is the most significant. The SAPI values are allocated as shown in table 10.2.

Table 10.2: SAPI values

SAPI value	Related Layer 3 or layer management entity
0	Call control procedures
63	Layer 2 management procedures
All others	Reserved for future standardization

10.2.3.4 Terminal Endpoint Identifier (TEI)

Reference: ETS 300 125, Part 2, subclause 3.3.4.

Definition: The TEI for a point-to-point data link connection is associated with a single TE. A TE may contain one or more point-to-point TEIs. The TEI for a broadcast data link connection is associated with all TE data link layer entities containing the same SAPI. The TEI subfield allows 128 values where bit 2 of the address field octet containing the TEI is the least significant binary digit and bit 8 is the most significant binary digit. The following conventions apply in the assignment of these values.

10.2.3.4.1 TEI for broadcast data link connection

Reference: ETS 300 125, Part 2, subclause 3.3.4.1

Definition: The TEI subfield bit pattern 111 1111 (=127) is defined as the group TEI. The group TEI is assigned to the broadcast data link connection associated with the addressed SAP.

10.2.3.4.2 TEI for point-to-point data link connection

Reference: ETS 300 125, Part 2, subclause 3.3.4.2.

Definition: The remaining TEI values are used for the point-to-point data link connections associated with the addressed SAP. The range of TEI values are allocated as shown in table 10.3.

Table 10.3: TEI values

TEI value	User type
0 - 63	Non-automatic TEI assignment TE
64 - 126	Automatic TEI assignment TE

Non-automatic TEI values are selected by the user, and their allocation is the responsibility of the user.

Automatic TEI values are selected by the network, and their allocation is the responsibility of the network.

10.2.4 Control field formats

Reference: ETS 300 125, Part 2, subclause 3.4.

Definition: The control field identifies the type of frame, which can either be a command or response. The control field contains sequence numbers, where applicable.

Three types of control field formats are defined: numbered information transfer (I format), supervisory functions (S format), and unnumbered information transfers and control functions (U format). The control field formats are shown in table 10.4.

Table 10.4: Control field formats

Control field bits (modulo 128)	8	7	6	5	4	3	2	1	
I format	N(S)							O	Octet 4
	N(R)							P	5
S format	X	X	X	X	S	S	0	1	Octet 4
	N(R)							P/F	5
U format	M	M	M	P/F	M	M	1	1	Octet 4

N(S)	Transmitter send sequence number
M	Modifier function bit
N(R)	Transmitter receive sequence number
P/F	Poll bit when issued as a command, final bit when issued as a response
S	Supervisory function bit
X	Reserved and set to 0

10.2.4.1 Information transfer (I) format

Reference: ETS 300 125, Part 2, subclause 3.4.1.

Definition: The I format is used to perform an information transfer between Layer 3 entities. The functions of N(S), N(R) and P (defined in subclause 10.2.5) are independent; that is, each I-frame has an N(S) sequence number, an N(R) sequence number which may or may not acknowledge additional I-frames received by the data link layer entity, and a P bit that may be set to 0 or 1.

10.2.4.2 Supervisory (S) format

Reference: ETS 300 125, Part 2, subclause 3.4.2.

Definition: The S format is used to perform data link supervisory control functions such as; acknowledge I-frames, request retransmission of I-frames, and request a temporary suspension of transmission of I-frames. The functions of N(R) and P/F are independent, that is, each supervisory frame has an N(R) sequence number which may or may not acknowledge additional I-frames received by the data link layer entity, and a P/F bit that may be set to 0 or 1.

10.2.4.3 Unnumbered (U) format

Reference: ETS 300 125, Part 2, subclause 3.4.3.

Definition: The U format is used to provide additional data link control functions and unnumbered information transfers for unacknowledged information transfer. This format does not contain sequence numbers. It does include a P/F bit that may be set to 0 or 1.

10.2.5 Control field parameters and associated state variables

10.2.5.1 Poll/Final bit

Reference: ETS 300 125, Part 2, subclause 3.5.1.

Definition: All frames contain the Poll/Final (P/F) bit. The P/F bit serves a function in both command frames and response frames. In command frames the P/F bit is referred to as the P bit. In response frames it is referred to as the F bit. The P bit set to 1 is used by a data link layer entity to solicit (poll) a response frame from the peer data link layer entity. The F bit set to 1 is used by a data link layer entity to indicate the response frame transmitted as a result of a soliciting (poll) command.

10.2.5.2 Multiple frame operation - variables and sequence numbers

10.2.5.2.1 Modulus

Reference: ETS 300 125, Part 2, subclause 3.5.2.1.

Definition: Each I-frame is sequentially numbered and may have the value 0 through n minus 1 (where n is the modulus of the sequence numbers). The modulus equals 128 and the sequence numbers cycle through the entire range, 0 through 127.

NOTE: All arithmetic operations on state variables and sequence numbers contained in this TBR are affected by the modulus operation.

10.2.5.2.2 Send state variable V(S)

Reference: ETS 300 125, Part 2, subclause 3.5.2.2.

Definition: Each point-to-point data link connection endpoint has an associated V(S) when using I-frame commands. V(S) denotes the sequence number of the next I-frame to be transmitted. V(S) can take on the value 0 through n minus 1. The value of V(S) is incremented by 1 with each successive I-frame transmission, and shall not exceed V(A) by more that the maximum number of outstanding I-frames, k (see subclause 10.10.5). The value of k may be in the range $1 \leq k \leq 127$.

10.2.5.2.3 Acknowledge state variable V(A)

Reference: ETS 300 125, Part 2, subclause 3.5.2.3.

Definition: Each point-to-point data link connection endpoint has an associated V(A) when using I-frame commands and supervisory frame commands/responses. V(A) identifies the last frame that has been acknowledged by its peer (V(A)-1 equals the N(S) of the last acknowledged I-frame). V(A) can take on the value 0 through n minus 1. The value of the acknowledge state variable is updated by the valid N(R) values received from its peer (see subclause 10.2.5.2.6). A valid N(R) value is one that is in the range $V(A) \leq N(R) \leq V(S)$.

10.2.5.2.4 Send sequence number N(S)

Reference: ETS 300 125, Part 2, subclause 3.5.2.4.

Definition: Only I-frames contain N(S), the send sequence number of transmitted I-frames. At the time that an in-sequence I-frame is designated for transmission, the value of N(S) is set equal to V(S).

10.2.5.2.5 Receive state variable V(R)

Reference: ETS 300 125, Part 2, subclause 3.5.2.5.

Definition: Each point-to-point data link connection endpoint has an associated V(R) when using I-frame commands and supervisory frame command/responses. V(R) denotes the sequence number of the next in-sequence I-frame expected to be received. V(R) can take on the value 0 through n minus 1. The value of V(R) is incremented by one with the receipt of an error free, in-sequence I-frame whose N(S) equals V(R).

10.2.5.2.6 Receive sequence number N(R)

Reference: ETS 300 125, Part 2, subclause 3.5.2.6.

Definition: All I-frames and supervisory frames contain N(R), the expected send sequence number of the next received I-frame. At the time that a frame of the above types is designated for transmission, the value of N(R) is set equal to V(R). N(R) indicates that the data link layer entity transmitting the N(R) has correctly received all I-frames numbered up to and including N(R) - 1.

10.2.6 Frame types

10.2.6.1 Commands and responses

Reference: ETS 300 125, Part 2, subclause 3.6.1.

Definition: The following commands and responses are used by either the user or the network data link layer entities and are represented in table 10.5. Each data link connection supports the full set of commands and responses for each application implemented. The frame types associated with each of the two applications are identified in table 10.5.

For purposes of the LAPD procedures in each application, those frame types not identified in table 10.5 are identified as undefined command and/or response control fields.

Table 10.5: Commands and responses - modulo 128

				Encoding								
Application	**Format**	**Commands**	**Responses**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Octet**
Unacknowledged and Multiple Frame acknowledged Information Transfer	Information transfer	I (Information)		N(S)							0	4
				N(R)							P	5
	Supervisory	RR (Receiver Ready)	RR (Receiver Ready)	0	0	0	0	0	0	0	1	4
				N(R)							P/F	5
		RNR (Receiver Not Ready)	RNR (Receiver Not Ready)	0	0	0	0	0	1	0	1	4
				N(R)							P/F	5
		REJ (reject)	REJ (reject)	0	0	0	0	1	0	0	1	4
				N(R)							P/F	5
	Unnumbered	SABME (Set Asynchronous Balanced Mode Extended)		0	1	1	P	1	1	1	1	4
			DM (Disconnected Mode)	0	0	0	F	1	1	1	1	4
		UI (Unnumbered Information)		0	0	0	P	0	0	1	1	4
		DISC (Disconnect)		0	1	0	P	0	0	1	1	4
			UA (Unnumbered Acknowledgement))	0	1	1	F	0	0	1	1	4

The commands and responses in table 10.5 are defined in subclauses 10.2.6.2 to 10.2.6.10.

10.2.6.2 Information (I) command

Reference: ETS 300 125, Part 2, subclause 3.6.2.

Definition: The function of the Information (I) command is to transfer, across a data link connection, sequentially numbered frames containing information fields provided by Layer 3. This command is used in the multiple frame operation on point-to-point data link connections.

10.2.6.3 Set Asynchronous Balanced Mode Extended (SABME) command

Reference: ETS 300 125, Part 2, subclause 3.6.3.

Definition: The SABME unnumbered command is used to place the addressed TE or NT into modulo 128 multiple frame acknowledged operation.

No information field is contained within the SABME command.

10.2.6.4 DISConnect (DISC) command

Reference: ETS 300 125, Part 2, subclause 3.6.4.

Definition: The DISC unnumbered command is used to terminate the multiple frame operation.

No information field is contained within the DISC command.

10.2.6.5 Unnumbered Information (UI) command

Reference: ETS 300 125, Part 2, subclause 3.6.5.

Definition: When a Layer 3 or management entity requests unacknowledged information transfer, the UI unnumbered command is used to send information to its peer without affecting data link layer variables. UI

command frames do not carry a sequence number and therefore, the UI-frame may be lost without notification.

10.2.6.6 Receive Ready (RR) command/response

Reference: ETS 300 125, Part 2, subclause 3.6.6.

Definition: The RR supervisory frame is used by a data link layer entity to:

a) indicate it is ready to receive an I-frame;

b) acknowledge previously received I-frames numbered up to and including N(R)-1 (as defined in subclause 10.2.5); and

c) clear a busy condition that was indicated by the earlier transmission of an RNR frame by that same data link layer entity.

In addition to indicating the status of a data link layer entity, the RR command with the P bit set to 1 may be used by the data link layer entity to ask for the status of its peer data link layer entity.

10.2.6.7 REJect (REJ) command/response

Reference: ETS 300 125, Part 2, subclause 3.6.7.

Definition: The REJ supervisory frame is used by a data link layer entity to request retransmission of I-frames starting with the frame numbered N(R). The value of N(R) in the REJ frame acknowledges I-frames numbered up to and including N(R)-1.

The transmission of an REJ frame also indicates the clearance of any busy condition within the sending data link layer entity that was reported by the earlier transmission of an RNR frame by that same data link layer entity.

In addition to indicating the status of a data link layer entity, the REJ command with the P bit set to 1 may be used by the data link layer entity to ask for the status of its peer data link layer entity.

10.2.6.8 Receive Not Ready (RNR) command/response

Reference: ETS 300 125, Part 2, subclause 3.6.8.

Definition: The RNR supervisory frame is used by a data link layer entity to indicate a busy condition; that is, a temporary inability to accept additional incoming I-frames. The value of N(R) in the RNR frame acknowledges I-frames numbered up to and including N(R)-1.

In addition to indicating the status of a data link layer entity, the RNR command with the P bit set to 1 may be used by the data link layer entity to ask for the status of its peer data link layer entity.

10.2.6.9 Unnumbered Acknowledgement (UA) response

Reference: ETS 300 125, Part 2, subclause 3.6.9.

Definition: The UA unnumbered response is used by a data link layer entity to acknowledge the receipt and acceptance of the mode-setting commands (SABME or DISC). Received mode-setting commands are not processed until the UA response is transmitted. No information field is contained within the UA response. The transmission of the UA response indicates the clearance of any busy condition that was reported by the earlier transmission of an RNR frame by that same data link layer entity.

10.2.6.10 Disconnected Mode (DM) response

Reference: ETS 300 125, Part 2, subclause 3.6.10.

Definition: The DM unnumbered response is used by a data link layer entity to report to its peer that the data link layer is in a state such that multiple frame operation cannot be performed. No information field is contained within the DM response.

10.3 Provision of point-to-point signalling connections

Reference: ETS 300 125, Part 2, annex A.

Requirement: If a point-to-point configuration exists and the TE can only use a single TEI value for all implemented SAPIs then:

- layer 2 management procedures defined in subclause 10.5 shall not be used; and

- the value 0 shall be used for the TEI.

Test: No direct testing shall be required. The first item is covered by appropriate test suite selection. The second item is covered by remaining Layer 2 testing using the appropriate Layer 2 test suite parameter.

10.4 Procedures for unacknowledged information transfer

10.4.1 Transmission of unacknowledged information

Reference: ETS 300 125, Part 2 subclause 5.2.2.

Requirement: Unacknowledged information shall be passed to the data link layer by the management entity using the primitive MDL-UNIT DATA-REQUEST. The message unit shall be transmitted in a UI command frame.

For broadcast operation, the TEI value in the UI command address field shall be set to 127 (binary 111 1111, the group value).

The P bit shall be set to 0.

In the case of persistent Layer 1 deactivation, the data link layer is informed by the receipt of the PH-DEACTIVATE INDICATION primitive. Upon receipt of this primitive, all UI transmission queues shall be discarded.

Test: The test shall be conducted according to annex C, TTCN test case TC14001 and annex B subclause B.4.4, TTCN test cases CPF4PHDI_T3exp, CPF5PHDI_I0T3, CPF5PHDI_T3expa, CPF5PHDI_T3expb, CPF6PHDI_T3exp, CPF6PHDI_I0T3, CPF6PHDI_I0, CPF6PHARa, CPF7PHDI_I0, CPF8PHDI_T3exp, CPF8PHDI_I0T3, CPF8PHDI_I0b and CPF8PHARa.

10.4.2 Receipt of unacknowledged information

Reference: ETS 300 125, Part 2, subclause 5.2.3.

Requirement: On receipt of a UI command frame with a SAPI and TEI which are supported by the receiver, the contents of the information field shall be passed to the Layer 3 or management entity using the data link layer to Layer 3 primitive DL-UNIT DATA-INDICATION or the data link layer to management primitive MDL-UNIT DATA-INDICATION, respectively. Otherwise, the UI command frame shall be discarded.

Test: The test shall be conducted according to annex C, TTCN test cases TC11013, TC14001, and test preamble PR37004.

10.5 Terminal Endpoint Identifier (TEI) management procedures

10.5.1 General

Reference: ETS 300 125, Part 2, subclause 5.3.1.

TEI management is based on the following procedural means:

- TEI assignment procedures (see subclause 10.5.2);
- TEI check procedures (see subclause 10.5.3);
- TEI removal procedures (see subclause 10.5.4);
- optional TE initiated TEI identity verify procedures (see subclause 10.5.5).

A TE in the TEI-*unassigned* state shall use the TEI assignment procedures to enter the TEI-*assigned* state. Conceptually, these procedures exist in the layer management entity.

NOTE: The layer management entity at the NT is referred to as the Assignment Source Point (ASP) in this TBR.

The purpose of these procedures is to:

a) allow automatic TEI equipment to request the network to assign a TEI value that the data link layer entities within the requesting TE can use in their subsequent communications;

b) allow a network to remove a previously assigned TEI value from specific or all TEs;

c) allow a network to check:

- whether or not a TEI value is in use; or
- whether multiple-TEI assignment has occurred;

d) allow a TE the option to request that the network invoke TEI check procedures.

The initiation of TEI assignment procedures occurs on the receipt of a request for establishment or unacknowledged information transfer while in the TEI-unassigned state.

Requirement: The data link layer entity transmits management entity messages in UI command frames. The SAPI value shall be 63. The TEI value shall be 127.

10.5.2 TEI assignment procedure

Reference: ETS 300 125, Part 2, subclause 5.3.2.

Requirement: If the TE is of the non-automatic TEI assignment category, the TE layer management entity shall deliver the TEI value to be used to the data link layer entity(s) via the MDL-ASSIGN-REQUEST primitive.

If the TE is of the automatic TEI assignment category, upon initiation of the TEI assignment procedure, the TE layer management entity shall transmit to its peer an ID request message.

The coding of the Ai shall be Ai = Group address TEI =127. This Ai value requests the ASP to assign any TEI value.

Timer T202 shall be started.

The TE layer management entity receiving an identity assigned message shall compare the TEI value in the Ai field to its own TEI value(s) (if any) to see if it is already allocated, if an identity request message is outstanding.

If there is a match, the management entity shall either:

- initiate TEI removal; or

- initiate the TEI identity verify procedure.

If there is no match, the TE layer management entity receiving an identity assigned message shall:

- compare the Ri value with any outstanding identity request message and if it matches, consider the TEI value assigned to the TE, discard the value of Ri, inform the TE data link layer entities by means of the MDL-ASSIGN-REQUEST primitive and stop timer T202;

- compare the Ri value with any outstanding identity request message and if there is no match, do nothing;

- if there is no outstanding identity request message, do nothing.

When the data link layer receives the MDL-ASSIGN-REQUEST primitive from the layer management entity, the data link layer entity shall:

- enter the TEI-assigned state; and

- proceed with data link establishment procedures if a DL-ESTABLISH-REQUEST primitive is outstanding.

Test: The test shall be conducted according to annex C, TTCN test case TC13014 and test preamble PR37004, and annex B, subclause B.4.4, TTCN test cases CPF2PHAI, CPF3PHAI, CPF4PHAI, CPF4Tlayer2, CPF5PHAI, CPF6PHAIa, CPF6PHAIb, CPF6PHARb, CPF8PHAIb, CPF8PHAIc and CPF8PHARb.

10.5.2.1 Expiry of timer T202

Reference: ETS 300 125, Part 2, subclause 5.3.2.1.

Requirement: If the user receives either no response or an identity denied message to its identity request message, then on expiry of timer T202, the timer shall be restarted and the identity request message shall be retransmitted with a new value of Ri.

After N202 unsuccessful attempts to acquire a TEI value, the layer management entity shall inform the data link layer entity using the MDL-ERROR-RESPONSE primitive. The data link layer entity receiving the MDL-ERROR-RESPONSE primitive shall respond with the DL-RELEASE-INDICATION primitive if a request for establishment had previously occurred, and shall discard all unserviced DL-UNIT DATA-REQUEST primitives.

Test: The test shall be conducted according to annex C, TTCN test cases TC13008 and TC13010.

10.5.3 TEI check procedure

Reference: Reference: ETS 300 125, Part 2, subclause 5.3.3.2.

Requirement: If the TE has been assigned the TEI value specified in an identity check request message received, it shall respond by transmitting one or more identity check response messages.

Test: The test shall be conducted according to annex C, TTCN test cases TC14001 and TC14002.

10.5.4 TEI removal procedure

10.5.4.1 Action taken by the data link layer entity receiving the MDL-REMOVE-REQUEST primitive

Reference: ETS 300 125, Part 2, subclause 5.3.4.1.

Requirement: A data link layer entity receiving an MDL-REMOVE-REQUEST primitive shall issue a DL-RELEASE-INDICATION primitive.

The data link layer entity shall then enter the TEI-*unassigned* state after discarding the contents of the I queue.

Test: The test shall be conducted according to annex C, TTCN test preamble PR31401.

10.5.4.2 Conditions for TEI removal

Reference: ETS 300 125, Part 2, subclause 5.3.4.2.

Requirement: At the TE, automatic TEI values shall be removed by sending an MDL-REMOVE-REQUEST primitive to the data link layer entity under the following conditions:

- on receipt from the ASP of an identity remove message;
- on receipt of an MPH-INFORMATION INDICATION (disconnected) primitive;
- on receipt of an MDL-ERROR-INDICATION primitive indicating that the data link layer entity has assumed possible multiple-assignment of a TEI value, rather than requesting a TEI check procedure by the transmission of an identity verify request message.

Test: The test shall be conducted according to annex C, TTCN test cases TC14021, TC14022 and test preamble PR31401, and annex B, subclause B.4.4, TTCN test cases CPF3MPHIID, CPF4MPHIID, CPF5MPHIID, CPF8MPHIIDa and CPF8MPHIIDb.

10.5.5 TEI identity verify procedure

10.5.5.1 General

Reference: ETS 300 125, Part 2, subclause 5.3.5.1.

Definition: The TEI identity verify procedure allows the TE layer management entity to have the capability to request that the network invoke the identity check procedure for verification of multiple-TEI assignment.

10.5.5.2 Operation of the TEI identity verify procedure

Reference: ETS 300 125, Part 2, subclause 5.3.5.2.

Requirement: The TE shall transmit an identity verify request message.

Timer T202 shall be started.

Test: The test shall be conducted according to annex C, TTCN test case TC14019.

10.5.5.3 Expiry of timer T202

Reference: ETS 300 125, Part 2, subclause 5.3.5.3.

Requirement: If the TE receives no identity check request message with an Ai equal to its TEI or an Ai equal to 127 before the expiry of timer T202, the TE layer management entity shall restart the timer and the TEI identity verify message shall be retransmitted. If no identity check request message is received from the ASP after the second TEI identity verify request message, the TEI shall be removed.

Test: The test shall be conducted according to annex C, TTCN test case TC14019.

10.5.6 Formats and codes

10.5.6.1 General

Reference: ETS 300 125, Part 2, subclause 5.3.6.1.

Definition: All messages used for TEI management procedures are carried in the information field of UI command frames with a SAPI value set to 63 (binary 11 1111) and TEI value set to 127 (binary 111 1111).

All messages have the structure shown in figure 10.6.

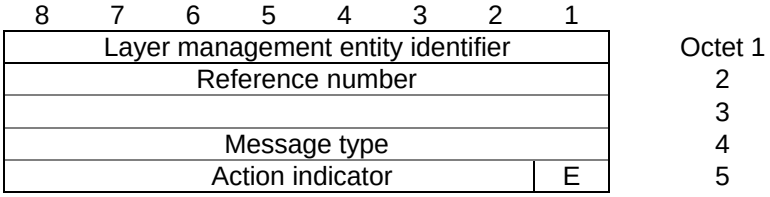


Figure 10.6: Messages used for TEI management procedures

Fields that are not used in a specific message are coded all zeros, and are not processed by either side.

The coding of each field for the various messages is specified in table 10.6.

E is the Action indicator field extension bit (see subclause 10.5.6.5).

Table 10.6: Codes for messages concerning TEI management procedures

Message name	Layer management entity identifier	Reference number Ri	Message type	Action indicator Ai
Identity request (user to network)	0000 1111	0 - 65535	0000 0001	Ai = 127 Any TEI value acceptable
Identity assigned (network to user)	0000 1111	0 - 65535	0000 0010	Ai = 64 - 126 Assigned TEI value
Identity denied (network to user)	0000 1111	0 - 65535	0000 0011	Ai = 64 - 126 denied TEI value Ai = 127 No TEI value available
Identity check request (network to user)	0000 1111	Not used (code 0)	0000 0100	Ai = 127 Check all TEI values Ai = 0 - 126 TEI value to be checked
Identity check response (user to network)	0000 1111	0 - 65535	0000 0101	Ai = 0 - 126 TEI value in use
Identity remove (network to user)	0000 1111	Not used (code 0)	0000 0110	Ai = 127 Request for removal of all TEI value Ai = 0 - 126 TEI value to be removed
Identity verify (user to network)	0000 1111	Not used (code 0)	0000 0111	Ai = 0 - 126 TEI value to be checked

10.5.6.2 Layer management entity identifier

Reference: ETS 300 125, Part 2, subclause 5.3.6.2.

Definition: For TEI administration procedures, the layer management entity identifier octet is 0000 1111. Other values are reserved for further standardization.

10.5.6.3 Reference number (Ri)

Reference: ETS 300 125, Part 2, subclause 5.3.6.3.

Definition: Octets 2 and 3 contain Ri. When used, it can assume any value between 0 and 65 535.

NOTE: Ri should be randomly generated on each occasion that a new value is required. The design of the random number generator should minimize the probability of identical reference numbers being generated by terminals which initiate their TEI assignment procedures simultaneously.

10.5.6.4 Message type

Reference: ETS 300 125, Part 2, subclause 5.3.6.4.

Definition: Octet 4 contains the message type. The purpose of the message type is to identify the function of the message being sent.

10.5.6.5 Action indicator (Ai)

Reference: ETS 300 125, Part 2, subclause 5.3.6.5.

Definition: The Ai field is extended by reserving the first transmitted bit of the Ai field octets to indicate the final octet of the Ai field.

Ai variables in the Ai field are coded as follows:

a) bit 1 is the extension bit and is coded as follows:

- 0 to indicate an extension; and
- 1 to indicate the final octet;

b) bits 2 to 8 contain the Action indicator.

The purpose of the Action indicator is to identify the concerned TEI value(s).

NOTE: The use of the extension mechanism is confined to the identity check response when all of the TEI values in use within a TE are to be reported in a single identity check response upon receipt of an identity check request with an Ai equal to 127 (see subclause 10.5.3.2).

10.6 Procedures for establishment and release of multiple frame operation

10.6.1 Establishment of multiple frame operation

10.6.1.1 General

Reference: ETS 300 125, Part 2, subclause 5.5.1.1.

Requirement: These procedures shall be used to establish multiple frame operation between the network and a designated user entity.

The data link layer entity shall initiate establishment of multiple frame operation on receipt of the DL-ESTABLISH-REQUEST primitive from Layer 3. All frames other than unnumbered frame formats received during the establishment procedures shall be ignored.

Test: The test shall be conducted according to annex C, TTCN test case TC25013 and test preamble PR37004.

10.6.1.2 Establishment procedures

Reference: ETS 300 125, Part 2, subclause 5.5.1.2.

Requirement: A data link layer entity shall initiate a request for the multiple frame operation to be set by transmitting the SABME command. All existing exception conditions shall be cleared, the retransmission counter shall be reset, and timer T200 shall then be started. All mode setting commands shall be transmitted with the P bit set to 1.

NOTE 1: Layer 3 initiated establishment procedures imply the discard of all outstanding DL-DATA-REQUEST primitives and all I-frames in queue.

A data link layer entity receiving an SABME command, if it is able to enter the *multiple-frame-established* state, shall:

- respond with an UA response with the F bit set to the same binary value as the P bit in the received SABME command;
- set V(S), V(R) and V(A) to 0;
- enter the *multiple-frame-established* state and inform Layer 3 using the DL-ESTABLISH-INDICATION primitive;
- clear all existing exception conditions; and
- clear any existing peer receiver busy condition.

Upon reception of the UA response with the F bit set to 1, the originator of the SABME command shall:

- reset timer T200;
- set V(S), V(R), and V(A) to 0; and
- enter the *multiple-frame-established* state and inform Layer 3 using the DL-ESTABLISH CONFIRM primitive.

Upon reception of a DM response with the F bit set to 1, the originator of the SABME command shall indicate this to Layer 3 by means of the DL-RELEASE-INDICATION primitive, and reset timer T200. It shall then enter the TEI-*assigned* state.

NOTE 2: No test is specified in this version of the TBR for the establishment of multiple frame operation by terminals which are not stable in the *TEI-assigned* state because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

NOTE 3: No test is specified in this version of the TBR for the network-initiated establishment of multiple frame operation by terminals which operate according to subclause 10.3 because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

Test: The test shall be conducted according to annex C, TTCN test case TC24004 and TC25002, and annex B, subclause B.4.4, TTCN test cases CPF2PHAI, CPF3PHAI, CPF4PHAI, CPF4Tlayer2, CPF5PHAI, CPF6PHAIa, CPF6PHAIb, CPF6PHARb, CPF8PHAIb, CPF8PHAIc, CPF8PHARb.

10.6.1.3 Procedure on expiry of timer T200

Reference: ETS 300 125, Part 2, subclause 5.5.1.3.

Requirement: If timer T200 expires before the UA or DM response with the F bit set to 1 is received, the data link layer entity shall:

- retransmit the SABME command as above;
- restart timer T200; and
- increment the retransmission counter.

After retransmission of the SABME command N200 times, the data link layer entity shall indicate this to Layer 3 by means of the DL-RELEASE-INDICATION primitive, and enter the TEI-*assigned* state, after discarding all outstanding DL-DATA-REQUEST primitives and all I-frames in queue.

Test: The test shall be conducted according to annex C, TTCN test case TC25005.

10.6.2 Termination of multiple frame operation

Reference: ETS 300 125, Part 2, subclause 5.5.3.2.

Requirement: A data link layer entity receiving a DISC command while in the *multiple-frame-established* or *timer recovery* state shall transmit a UA response with the F bit set to the same binary value as the P bit in the received DISC command. A DL-RELEASE-INDICATION primitive shall be passed to Layer 3, and the TEI-*assigned* state shall be entered.

Test: The test shall be conducted according to annex C, TTCN test case TC27012, and annex B, subclause B.4.4, TTCN test cases CPF4PHDI_T3exp, CPF5PHDI_I0T3, CPF5PHDI_T3expa, CPF5PHDI_T3expb, CPF6PHDI_T3exp, CPF6PHDI_I0T3, CPF6PHDI_I0, CPF6PHARa, CPF7PHDI_I0, CPF8PHDI_T3exp, CPF8PHDI_I0T3, CPF8PHDI_I0b, CPF8PHARa.

10.6.3 Collision of unnumbered commands and responses

10.6.3.1 Identical transmitted and received commands

Reference: ETS 300 125, Part 2, subclause 5.5.5.1.

Requirement: If the transmitted and received unnumbered commands (SABME) are the same, the data link layer entity shall send the UA response within a time less than the limit specified in subclause 10.10.7. The indicated state shall be entered after receiving the UA response. The data link layer entity shall notify Layer 3 by means of the DL-ESTABLISH CONFIRM primitive.

Test: The test shall be conducted according to annex C, TTCN test case TC25007.

10.7 Procedures for information transfer in multiple frame operation

Reference: ETS 300 125, Part 2, subclause 5.6.

The procedures which apply to the transmission of I-frames are defined below.

NOTE: The term "transmission of an I-frame" refers to the delivery of an I-frame by the data link layer to the physical layer.

10.7.1 Transmitting I-frames

Reference: ETS 300 125, Part 2, subclause 5.6.1.

Requirement: Information received by the data link layer entity from Layer 3 by means of a DL-DATA-REQUEST primitive shall be transmitted in an I-frame with the P bit set to 0. The control field parameters

N(S) and N(R) shall be assigned the values V(S) and V(R), respectively. V(S) shall be incremented by 1 at the end of the transmission of the I-frame.

If timer T200 is not running at the time of transmission of an I-frame, it shall be started. If V(S) is equal to V(A) plus k (where k is the maximum number of outstanding I-frames - see subclause 10.10.5), the data link layer entity shall not transmit any new I-frames, but may retransmit an I-frame as a result of the error recovery procedures as described in subclauses 10.7.4 and 10.7.6.

Test: The test shall be conducted according to annex C, TTCN test case TC27003.

10.7.2 Receiving I-frames

Reference: ETS 300 125, Part 2, subclause 5.6.2.

Requirement: Independent of a timer recovery condition, when a data link layer entity is not in an own receiver busy condition and receives a valid I-frame whose N(S) is equal to the current V(R), the data link layer entity shall:

- pass the information field of this frame to Layer 3 using the DL-DATA-INDICATION primitive;

- increment by 1 its V(R), and act as indicated below.

Test: The test shall be conducted according to annex C, TTCN test cases TC27003, TC28012 and TC28406.

10.7.2.1 P bit set to 1

Reference: ETS 300 125, Part 2, subclause 5.6.2.1.

Requirement: If the P bit of the received I-frame was set to 1, the data link layer entity shall respond to its peer in one of the following ways:

- if the data link layer entity receiving the I-frame is still not in an own receiver busy condition, it shall send an RR response with the F bit set to 1;

- if the data link layer entity receiving the I-frame enters the own receiver busy condition upon receipt of the I-frame, it shall send an RNR response frame with the F bit set to 1.

The second bullet item is not testable.

Test: The test shall be conducted according to annex C, TTCN test step CS57101.

10.7.2.2 P bit set to 0

Reference: ETS 300 125, Part 2, subclause 5.6.2.2.

Requirement: If the P bit of the received I-frame was set to 0 and:

a) if the data link layer entity is still not in an own receiver busy condition:

   - if no frame is available for transmission or if an I-frame is available for transmission but a peer receiver busy condition exists, the data link layer entity shall transmit an RR response with the F bit set to 0; or

   - if an I-frame is available for transmission and no peer receiver busy condition exists, the data link layer entity shall transmit the I-frame with the value of N(R) set to the current value of V(R) as defined in subclause 10.7.1.

b) if, on receipt of this I-frame, the data link layer entity is now in an own receiver busy condition, it shall transmit an RNR response with the F bit set to 0..

The bullet item b) is not testable.

Test: The test shall be conducted according to annex C, TTCN test case TC27003.

NOTE: No test for the second bullet of paragraph a) is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

10.7.3 Receiving acknowledgements

Reference: ETS 300 125, Part 2, subclause 5.6.3.2.

Requirement: On receipt of a valid I-frame or supervisory frame (RR, RNR, or REJ), even in the own receiver busy, or timer recovery conditions, the data link layer entity shall treat the N(R) contained in this frame as an acknowledgement for all the I-frames it has transmitted with an N(S) up to and including the received N(R)-1. V(A) shall be set to N(R). The data link layer entity shall reset the timer T200 on receipt of a valid I-frame or supervisory frame with the N(R) higher than V(A) (actually acknowledging some I-frames), or an REJ frame with an N(R) equal to V(A).

If a supervisory frame with the P bit set to 1 has been transmitted and not acknowledged, timer T200 shall not be reset.

Upon receipt of a valid I-frame, timer T200 shall not be reset if the data link layer entity is in the peer receiver busy condition.

If timer T200 has been reset by the receipt of an I, RR, or RNR frame, and if there are outstanding I-frames still unacknowledged, the data link layer entity shall restart timer T200. If timer T200 then expires, the data link layer entity shall follow the recovery procedure as defined in subclause 10.7.6 with respect to the unacknowledged I-frames.

Test: The test shall be conducted according to annex C, TTCN test cases TC27003 and TC27004.

10.7.4 Receiving REJ frames

Reference: ETS 300 125, Part 2, subclause 5.6.4.

Requirement: On receipt of a valid REJ frame, the data link layer entity shall act as follows:

a) if it is not in the timer recovery condition:

- clear an existing peer receiver busy condition;
- set its V(S) and its V(A) to the value of N(R) contained in the REJ frame control field;
- stop timer T200;
- if it was an REJ command frame with the P bit set to 1, transmit an appropriate supervisory response frame with the F bit set to 1 (see subclause 10.7.5);
- transmit the corresponding I-frame as soon as possible, as defined in subclause 10.7.1;

b) if it is in the timer recovery condition and it was an REJ response frame with the F bit set to 1:

- clear an existing peer receiver busy condition;
- set its V(S) and its V(A) to the value of N(R) contained in the REJ frame control field;
- stop timer T200;
- enter the multiple-frame-established state; and
- transmit the corresponding I-frame as soon as possible, as defined in subclause 10.2.6.2;

c) if it is in the timer recovery condition and it was an REJ frame other than an REJ response frame with the F bit set to 1:

- clear an existing peer receiver busy condition;

- set its V(A) to the value of the N(R) contained in the REJ frame control field; and

- if it was an REJ command frame with the P bit set to 1, transmit an appropriate supervisory response frame with the F bit set to 1 (see note in subclause 10.7.5).

All outstanding unacknowledged I-frames, commencing with the I-frame identified in the received REJ frame shall be transmitted.

Test: The test shall be conducted according to annex C, TTCN test cases TC27011, TC28005, TC28407 and TC28424.

10.7.5 Receiving RNR frames

Reference: ETS 300 125, Part 2, subclause 5.6.5.

10.7.5.1 Receiving a valid RNR command or response

Requirement: After receiving a valid RNR command or response, if the data link layer entity is not engaged in a mode-setting operation, it shall set a peer receiver busy condition and then:

- if it was an RNR command with the P bit set to 1, it shall transmit an appropriate supervisory response (see subclause 10.7.5.5) with the F bit set to 1; and

- if it was an RNR response with the F bit set to 1, an existing timer recovery condition shall be cleared.

The data link layer entity shall take note of the peer receiver busy condition and not transmit any I-frames to the peer which has indicated the busy condition.

Test: The test shall be conducted according to annex C, TTCN test case TC27404.

10.7.5.2 Expiry of timer T200 during "peer receiver busy"

Requirement: If timer T200 expires, the data link layer entity shall:

- if it is not yet in a timer recovery condition, enter the timer recovery condition and reset the retransmission count variable; or

- if it is already in a timer recovery condition, add one to its retransmission count variable.

The data link layer entity shall then:

a) if the value of the retransmission count variable is less than N200:

- transmit an appropriate supervisory command (see subclause 10.7.5.5) with a P bit set to 1;

- restart timer T200; and

b) if the value of the retransmission count variable is equal to N200, initiate a re-establishment procedure as defined in subclause 10.8, and indicate this by means of the MDL-ERROR-INDICATION primitive to the connection management entity.

Test: The test shall be conducted according to annex C test cases TC27411 and TC27417.

10.7.5.3 Receiving a valid RNR command or response during "peer receiver busy"

Requirement: The data link layer entity receiving an RNR supervisory frame shall retain the peer receiver busy condition, and if the supervisory frame received was an RNR command with the P bit set to 1, transmit the appropriate supervisory response frame with the F bit set to 1.

Test: The test shall be conducted according to annex C, TTCN test cases TC27414 and TC27416.

10.7.5.4 Receiving a valid RR or REJ command or response during "peer receiver busy"

Requirement: The data link layer entity receiving and RR or REJ supervisory command frame with the P bit set to 1 shall respond, within a time less than the limit specified in subclause 10.10.7, with an appropriate supervisory response frame (see subclause 10.7.5.5) with the F bit set to 1 and clear the peer receiver busy condition.

Upon receipt of an RR or REJ response with the F bit set to 1, the data link layer entity shall reset timer T200, and clear the peer receiver busy condition.

Test: The test shall be conducted according to annex C, TTCN test cases TC27404, TC27405 and TC27412.

Requirement: The data link layer entity receiving an RR or REJ supervisory frame with the P/F bit set to 0 shall clear the peer receiver busy condition.

After clearing the peer receiver busy condition the data link layer entity may transmit new I-frames or retransmit I-frames as defined in subclause 10.7.1 or subclause 10.7.4 respectively.

Test: The test shall be conducted according to annex C, TTCN test cases TC27407 and TC27413.

10.7.5.5 Appropriate supervisory response frame

Requirement: In subclauses 10.7.1 to 10.7.4, if the data link layer entity is not in an own receiver busy condition and is in a reject exception condition (that is, an N(S) sequence error has been received, and an REJ frame has been transmitted, but the requested I-frame has not been received), the appropriate supervisory frame shall be the RR frame.

If the data link layer entity is not in an own receiver busy condition but is in an N(S) sequence error exception condition (that is, an N(S) sequence error has been received but an REJ frame has not been transmitted), the appropriate supervisory frame shall be the REJ frame.

If the data link layer entity is in its own receiver busy condition, the appropriate supervisory frame shall be the RNR frame.

Otherwise, the appropriate supervisory frame shall be the RR frame.

10.7.6 Waiting acknowledgement

Reference: ETS 300 125, Part 2, subclause 5.6.7.

Requirement: The data link layer entity shall maintain an internal retransmission count variable.

If timer T200 expires, the data link layer entity shall:

- if it is not yet in the timer recovery condition, enter the timer recovery condition and reset the retransmission count variable; or

- if it is already in the timer recovery condition, add one to its retransmission count variable.

The data link layer entity shall then:

a) if the value of the retransmission count variable is less than N200:

- restart timer T200; and either
- transmit an appropriate supervisory command with the P bit set to 1; or
- retransmit the last transmitted I-frame (V(S)-1) with the P bit set to 1; or

b) if the value of the retransmission count variable is equal to N200, initiate a re-establishment procedure as defined in subclause 10.8.

The timer recovery condition is cleared when the data link layer entity receives a valid supervisory frame response with the F bit set to 1. If the received supervisory frame N(R) is within the range from its current V(A) to its current V(S) inclusive, it shall set its V(S) to the value of the received N(R). Timer T200 shall be reset if the received supervisory frame response is an RR or REJ response, and then the data link layer entity shall resume with I-frame transmission or retransmission, as appropriate. Timer T200 shall be reset and restarted if the received supervisory response is an RNR response, to proceed with the enquiry process according to subclause 10.7.5.

Test: The test shall be conducted according to annex C, TTCN test cases TC27015, TC27019, TC27411, TC27417 and TC28005.

10.8 Re-establishment of multiple frame operation

Reference: ETS 300 125, Part 2, subclause 5.7.2.

Requirement: In all re-establishment situations, the data link layer entity shall follow the procedures defined in subclause 10.6.1. All locally generated conditions for re-establishment shall cause the transmission of the SABME.

In the case of data link layer and peer initiated re-establishment, the data link layer entity shall also:

- if V(S)>V(A) prior to re-establishment discard all I queues.

Test: The test shall be conducted according to annex C, TTCN test cases TC27022 and TC28408.

10.9 Exception condition reporting and recovery

10.9.1 N(S) sequence error

Reference: ETS 300 125, Part 2, subclause 5.8.1.

Requirement: An N(S) sequence error exception condition occurs in the receiver when a valid frame is received which contains an N(S) value which is not equal to the V(R) at the receiver. The information field of all I-frames whose N(S) does not equal the V(R) shall be discarded.

The receiver shall not acknowledge (nor increment its V(R)) the I-frame causing the sequence error, nor any I-frames which may follow, until an I-frame with the correct N(S) is received.

A data link layer entity which receives one or more I-frames having sequence errors but otherwise error-free, or subsequent supervisory frames (RR, RNR, and REJ), shall use the control field information contained in the N(R) field and the P or F bit to perform data link control functions; for example, to receive acknowledgement of previously transmitted I-frames and to cause the data link layer entity to respond if the P bit is set to 1. Therefore, the retransmitted I-frame may contain an N(R) field value and P bit that are updated from, and therefore different from, the ones contained in the originally transmitted I-frame.

Following the detection of an N(S) sequence error, the receiving data link layer entity shall send a REJ frame to indicate an exception condition recovery (retransmission).

Test: The test shall be conducted according to annex C, TTCN test cases TC27027 and TC27028.

10.9.2 Invalid frame condition

Reference: ETS 300 125, Part 2, subclause 5.8.4.

Requirement: Any frame received which is invalid or incompatible (as defined in subclause 10.1.9) shall be discarded, and no action shall be taken as a result of that frame.

Test: The test shall be conducted according to annex C, TTCN test cases TC27058 and TC24020.

10.9.3 Frame rejection condition

Reference: ETS 300 125, Part 2, subclause 5.8.5.

Requirement: A frame rejection condition results from the receipt of an invalid N(R).

Upon occurrence of a frame rejection condition whilst in the multiple frame operation, the data link layer entity shall initiate re-establishment (see subclause 10.8.1).

Test: The test shall be conducted according to annex C, TTCN test cases TC27040, TC27043 and TC27046.

10.9.4 Multiple-assignment of TEI value

Reference: ETS 300 125, Part 2, subclause 5.8.8.

Requirement: A data link layer entity shall assume multiple-assignment of a TEI value and initiate recovery as specified below by:

a) the receipt of a UA response frame whilst in the *multiple-frame-established* state;

b) the receipt of a UA response frame whilst in the *timer recovery* state;

c) the receipt of a UA response frame whilst in the TEI-*assigned* state.

A data link layer entity, after assuming multiple-assignment of a TEI value shall inform the connection management entity by means of the MDL-ERROR-INDICATION primitive.

NOTE: No test is specified in this version of the TBR for the detection of possible multiple TEI assignment by terminals which are not stable in the *TEI-assigned* state because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

Test: The test shall be conducted according to annex C, TTCN test cases TC24007, TC27031 and TC28019.

10.10 List of system parameters

Reference: ETS 300 125, Part 2, subclause 5.9.

Definition: The system parameters listed below are associated with each individual SAP.

10.10.1 Timer T200

Reference: ETS 300 125, Part 2, subclause 5.9.1.

Definition: The value for timer T200 at the end of which transmission of a frame may be initiated according to the procedures described in subclauses 10.6 and 10.7 is in the range 0,95 s to 3 s.

NOTE: A value of 1 s is recommended.

10.10.2 Maximum number of retransmissions (N200)

Reference: ETS 300 125, Part 2, subclause 5.9.2.

Definition: The maximum number of retransmissions of a frame (N200) is a system parameter. The value of N200 is 3.

NOTE: This means that the total number of transmissions of a frame is 4, including the original transmission.

10.10.3 Maximum number of octets in an information field (N201)

Reference: ETS 300 125, Part 2, subclause 5.9.3.

Definition: The maximum number of octets in an information field (N201) is a system parameter:

- for a SAP supporting signalling, the value is 260 octets.

10.10.4 Maximum number of transmission of the TEI identity request message (N202)

Reference: ETS 300 125, Part 2, subclause 5.9.4.

Definition: The maximum number of transmission of a TEI identity request message (when the user requests a TEI) is a system parameter. The value of N202 is 3.

10.10.5 Maximum number of outstanding I-frames (k)

Reference: ETS 300 125, Part 2, subclause 5.9.5.

Definition: The maximum number (k) of sequentially numbered I-frames that may be outstanding (that is, unacknowledged) at any given time is a system parameter, for extended (modulo 128) operation:

- for a SAP supporting basic access (16 kbit/sec) signalling, the value is 1.

10.10.6 Timer T202

Reference: ETS 300 125, Part 2, subclause 5.9.7.

Definition: The time between the transmission of TEI identity request or TEI identity verify messages is a system parameter (T202) which is in the range 1,9 s to 5 s.

NOTE: A value of 2 s is recommended.

10.10.7 Layer 2 response time

Reference: ETS 300 153, subclause 9.4.

Requirement: The maximum time between receipt of an incoming frame, and the generation of a response, where this is required immediately, shall not exceed:

- 500 ms described in subclause 10.3;

- 200 ms for TEs not operating as described in subclause 10.3.

NOTE: This limit applies only under test conditions as described in annex C. In conditions of actual use, the Layer 2 response time may be greater, because of queuing of outgoing frames and contention for use of the D-channel.

Test: The requirement is tested implicitly by all the test cases in the Layer 2 test suite.

11 Layer 3 requirements

The following clauses contain elements of procedure that are expressed in the form of definitions. These elements of procedure do not form requirements in their own right and, therefore, do not have associated conformance tests. However, these elements are used as components for procedures that are requirements. To ensure that the requirements are satisfied, it is necessary for a TE to implement these elements of procedure in the manner specified within the associated definition. The tests for requirements implicitly test the elements of procedure.

The requirements of the various subclauses of clause 11 (excluding subclause 11.4.6) apply only to messages that carry the protocol discriminator coded as "Q.931 (I.451) user-network call control message" and that pass the requirements defined in subclause 11.4.6.

11.1 Overview of call control

11.1.1 Call states at the user side of the interface

11.1.1.1 Null state (U0)

Reference: ETS 300 102-1, subclause 2.1.1.1.

Definition: No call exists.

11.1.1.2 Call initiated (U1)

Reference: ETS 300 102-1, subclause 2.1.1.2.

Definition: This state exists for an outgoing call, when the user requests call establishment from the network.

11.1.1.3 Overlap sending (U2)

Reference: ETS 300 102-1, subclause 2.1.1.3.

Definition: This state exists for an outgoing call when the user has received acknowledgement of the call establishment request which permits the user to send additional call information to the network in overlap mode.

11.1.1.4 Outgoing call proceeding (U3)

Reference: ETS 300 102-1, subclause 2.1.1.4.

Definition: This state exists for an outgoing call when the user has received acknowledgement that the network has received all call information necessary to effect call establishment.

11.1.1.5 Call delivered (U4)

Reference: ETS 300 102-1, subclause 2.1.1.5.

Definition: This state exists for an outgoing call, when the calling user has received an indication that remote user alerting has been initiated.

11.1.1.6 Call present (U6)

Reference: ETS 300 102-1, subclause 2.1.1.6.

Definition: This state exists for an incoming call when the user has received a call establishment request but has not yet responded.

11.1.1.7 Call received (U7)

Reference: ETS 300 102-1, subclause 2.1.1.7.

Definition: This state exists for an incoming call when the user has indicated alerting but has not yet answered.

11.1.1.8 Connect request (U8)

Reference: ETS 300 102-1, subclause 2.1.1.8.

Definition: This state exists for an incoming call when the user has answered the call and is waiting to be awarded the call.

11.1.1.9 Incoming call proceeding (U9)

Reference: ETS 300 102-1, subclause 2.1.1.9.

Definition: This state exists for an incoming call when the user has sent acknowledgement that the user has received all call information necessary to effect call establishment.

11.1.1.10 Active (U10)

Reference: ETS 300 102-1, subclause 2.1.1.10.

Definition: This state exists for an incoming call when the user has received an acknowledgement from the network that the user has been awarded the call. This state exists for an outgoing call when the user has received an indication that the remote user has answered the call.

11.1.1.11 Disconnect request (U11)

Reference: ETS 300 102-1, subclause 2.1.1.11.

Definition: This state exists when the user has requested the network to clear the end-to-end connection (if any) and is waiting for a response.

11.1.1.12 Disconnect indication (U12)

Reference: ETS 300 102-1, subclause 2.1.1.12.

Definition: This state exists when the user has received an invitation to disconnect because the network has disconnected the end-to-end connection (if any).

11.1.1.13 Suspend request (U15)

Reference: ETS 300 102-1, subclause 2.1.1.13.

Definition: This state exists when the user has requested the network to suspend the call and is waiting for a response.

11.1.1.14 Resume request (U17)

Reference: ETS 300 102-1, subclause 2.1.1.14.

Definition: This state exists when the user has requested the network to resume a previously suspended call and is waiting for a response.

11.1.1.15 Release request (U19)

Reference: ETS 300 102-1, subclause 2.1.1.15.

Definition: This state exists when the user has requested the network to release and is waiting for a response.

11.1.1.16 Overlap receiving (U25)

Reference: ETS 300 102-1, subclause 2.1.1.16.

Definition: This state exists for an incoming call when the user has acknowledged the call establishment request from the network and is prepared to receive additional call information (if any) in overlap mode.

11.1.2 Network call states

11.1.2.1 Null state (N0)

Reference: ETS 300 102-1, subclause 2.1.2.1.

Definition: No call exists.

11.1.2.2 Call initiated (N1)

Reference: ETS 300 102-1, subclause 2.1.2.2.

Definition: This state exists for an outgoing call when the network has received a call establishment request but has not yet responded.

11.1.2.3 Overlap sending (N2)

Reference: ETS 300 102-1, subclause 2.1.2.3.

Definition: This state exists for an outgoing call when the network has acknowledged the call establishment request and is prepared to receive additional call information (if any) in overlap mode.

11.1.2.4 Outgoing call proceeding (N3)

Reference: ETS 300 102-1, subclause 2.1.2.4.

Definition: This state exists for an outgoing call when the network has sent acknowledgement that the network has received all call information necessary to effect call establishment.

11.1.2.5 Call delivered (N4)

Reference: ETS 300 102-1, subclause 2.1.2.5.

Definition: This state exists for an outgoing call when the network has indicated that remote user alerting has been initiated.

11.1.2.6 Call present (N6)

Reference: ETS 300 102-1, subclause 2.1.2.6.

Definition: This state exists for an incoming call when the network has sent a call establishment request but has not yet received a satisfactory response.

11.1.2.7 Call received (N7)

Reference: ETS 300 102-1, subclause 2.1.2.7.

Definition: This state exists for an incoming call when the network has received an indication that the user is alerting but has not yet received an answer.

11.1.2.8 Connect request (N8)

Reference: ETS 300 102-1, subclause 2.1.2.8.

Definition: This state exists for an incoming call when the network has received an answer but the network has not yet awarded the call.

11.1.2.9 Incoming call proceeding (N9)

Reference: ETS 300 102-1, subclause 2.1.2.9.

Definition: This state exists for an incoming call when the network has received acknowledgement that the user has received all call information necessary to effect call establishment.

11.1.2.10 Active (N10)

Reference: ETS 300 102-1, subclause 2.1.2.10.

Definition: This state exists for an incoming call when the network has awarded the call to the called user. This state exists for an outgoing call when the network has indicated that the remote user has answered the call.

11.1.2.11 Disconnect request (N11)

Reference: ETS 300 102-1, subclause 2.1.2.11.

Definition: This state exists when the network has received a request from the user to clear the end-to-end connection (if any).

11.1.2.12 Disconnect indication (N12)

Reference: ETS 300 102-1, subclause 2.1.2.12.

Definition: This state exists when the network has disconnected the end-to-end connection (if any) and has sent an invitation to disconnect the user-network connection.

11.1.2.13 Suspend request (N15)

Reference: ETS 300 102-1, subclause 2.1.2.13.

Definition: This state exists when the network has received a request to suspend the call but has not yet responded.

11.1.2.14 Resume request (N17)

Reference: ETS 300 102-1, subclause 2.1.2.14.

Definition: This state exists when the network has received a request to resume a previously suspended call but has not yet responded.

11.1.2.15 Release request (N19)

Reference: ETS 300 102-1, subclause 2.1.2.15.

Definition: This state exists when the network has requested the user to release and is waiting for a response.

11.1.2.16 Call abort (N22)

Reference: ETS 300 102-1, subclause 2.1.2.16.

Definition: This state exists for an incoming call for the point-to-multipoint configuration when the call is being cleared before any user has been awarded the call.

11.1.2.17 Overlap receiving (N25)

Reference: ETS 300 102-1, subclause 2.1.2.17.

Definition: This state exists for an incoming call when the network has received acknowledgement of the call establishment request which permits the network to send additional call information (if any) in the overlap mode.

11.1.3 States associated with the global call reference

11.1.3.1 Call states at the user side of the interface

11.1.3.1.1 Null (Rest 0)

Reference: ETS 300 102-1, subclause 2.4.1.1.

Definition: No transaction exists.

11.1.3.1.2 Restart (Rest 2)

Reference: ETS 300 102-1, subclause 2.4.1.3.

Definition: This state exists when a request for a restart has been received from the network and responses have not yet been received from all locally active Call references.

11.1.3.2 Call states at the network side of the interface

The states which may exist on the network side of the user-network interface.

11.1.3.2.1 Null (Rest 0)

Reference: ETS 300 102-1, subclause 2.4.2.1.

No transaction exists.

11.1.3.2.2 Restart request (Rest 1)

Reference: ETS 300 102-1, subclause 2.4.2.2.

This state exists for a restart transaction when the network has sent a restart but has not yet received an acknowledgement response from the user.

11.2 Message functional definitions and content

Reference: ETS 300 102-1, clause 3.

This provides an overview of the Layer 3 message structure. Each definition includes:

a) a brief description of the message direction and use, including whether the message has:

1) local significance, i.e. relevant only in the originating or terminating access;
2) access significance, i.e. relevant in the originating and terminating access, but not in the network;
3) dual significance, i.e. relevant in either the originating or the terminating access and in the network; or,
4) global significance, i.e. relevant in the originating and terminating access and in the network.

b) a table listing the codeset 0 information elements in the order of their appearance in the message (same relative order for all Message types). For each information element the table indicates:

1) the direction which it may be sent; i.e. user-to-network ("u $\rightarrow$ n"), network-to-user ("n $\rightarrow$ u"), or both;
2) whether inclusion is mandatory ("M") or optional ("O") with a reference to notes explaining the circumstances under which the information element is included;
3) the length of the information element (or permissible range of lengths), in octets, where "*" denotes an undefined maximum length, which may be network or service dependent.

NOTE 1: All messages may contain information elements from codesets 5, 6 and 7 and corresponding locking and non-locking shift information elements which comply with the coding rules specified in subclauses 11.3.5.2 to 11.3.5.4. None of these information elements, however, are listed in any of the tables in subclause 11.2.

c) further explanatory notes, as necessary.

NOTE 2: Table 11.1 summarises the messages for circuit mode connection control that are part of the requirements of this TBR.

NOTE 3: It is strongly recommended that manufacturers use other messages or information elements only in accordance with definitions and procedures in national, European and international standards. Terminals that use messages or information elements that result in violations of the essential requirements are liable to be disconnected or required to be withdrawn from the market. The use of certain other messages or information elements may be the subject of specific requirements in other TBRs or national approval requirements.

Table 11.1: Messages for circuit mode connection control

Message type	Reference
Call establishment messages:	
ALERTING	11.2.1
CALL PROCEEDING	11.2.2
CONNECT	11.2.3
CONNECT ACKNOWLEDGE	11.2.4
PROGRESS	11.2.8
SETUP	11.2.14
SETUP ACKNOWLEDGE	11.2.15
Call information phase messages:	
RESUME	11.2.11
RESUME ACKNOWLEDGE	11.2.12
RESUME REJECT	11.2.13
SUSPEND	11.2.18
SUSPEND ACKNOWLEDGE	11.2.19
SUSPEND REJECT	11.2.20
Call clearing messages:	
DISCONNECT	11.2.5
RELEASE	11.2.9
RELEASE COMPLETE	11.2.10
Miscellaneous messages	
INFORMATION	11.2.6
NOTIFY	11.2.7
STATUS	11.2.16
STATUS ENQUIRY	11.2.17

11.2.1 Alerting

Reference: ETS 300 102-1, subclause 3.1.1.

Definition: This message is sent by the called user to the network and by the network to the calling user to indicate that called user alerting has been initiated. See table 11.2.

Table 11.2: ALERTING message content

Message type: ALERTING
Significance: global
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Bearer capability	both	O	4 - 13
Channel identification	both	O (note 1)	2 - *
Progress indicator	both	O (note 2)	2 - 4
High layer compatibility	both	O	2 - 4

NOTE 1: Mandatory if this message is the first message in response to SETUP, unless the user accepts the B-channel indicated in the SETUP message.

NOTE 2: Included in the event of interworking. Included in the network-to-user direction in connection with the provision of in-band information/patterns. Included in the user-to-network direction in connection with the provision of in-band information/patterns. If the Bearer capability information element is included, then the Progress indicator information element shall be coded #5 "interworking has occurred and resulted in a telecommunication service change".

11.2.2 Call proceeding

Reference: ETS 300 102-1, subclause 3.1.2.

Definition: This message is sent by the called user to the network or by the network to the calling user to indicate that the requested call establishment has been initiated and no more call establishment information will be accepted. See table 11.3.

Table 11.3: Call proceeding message content

Message type: CALL PROCEEDING
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Bearer capability	both	O	4 - 13
Channel identification	both	O (note 1)	2 - *
Progress indicator	both	O (note 2)	2 - 4
High layer compatibility	both	O	2 - 4

NOTE 1: Mandatory in the network-to-user direction if this message is the first message in response to SETUP. Mandatory in the user-to-network direction if this message is the first message in response to SETUP, unless the user accepts the B-channel indicated in the SETUP message.

NOTE 2: Included in the event of interworking. Included in the network-to-user direction in connection with the provision of in-band information/patterns. Included in the user-to-network direction in connection with the provision of in-band information/patterns. If the Bearer capability information element is included, then the Progress indicator information element shall be coded #5 "interworking has occurred and resulted in a telecommunication service change".

11.2.3 Connect

Reference: ETS 300 102-1, subclause 3.1.4.

Definition: This message is sent by the called user to the network and by the network to the calling user to indicate call acceptance by the called user. See table 11.4.

Table 11.4: Connect message content

Message type: CONNECT
Significance: global
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Bearer capability	both	O	4 - 13
Channel identification	both	O (note 1)	2 - *
Progress indicator	both	O (note 2)	2 - 4
Low layer compatibility	both	O (note 3)	2 - 16

NOTE 1: Mandatory if this message is the first message in response to SETUP, unless the user accepts the B-channel indicated in the SETUP message.

NOTE 2: Included in the event of interworking or in connection with the provision of in-band information/patterns. If the Bearer capability information element is included, then the Progress indicator information element shall be coded #5 "interworking has occurred and resulted in a telecommunication service change".

NOTE 3: Included in the user-to-network direction when the answering user wants to return Low layer compatibility information to the calling user. Included in the network-to-user direction if the user awarded the call included a Low layer compatibility information element in the CONNECT message. Optionally included for Low layer compatibility negotiation, but some networks may not transport this information element to the calling user.

11.2.4 Connect acknowledge

Reference: ETS 300 102-1, subclause 3.1.5.

Definition: This message is sent by the network to the called user to indicate the user has been awarded the call. It may also be sent by the calling user to the network to allow symmetrical call control procedures. See table 11.5.

Table 11.5: Connect acknowledge message content

Message type: CONNECT ACKNOWLEDGE
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Channel identification	n → u	O (note)	2 - *
NOTE: Available for use by supplementary services (e.g. call waiting).			

11.2.5 Disconnect

Reference: ETS 300 102-1, subclause 3.1.6.

Definition: This message is sent by the user to request the network to clear an end-to-end connection or is sent by the network to indicate that the end-to-end connection is cleared. See table 11.6.

Table 11.6: Disconnect message content

Message type: DISCONNECT
Significance: global
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Cause	both	M	4 - 32
Progress indicator	note	O (note)	2 - 4
NOTE: Included by the network if in-band tones are provided. However, the user may include the Progress indicator and provide in-band tones. But in this case the network ignores this information element and does not convey the in-band tones.			

11.2.6 Information

Reference: ETS 300 102-1, subclause 3.1.8.

Definition: This message is sent by the user or the network to provide additional information. It may be used to provide information for call establishment (e.g. overlap sending and receiving) or miscellaneous call-related information. See table 11.7.

Table 11.7: Information message content

Message type: INFORMATION
Significance: local (note 1)
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Sending complete	both	O (note 2)	1
Cause	n → u	O (note 1)	2 - 32
Called party number	both	O (note 3)	2 - 23

NOTE 1: This message has local significance, but may carry information of global significance.

NOTE 2: Included if the user optionally indicates completion of overlap sending to the network, or if the network optionally indicates completion of overlap receiving to the user.

NOTE 3: The Called party number information element is included by the user to convey Called party number information to the network during overlap sending. The Called party number information element is included by the network to transfer Called party number information to the user during overlap receiving.

11.2.7 Notify

Reference: ETS 300 102-1, subclause 3.1.9.

Definition: This message is sent by the user or the network to indicate information pertaining to a call, such as user suspended. See table 11.8.

Table 11.8: Notify message content

Message type: NOTIFY
Significance: access
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Notification indicator	both	M	3

11.2.8 Progress

Reference: ETS 300 102-1, subclause 3.1.10.

Definition: This message is sent by the user or the network to indicate the progress of a call in the event of interworking or in relation with the provision of in-band information/patterns. See table 11.9.

Table 11.9: Progress message content

Message type: PROGRESS
Significance: global
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Bearer capability	both	O	4 - 13
Cause	both	O (note 1)	2 - 32
Progress indicator	both	M (note 2)	4
High layer compatibility	both	O	2 - 4

NOTE 1: Included by the user or the network to provide additional information concerning the provision of in-band information/patterns.

NOTE 2: If the Bearer capability information element is included, then the Progress indicator information element shall be coded #5 "interworking has occurred and resulted in a telecommunication service change".

11.2.9 Release

Reference: ETS 300 102-1, subclause 3.1.11.

Definition: This message is sent by the user or the network to indicate that the equipment sending the message has disconnected the channel (if any) and intends to release the channel and the Call reference, and that the receiving equipment should release the channel and prepare to release the Call reference after sending RELEASE COMPLETE message. See table 11.10.

Table 11.10: Release message content

Message type: RELEASE
Significance: local (see note 1)
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Cause	both	O (note 2)	2 - 32
NOTE 1: This message has a local significance; however, it may carry information of global significance when used as the first call clearing message.			
NOTE 2: Mandatory in the first call clearing message, including when the RELEASE message is sent as a result of an error handling condition.			

11.2.10 Release complete

Reference: ETS 300 102-1, subclause 3.1.12.

Definition: This message is sent by the user or the network to indicate that the equipment sending the message has released the channel (if any) and Call reference. See table 11.11.

Table 11.11: Release complete message content

Message type: RELEASE COMPLETE
Significance: local (note 1)
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Cause	both	O (note 2)	2 - 32
NOTE 1: This message has a local significance; however, it may carry information of global significance when used as the first call clearing message.			
NOTE 2: Mandatory in the first call clearing message, including when the RELEASE COMPLETE message is sent as a result of an error handling condition.			

11.2.11 Resume

Reference: ETS 300 102-1, subclause 3.1.13.

Definition: This message is sent by the user to request the network to resume a suspended call. See table 11.12.

Table 11.12: Resume message content

Message type: RESUME
Significance: local
Direction: user-to-network

Information Element	Direction	Type	Length
Protocol discriminator	u → n	M	1
Call reference	u → n	M	2
Message type	u → n	M	1
Call identity	u → n	O (note)	2 - 10
NOTE: Included when the SUSPEND message used to suspend the call included a Call identity information element.			

11.2.12 Resume acknowledge

Reference: ETS 300 102-1, subclause 3.1.14.

Definition: This message is sent by the network to the user to indicate completion of a request to resume a suspended call. See table 11.13.

Table 11.13: Resume acknowledge message content

Message type: RESUME ACKNOWLEDGE
Significance: local
Direction: network-to-user

Information Element	Direction	Type	Length
Protocol discriminator	n → u	M	1
Call reference	n → u	M	2
Message type	n → u	M	1
Channel identification	n → u	M	3 - *

11.2.13 Resume reject

Reference: ETS 300 102-1, subclause 3.1.15.

Definition: This message is sent by the network to the user to indicate failure of a request to resume a suspended call. See table 11.14.

Table 11.14: Resume reject message content

Message type: RESUME REJECT
Significance: local
Direction: network-to-user

Information Element	Direction	Type	Length
Protocol discriminator	n → u	M	1
Call reference	n → u	M	2
Message type	n → u	M	1
Cause	n → u	M	4 - 32

11.2.14 Setup

Reference: ETS 300 102-1, subclause 3.1.16.

Definition: This message is sent by the calling user to the network and by the network to the called user to initiate call establishment. See table 11.15.

Table 11.15: Setup message content

Message type: SETUP
Significance: global
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Sending complete	both	O (note 1)	1
Bearer capability	both	M (note 8)	4 - 13
Channel identification	both	O (note 2)	2 - *
Progress indicator	both	O (note 3)	2 - 4
Called party number	both	O (note 4)	2 - 23
Called party subaddress	both	O (note 5)	2 - 23
Low layer compatibility	both	O (note 6)	2 - 16
High layer compatibility	both	O (note 7 & 8)	2 - 4

NOTE 1: Included if the user or the network optionally indicates that all information necessary for call establishment is included in the SETUP message.

NOTE 2: Mandatory in the network-to-user direction. Included in the user-to-network direction when the user wants to indicate a channel. If not included, its absence is interpreted as "any channel acceptable".

NOTE 3: Included in the event of interworking or in connection with the provision of in-band information/patterns.

NOTE 4: The Called party number information element is included by the user to convey Called party number information to the network. The Called party number information element is included by the network when Called party number information is conveyed to the user.

NOTE 5: Included in the user-to-network direction when the calling user wants to indicate the Called party subaddress. Included in the network-to-user direction if the calling user included a Called party subaddress information element in the SETUP message.

NOTE 6: Included in the user-to-network direction when the calling user wants to pass Low Layer compatibility information to the called user. Included in the network-to-user direction if the calling user included a Low Layer compatibility information element in the SETUP message.

NOTE 7: Included in the user-to-network direction when the calling user wants to pass High layer compatibility information to the called user. Included in the network-to-user direction if the calling user included a High layer compatibility information element in the SETUP message.

NOTE 8: The Bearer capability information element and the High layer compatibility information element may be repeated in the SETUP message, not preceded by a Repeat indicator information element. If the bearer capability information element is repeated in the SETUP message, the Low layer compatibility information element shall not be included.

11.2.15 Setup acknowledge

Reference: ETS 300 102-1, subclause 3.1.17.

Definition: This message is sent by the network to the calling user or by the called user to the network to indicate that call establishment has been initiated, but additional information may be required. See table 11.16.

Table 11.16: Setup acknowledge message content

Message type: SETUP ACKNOWLEDGE
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Channel identification	both	O (note 1)	2 - *
Progress indicator	both	O (note 2)	2 - 4
NOTE 1: Mandatory in all cases, except when the user accepts the specific B-channel indicated in the SETUP message.			
NOTE 2: Included in the event of interworking or in connection with the provision of in-band information/patterns.			

11.2.16 Status

Reference: ETS 300 102-1, subclause 3.1.18.

Definition: This message is sent by the user or the network in response to a STATUS ENQUIRY message or at any time during a call to report certain error conditions. See table 11.17.

Table 11.17: Status message content

Message type: STATUS
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1
Cause	both	M	4 - 32
Call state	both	M	3

11.2.17 Status enquiry

Reference: ETS 300 102-1, subclause 3.1.19.

Definition: This message is sent by the user or the network at any time to solicit a STATUS message from the peer Layer 3 entity. See table 11.18.

Table 11.18: Status enquiry message content

Message type: STATUS ENQUIRY
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M	2
Message type	both	M	1

11.2.18 Suspend

Reference: ETS 300 102 part 1, subclause 3.1.20.

Definition: This message is sent by the user to request the network to suspend a call. See table 11.19.

Table 11.19: Suspend message content

Message type: SUSPEND
Significance: local
Direction: user-to-network

Information Element	Direction	Type	Length
Protocol discriminator	u $\rightarrow$ n	M	1
Call reference	u $\rightarrow$ n	M	2
Message type	u $\rightarrow$ n	M	1
Call identity	u $\rightarrow$ n	O (note)	2 - 10
NOTE: Included if the user later wants to identify the suspended call explicitly.			

11.2.19 Suspend acknowledge

Reference: ETS 300 102-1, subclause 3.1.21.

Definition: This message is sent by the network to the user to indicate completion of a request to suspend a call. See table 11.20.

Table 11.20: Suspend acknowledge message content

Message type: SUSPEND ACKNOWLEDGE
Significance: local
Direction: network-to-user

Information Element	Direction	Type	Length
Protocol discriminator	n → u	M	1
Call reference	n → u	M	2
Message type	n → u	M	1

11.2.20 Suspend reject

Reference: ETS 300 102-1, subclause 3.1.22.

Definition: This message is sent by the network to the user to indicate failure of a request to suspend a call. See table 11.21.

Table 11.21: Suspend reject message content

Message type: SUSPEND REJECT
Significance: local
Direction: network-to-user

Information Element	Direction	Type	Length
Protocol discriminator	n → u	M	1
Call reference	n → u	M	2
Message type	n → u	M	1
Cause	n → u	M	4 - 32

11.2.21 Messages used with the global call reference

Reference: ETS 300 102-1, subclause 3.4.

NOTE: Table 11.22 summarizes the messages which may use the global call reference defined in subclause 11.3.3.

Table 11.22: Messages with the global call reference

Messages	Reference
RESTART	11.2.21.1
RESTART ACKNOWLEDGE	11.2.21.2

11.2.21.1 Restart

Reference: ETS 300 102-1, subclause 3.4.1.

Definition: This message is sent by the user or the network to request the recipient to restart (i.e. return to an idle condition) the indicated channel(s) or interface. See table 11.23.

Table 11.23: Restart message content

Message type: RESTART
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M (note 1)	2
Message type	both	M	1
Channel identification	both	O (note 2)	2 - *
Restart indicator	both	M	3

NOTE 1: This message is sent with the global call reference defined in subclause 11.3.3.

NOTE 2: Included when necessary to indicate the particular channel(s) to be restarted.

11.2.21.2 Restart acknowledge

Reference: ETS 300 102-1, subclause 3.4.2.

Definition: This message is sent to acknowledge the receipt of a RESTART message and to indicate that the requested restart is complete. See table 11.24.

Table 11.24: Restart acknowledge message content

Message type: RESTART ACKNOWLEDGE
Significance: local
Direction: both

Information Element	Direction	Type	Length
Protocol discriminator	both	M	1
Call reference	both	M (note 1)	2
Message type	both	M	1
Channel identification	both	O (note 2)	2 - *
Restart indicator	both	M	3

NOTE 1: This message is sent with the global call reference defined in subclause 11.3.3.

NOTE 2: Included when necessary to indicate the particular channel(s) which has been restarted.

11.3 General message format and information elements coding

The figures and text in this subclause describe message contents. Within each octet, the bit designated "bit 1" is transmitted first, followed by bits 2, 3, 4, etc. Similarly, the octet shown at the top of each figure is sent first.

11.3.1 Overview

Reference: ETS 300 102-1, subclause 4.1.

Definition: Within this protocol, every message consists of the following parts:

a) Protocol discriminator;
b) Call reference;
c) Message type;
d) other information elements, as required.

Information elements a), b) and c) are common to all the messages and are always present, while information elements d) are specific to each Message type.

This organization is illustrated in the example shown in figure 11.1.

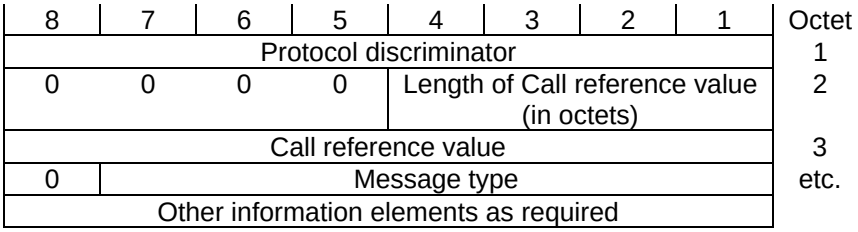


Figure 11.1: General message organization example

A particular message may contain more information than a particular (user or network) equipment needs or can understand. All equipment should be able to ignore any extra information, present in a message, which is not required for the proper operation of that equipment. For example, a user may ignore the calling party number if that number is of no interest to the user when a SETUP message is received.

Unless specified otherwise, a particular information element may be present only once in a given message.

The term "default" implies that the value defined should be used in the absence of any assignment, or the negotiation of alternative values.

When a field, such as the Call reference value, extends over more than one octet, the order of bit values progressively decreases as the octet number increases. The least significant bit of the field is represented by the lowest numbered bit of the highest numbered octet of the field.

11.3.2 Protocol discriminator

Reference: ETS 300 102-1, subclause 4.2.

Definition: The purpose of the Protocol discriminator is to distinguish messages for user-network call control from other messages. It also distinguishes messages of this TBR from those OSI network layer protocol data units which are coded to other CCITT Recommendations and other standards.

The Protocol discriminator is the first part of every message. The Protocol discriminator is coded according to table 11.25.

8	7	6	5	4	3	2	1	Octet
Q.931(I.451) user-network call control messages								
0	0	0	0	1	0	0	0	1
Protocol discriminator								

Figure 11.2: Protocol discriminator

Table 11.25: Protocol discriminator

8	7	6	5	4	3	2	1	
0	0	0	0	1	0	0	0	Q.931 user-network call control messages
All other values are reserved. NOTE: These values are reserved to discriminate these Protocol discriminators from the first octet of an X.25 packet including general format identifier.								

11.3.3 Call reference

Reference: ETS 300 102-1, subclause 4.3.

Definition: The purpose of the Call reference is to identify the call or facility registration/cancellation request at the local user-network interface to which the particular message applies. The Call reference does not have end-to-end significance across ISDNs.

The Call reference is the second part of every message. The Call reference is coded as shown in figure 11.3. The length of the Call reference value is indicated in octet 1, bits 1 - 4.

The length of the Call reference value for the basic access is one octet.

The Call reference information element includes the Call reference value and the Call reference flag.

Call reference values are assigned by the originating side of the interface for a call. These values are unique to the originating side only within a particular D-channel layer two logical link connection. The Call reference value is assigned at the beginning of a call and remains fixed for the lifetime of the call (except in the case of call suspension). After a call ends, or, after a successful suspension, the associated Call reference value may be reassigned to a later call. Two identical Call reference values on the same D-channel layer two logical link connection may be used when each value pertains to a call originated at opposite ends of the link.

The Call reference flag can take the values "0" or "1". The Call reference flag is used to identify which end of the layer two logical link originated a Call reference. The origination side always sets the Call reference flag to "0". The destination side always sets the Call reference flag to a "1".

Hence the Call reference flag identifies who allocated the Call reference value and the only purpose of the Call reference flag is to resolve simultaneous attempts to allocate the same Call reference value. The Call reference flag also applies to functions which use the global call reference (e.g. restart procedures).

NOTE: The numerical value of the global call reference is zero. The equipment receiving a message containing the global call reference should interpret the message as pertaining to all call references associated with the appropriate data link connection identifier. See figure 11.4.

For the use of the global call reference value see the restart procedure described in subclause 11.4.8.

8	7	6	5	4	3	2	1	Octet
0	0	0	0	Length of the Call reference value (in octets)				1
Flag	Call reference value							2
								etc.

Call reference flag (octet 2)
bit
8
0 the message is sent **from** the side that originates the Call reference.
1 the message is sent **to** the side that originates the Call reference.

Figure 11.3: Call reference information element

8	7	6	5	4	3	2	1	Octet
0	0	0	0	Length of call reference value				1
0/1 Flag	0	0	0	0	0	0	0	2
	Call reference value							

Figure 11.4: Encoding for global call reference

11.3.4 Message type

Reference: ETS 300 102-1, subclause 4.4.

Definition: The purpose of the Message type is to identify the function of the message being sent.

The Message type is the third part of every message. The Message type is coded as shown in figure 11.5 and table 11.26.

Bit 8 is reserved for possible future use as an extension bit.

8	7	6	5	4	3	2	1	Octet
0	Message type							1

Figure 11.5: Message type

Table 11.26: Message types

Bits								
8	7	6	5	4	3	2	1	
0	0	0	0	0	0	0	0	Escape to nationally specific Message type; see note.
0	0	0	-	-	-	-	-	**Call establishment messages:**
			0	0	0	0	1	ALERTING
			0	0	0	1	0	CALL PROCEEDING
			0	0	1	1	1	CONNECT
			0	1	1	1	1	CONNECT ACKNOWLEDGE
			0	0	0	1	1	PROGRESS
			0	0	1	0	1	SETUP
			0	1	1	0	1	SETUP ACKNOWLEDGE
0	0	1	-	-	-	-	-	**Call information phase messages:**
			0	0	1	1	0	RESUME
			0	1	1	1	0	RESUME ACKNOWLEDGE
			0	0	0	1	0	RESUME REJECT
			0	0	1	0	1	SUSPEND
			0	1	1	0	1	SUSPEND ACKNOWLEDGE
			0	0	0	0	1	SUSPEND REJECT
0	1	0	-	-	-	-	-	**Call clearing messages:**
			0	0	1	0	1	DISCONNECT
			0	1	1	0	1	RELEASE
			1	1	0	1	0	RELEASE COMPLETE
			0	0	1	1	0	RESTART
			0	1	1	1	0	RESTART ACKNOWLEDGE
0	1	1	-	-	-	-	-	**Miscellaneous messages:**
			1	1	0	1	1	INFORMATION
			0	1	1	1	0	NOTIFY
			1	1	1	0	1	STATUS
			1	0	1	0	1	STATUS ENQUIRY

NOTE: When allocating codes for national Message types the following principle is applied for the first octet following the escape to nationally specific type:

1 0 X X XXXX: National standard
1 1 X X XXXX: ETSI standard

11.3.5 Other information elements

11.3.5.1 Coding rules

Reference: ETS 300 102-1, subclause 4.5.1.

Definition: The coding of other information elements follows the coding rules defined below. These rules are formulated to allow each equipment which processes a message to find information elements important to it, and yet remain ignorant of information elements not important to that equipment.

Two categories of information elements are defined:

a) single octet information elements (see figure 11.6 a) and b));

b) variable length information elements (see figure 11.6 c)).

For the information elements listed below, the coding of the information element identifier bits is summarised in table 11.27.

The descriptions of the information elements below are organised in alphabetical order. However, there is a particular order of appearance for each information element in a message within each codeset (see subclause 11.3.5.2). The code values of the information element identifier for the variable length formats are assigned in ascending numerical order, according to the actual order of appearance of each information element in a message. This allows the receiving equipment to detect the presence or absence of a particular information element without scanning through an entire message.

Single octet information elements may appear at any point in the message. Two types of single octet information elements have been defined. Type 1 elements provide the information element identification in bit positions 7, 6 and 5. The value "0 1 0" in these bit positions is reserved for Type 2 single octet information elements.

Where the description of information elements in this TBR contains spare bits, these bits are indicated as being set to "0". In order to allow compatibility with future implementations, messages should not be rejected simply because a spare bit is set to "1".

The second octet of variable length information element indicates the total length of the contents of that information element regardless of the coding of the first octet (i.e. the length starting with octet 3). It is the binary coding of the number of octets of the contents, with bit 1 as the least significant bit (2^0).

An optional variable length information element may be present, but empty. For example, a SETUP message may contain a Called party number information element, the content of which is of zero length. This should be interpreted by the receiver as equivalent to that information element being absent. Similarly, an absent information element should be interpreted by the receiver as equivalent to that information element being empty.

The following rules apply for the coding of variable length information elements (octet 3, etc.):

a) the first digit in the octet number identifies one octet or a group of octets;

b) each octet group is a self contained entity. The internal structure of an octet group may be defined in alternative ways;

c) an octet group is formed by using some extension mechanism. The preferred extension mechanism is to extend an octet (N) through the next octet(s) (Na, Nb, etc.) by using bit 8 in each octet as an extension bit. The bit value "0" indicates that the octet continues through the next octet. The bit value "1" indicates that this octet is the last octet. If one octet (Nb) is present, also the preceding octets (N and Na) are present;
in the format descriptions appearing in subclause 11.3.5.5, etc., bit 8 is marked "0/1 ext" if another octet follows. Bit 8 is marked "1 ext" if this is the last octet in the extension domain. Additional octets may be defined later ("1 ext" changed to "0/1 ext");

d) in addition to the extension mechanism defined above, an octet (N) may be extended through the next octet(s) (N.1, N.2, etc.) by indications in bits 7-1 (of octet N);

e) the mechanisms in c) and d) may be combined;

f) optional octets are marked with asterisks (*).

8	7	6	5	4	3	2	1	Octet
1	Information element identifier			Contents of information element				1

a) single octet information element format (type 1)

8	7	6	5	4	3	2	1	Octet
1	Information element identifier							1

b) Single octet information element format (type 2)

8	7	6	5	4	3	2	1	Octet
0	Information element identifier							1
Length of contents of information element (octets)								2
Contents of information element								3 etc.

c) Variable length information element format

Figure 11.6: Formats of information elements

NOTE: One of the single octet formats is specified for shift operations described in subclause 11.3.5.2. This allows for the definition of eight codesets of 133 information element identifier values in each. Codeset 0 is used for these information elements that have been specified in CCITT Recommendation Q.931. Codeset 5 is used for information elements that are specified by ETSI.

11.3.5.1.1 Codeset 0

Reference: ETS 300 102-1, subclause 4.5.1.1.

Definition: The information elements belonging to codeset 0 are listed in table 11.27, which also gives the coding of the information identifier bits.

Table 11.27: Information element identifier coding

8	7	6	5	4	3	2	1		Maximum Length octets (note 1)
1	:	:	:	-	-	-	-	**Single octet information elements:**	
	0	0	0	-	-	-	-	Reserved	
	0	0	1	-	-	-	-	Shift (note 2)	1
	0	1	0	0	0	0	1	Sending complete	1
0	:	:	:	:	:	:	:	**Variable length information elements:**	
	0	0	0	0	1	0	0	Bearer capability	13
	0	0	0	1	0	0	0	Cause (note 2)	32
	0	0	1	0	0	0	0	Call identity	10
	0	0	1	0	1	0	0	Call state	3
	0	0	1	1	0	0	0	Channel identification (note 2)	(note 3)
	0	0	1	1	1	1	0	Progress indicator (note 2)	4
	0	1	0	0	1	1	1	Notification indicator	3
	1	1	1	0	0	0	0	Called party number	23
	1	1	1	0	0	0	1	Called party subaddress	23
	1	1	1	1	0	0	1	Restart indicator	3
	1	1	1	1	1	0	0	Low layer compatibility	16
	1	1	1	1	1	0	1	High layer compatibility	5
All other values are reserved (note 4).									

NOTE 1: The length limits described for the variable length information elements below take into account only the present CCITT standardized coding values. Future enhancements and expansions to this TBR will not be restricted to these limits.

NOTE 2: This information element may be repeated.

NOTE 3: The maximum length is network dependent.

NOTE 4: The reserved values with bits 5-8 coded "0 0 0 0" are for future information elements for which comprehension by the receiver is required (see subclause 11.4.6.6.1).

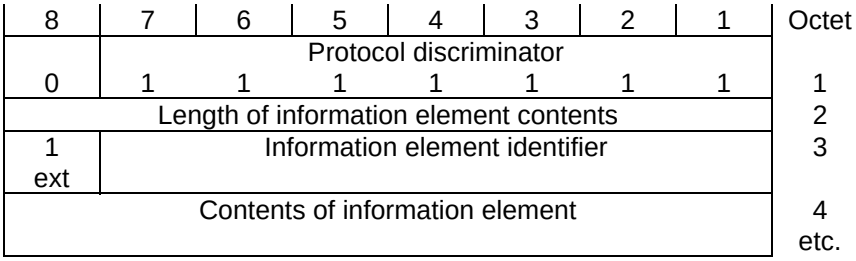


Figure 11.7: Information element format using escape for extension

11.3.5.2 Extensions of codesets

Reference: ETS 300 102-1, subclause 4.5.2.

Definition: There is a certain number of possible information element identifier values using the formatting rules described in subclause 11.3.5.1; 128 from the variable length information element format and at least 8 from the single octet information element format.

One value in the single octet format is specified for shift operations described below. One other value in both the single octet and variable format is reserved. This leaves at least 133 information element identifier values available for assignment.

It is possible to expand this structure to eight codesets of at least 133 information element identifier values each. One common value in the single octet format is employed in each codeset to facilitate shifting from one codeset to another. The contents of this Shift information element identifies the codeset to be used for the next information element or elements. The codeset in use at any given time is referred to as the "active codeset". By convention, codeset 0 is the initially active codeset.

Two codeset shifting procedures are supported: locking shift and non-locking shift.

Codeset 5 is reserved for information elements defined by ETSI.

Codeset 6 is reserved for information elements specific to a national network (either public or private).

Codeset 7 is reserved for user-specific information elements.

The coding rules specified in subclause 11.3.5.1 apply for information elements belonging to any active codeset.

Transitions from one active codeset to another (i.e. by means of the locking shift procedure) may only be made to a codeset with a higher numerical value than the codeset being left.

An information element belonging to codesets 5, 6 or 7, may appear together with information elements belonging to codeset 0 (being the active codeset) by using the non-locking shift procedure (see subclause 11.3.5.4).

The information element identifier code points with bits 5 to 8 coded "0 0 0 0" in each of the codesets are reserved for information elements for which comprehension by the receiver is required (see subclause 11.4.6.6.1 for specific error handling procedures).

11.3.5.3 Locking shift procedure

Reference: ETS 300 102-1, subclause 4.5.3.

Definition: The locking shift procedure employs an information element to indicate the new active codeset. The specified codeset remains active until another locking shift information element is encountered which specifies the use of another codeset. For example, codeset 0 is active at the start of message content analysis. If a locking shift to codeset 5 is encountered, the next information elements is interpreted according to the information element identifiers assigned in codeset 5, until another shift information element is encountered.

This procedure is used only to shift to a higher order codeset than the one being left.

The locking shift is valid only within that message which contains the locking Shift information element. At the start of every message content analysis, the active codeset is codeset 0.

The locking Shift information element uses the single octet information element format and coding shown in figure 11.8 and table 11.28.

8	7	6	5	4	3	2	1	Octet
1	0	Shift 0 identifier	1	0 *	New codeset identification			1

*: "0" in this position indicates locking shift

Figure 11.8: Locking Shift information element

Table 11.28: Locking Shift element information element

Codeset identification (bits 3 to 1): 3 2 1	
0 0 0	not applicable
0 0 1 } to 1 0 0 }	reserved
1 0 1	reserved, codeset 5: information elements defined by ETSI
1 1 0	reserved, codeset 6: information elements specific to a national network (either public or private)
1 1 1	reserved, codeset 7: user specific information elements

11.3.5.4 Non-locking shift procedure

Reference: ETS 300 102-1, subclause 4.5.4.

Definition: The non-locking shift procedure provides a temporary shift to the specified lower or higher codeset. The non-locking shift procedure uses a single octet information element to indicate the codeset to be used to interpret the next single information element. After the interpretation of the next single information element, the active codeset is again used for interpreting any following information elements. For example, codeset 0 is active at the beginning of message content analysis. If a non-locking shift to codeset 6 is encountered, only the next information element is interpreted according to the information element identifiers assigned in codeset 6. After this information element is interpreted, codeset 0 shall again be used to interpret the following information elements. A non-locking Shift information element indicating the current codeset shall not be regarded as an error.

A locking Shift information element does not directly follow a non-locking Shift information element. If this combination is received it is interpreted as though a locking Shift information element only had been received.

The non-locking Shift information element uses the single octet information element format and coding shown in figure 11.9 and table 11.29.

8	7	6	5	4	3	2	1	Octet
1	0	Shift 0 identifier	1	1 *	Temporary codeset identification			1

*: "1" in this position indicates non-locking shift

Figure 11.9: Non-locking Shift information element

Table 11.29: Non-locking Shift information element

Codeset identification (bits 3 to 1):		
3 2 1		
0 0 0	codeset 0	(initially active): Q.931 information elements
0 0 1 }		
to }	reserved	
1 0 0 }		
1 0 1	reserved, codeset 5:	information elements defined by ETSI
1 1 0	reserved, codeset 6:	information elements specific to a national network (either public or private)
1 1 1	reserved, codeset 7:	user-specific information elements

11.3.5.5 Bearer capability

Reference: ETS 300 102-1, subclause 4.5.5.

Definition: The purpose of the Bearer capability information element is to indicate a requested CCITT Recommendation I.231 bearer service to be provided by the network. It contains only information which may be used by the network.

The Bearer capability information element is coded as shown in figure 11.10 and table 11.30.

No default Bearer capability may be assumed by the absence of this information element.

The maximum length of this information element is 13 octets when CCITT recommended coding is used.

8	7	6	5	4	3	2	1	Octet
0	Bearer capability 0	0	0	0	1	0	0	1
	Information element identifier							
Length of the Bearer capability contents								2
1 ext	coding standard		information transfer capability					3
0/1 ext	transfer mode		information transfer rate					4
0/1 ext	structure			configuration		establishment		4a* (note 1)
1 ext	symmetry		information transfer rate (destination → origination)					4b* (note 1)
0/1 ext	0 Layer 1	1 ident.	user information Layer 1 protocol					5*
0/1 ext	synch./ asynch.	negot.	user rate					5a* (note 4)
0/1 ext	intermediate rate		NIC on Tx	NIC on Rx	Flow control on Tx	Flow control on Rx	0 Spare	5b* (note 2)
0/1 ext	Hdr/ no Hdr	MultI- frame support	Mode	LLI negot.	Assignor/ Assignee	Inband/ Outband negot.	0 Spare	5b* (note 3)
0/1 ext	number of stop bits		number of data bits		Parity			5c* (note 4)
1 ext	duplex mode	modem type						5d* (note 4)
1 ext	1 Layer 2	0 ident.	user information Layer 2 protocol					6*
1 ext	1 Layer 3	1 ident.	user information Layer 3 protocol					7*

NOTE 1: If default values are used for all fields of octets 4a and 4b, then these octets are not included. If default values are used for all fields of octet 4b, but not for one or more fields of octet 4a, then only octet 4a is included. Otherwise, both octets 4a and 4b are included.

NOTE 2: This octet may be present only if octet 5 indicates CCITT recommended rate adaption V.110/X.30.

NOTE 3: This octet is present only if octet 5 indicates CCITT recommended rate adaption V.120.

NOTE 4: This octet may be present if octet 5 indicates either of the CCITT recommended rate adaptions V.110/X.30 or V.120.

Figure 11.10: Bearer capability information element

Table 11.30: Bearer capability information element

Coding Standard (octet 3)

Bits
7 6
0 0 CCITT recommended coding as described below (note 1)

NOTE 1: Codepoint "0 0" "CCITT recommended coding as described below" is always used.

Information transfer capability (octet 3)

Bits
5 4 3 2 1

0 0 0 0 0	speech
0 1 0 0 0	unrestricted digital information
1 0 0 0 0	3,1 kHz audio
1 0 0 0 1	unrestricted digital information with tones/announcements (previously 7 kHz audio in ETS 300 102-1)
1 1 0 0 0	video

All other values are reserved.

Transfer mode (octet 4)

Bits
7 6
0 0 Circuit mode
1 0 packet mode
All other values are reserved.

Information transfer rate (octet 4 and 4b, bits 5 to 1)

Bits

5 4 3 2 1	**Circuit mode**	**Packet mode**
0 0 0 0 0		- This code is used for packet-mode calls
1 0 0 0 0	64 kbit/s	-
1 0 0 0 1	2 x 64 kbit/s	-
1 0 0 1 1	384 kbit/s	-
1 0 1 0 1	1 536 kbit/s	-
1 0 1 1 1	1 920 kbit/s	-

All other values are reserved.

NOTE 2: When octet 4b is omitted, the Bearer capability is bi-directional symmetric at the information transfer rate specified in octet 4. When octet 4b is included, the information transfer rate in octet 4 refers to the origination $\rightarrow$ destination direction.
NOTE 3: When the information transfer rate 2 x 64 kbit/s is used the coding of octet 3 and 4 refer to both 64 kbit/s channels.

Structure (octet 4a)

Bits
7 6 5

0 0 0	default (see note 4)
0 0 1	8 kHz integrity (see note 5)
1 0 0	service data unit integrity
1 1 1	unstructured

Table 11.30 (continued): Bearer capability information element

All other values are reserved.

NOTE 4: If octet 4a is omitted, or the structure field is coded "000", then the value of the structure attribute is according to the following:

Transfer mode	**Transfer capability**	**Structure**
circuit	speech	8 kHz integrity
circuit	unrestricted digital	8 kHz integrity
circuit	audio	8 kHz integrity
circuit	video	8 kHz integrity
packet	unrestricted digital	service data unit integrity

NOTE 5: When the information transfer rate 2 x 64 kbit/s is used, 8 kHz integrity with Restricted Differential Time Delay (RDTD) is offered.

Configuration (octet 4a)

Bits **4 3**	
0 0	point-to-point

All other values are reserved.

NOTE 6: If octet 4a is omitted, the configuration is assumed to be point-to-point.

Establishment (octet 4a)

Bits **2 1**	
0 0	demand

All other values are reserved.

NOTE 7: If octet 4a is omitted, the method of establishment is assumed to be "demand".

Symmetry (octet 4b)

Bits **7 6**	
0 0	bi-directional symmetric

All other values are reserved.

NOTE 8: If octet 4b is omitted, bi-directional symmetric is assumed.

Table 11.30 (continued): Bearer capability information element

User information Layer 1 protocol (octet 5)

Bits **5 4 3 2 1**	
0 0 0 0 1	CCITT standardized rate adaption V.110/X.30. This implies the presence of octet 5a and optionally octet 5b, 5c and 5d as defined below.
0 0 0 1 1	CCITT Recommendation G.711 [5] A-law.
0 0 1 0 0	CCITT Recommendation G.721 32 kbit/s ADPCM and Recommendation I.460.
0 0 1 0 1	CCITT Recommendations H.221 and H.242.
0 0 1 1 0	CCITT Recommendation G.7xx 384 kbit/s video
0 0 1 1 1	Non-CCITT recommended rate adaption. This implies the presence of octet 5a and optionally, octets 5b, 5c and 5d. The use of this codepoint indicates that the user rate specified in octet 5a is defined in accordance with the non-CCITT recommended rate adaption scheme. Additionally, octets 5b, 5c and 5d, if present, are defined consistent with the specified rate adaption.
0 1 0 0 1	CCITT recommended rate adaption X.31 HDLC flag stuffing.

All other values are reserved.

NOTE 9: If the transfer mode is "circuit mode"; and if the information transfer capability is "unrestricted digital information" or "restricted digital information"; and if the user information Layer 1 protocol is not to be identified to the network, octet 5 is omitted. If the transfer mode is packet mode, octet 5 may be omitted. Otherwise, octet 5 is present.

Synchronous/asynchronous (octet 5a)

Bit **7**	
0	synchronous
1	asynchronous

NOTE 10: Octets 5b, 5c and 5d may be omitted in case of synchronous user rates.

Negotiation (octet 5a)

Bit **6**	
0	in-band negotiation not possible
1	in-band negotiation possible

NOTE 11: See CCITT Recommendations V.110 and X.30.

User rate (octet 5a)

Bits **5 4 3 2 1**		
0 0 0 0 0	rate is indicated by E-bits specified in CCITT Recommendation I.460.	
0 0 0 0 1	0,6 kbit/s	CCITT Recommendations V.6 and X.1.
0 0 0 1 0	1,2 kbit/s	CCITT Recommendation V.6.
0 0 0 1 1	2,4 kbit/s	CCITT Recommendations V.6 and X.1.
0 0 1 0 0	3,6 kbit/s	CCITT Recommendation V.6.

Table 11.30 (continued): Bearer capability information element

0 0 1 0 1	4,8 kbit/s	CCITT Recommendations V.6 and X.1.
0 0 1 1 0	7,2 kbit/s	CCITT Recommendation V.6.
0 0 1 1 1	8 kbit/s	CCITT Recommendation I.460.
0 1 0 0 0	9,6 kbit/s	CCITT Recommendations V.6 and X.1.
0 1 0 0 1	14,4 kbit/s	CCITT Recommendation V.6.
0 1 0 1 0	16 kbit/s	CCITT Recommendation I.460.
0 1 0 1 1	19,2 kbit/s	CCITT Recommendation V.6.
0 1 1 0 0	32 kbit/s	CCITT Recommendation I.460.
0 1 1 1 0	48 kbit/s	CCITT Recommendations V.6 and X.1.
0 1 1 1 1	56 kbit/s	CCITT Recommendation V.6.
1 0 0 0 0	64 kbit/s	CCITT Recommendation X.1.
1 0 1 0 1	0,1345 kbit/s	CCITT Recommendation X.1.
1 0 1 1 0	0,100 kbit/s	CCITT Recommendation X.1.
1 0 1 1 1	0,075/1,2 kbit/s	CCITT Recommendations V.6 and X.1 (note 12).
1 1 0 0 0	1,2/0,075 kbit/s	CCITT Recommendations V.6 and X.1 (note 12).
1 1 0 0 1	0,050 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 0 1 0	0,075 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 0 1 1	0,110 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 1 0 0	0,150 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 1 0 1	0,200 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 1 1 0	0,300 kbit/s	CCITT Recommendations V.6 and X.1.
1 1 1 1 1	12 kbit/s	CCITT Recommendation V.6.

All other values are reserved.

NOTE 12: The first rate is the transmit rate in the forward direction of the call. The second rate is the transmit rate in the backward direction of the call.

*** Octet 5b for V.110/X.30 rate adaption ***

Intermediate rate (octet 5b)

Bits **7 6**	
0 0	reserved, not used
0 1	8 kbit/s
1 0	16 kbit/s
1 1	32 kbit/s

Network Independent clock (NIC) on Transmission (Tx) (octet 5b) (note 13)

Bit **5**	
0	not required to send data with Network Independent clock
1	required to send data with Network Independent clock

NOTE 13: Refers to transmission in the backward direction of the call.
NOTE 14: See CCITT Recommendations V.110 and X.30.

Table 11.30 (continued): Bearer capability information element

Network Independent clock (NIC) on reception (Rx) (octet 5b) (note 15)

Bit
4
0 Cannot accept data with Network Independent clock (i.e. sender does not support this optional procedure).
1 Can accept data with Network Independent clock (i.e. sender does support this optional procedure).

NOTE 15: Refers to transmission in the forward direction of the call.
NOTE 14: See CCITT Recommendations V.110 and X.30.

Flow control on transmission (Tx) (octet 5b) (note 16)

Bit
3
0 Not required to send data with flow control mechanism
1 Required to send data with flow control mechanism

NOTE 16: Refers to transmission in the forward direction of the call.
NOTE 17: See CCITT Recommendations V.110 and X.30.

Flow control on reception (Rx) (octet 5b) (note 18)

Bit
2
0 Cannot accept data with flow control mechanism (i.e. sender does not support this optional procedure).
1 Can accept data with flow control mechanism (i.e. sender does support this optional procedure).

NOTE 18: Refers to transmission in the backward direction of the call.
NOTE 19: See CCITT Recommendations V.110 and X.30.

Rate adaption header/no header (octet 5b)

Bit
7
0 Rate adaption header not included.
1 Rate adaption header included.

Multiple frame establishment support in data link (octet 5b)

Bit
6
0 Multiple frame establishment not supported. Only UI-frames allowed.
1 Multiple frame establishment supported.

Mode of operation (octet 5b)

Bit
5
0 Bit transparent mode of operation.
1 Protocol sensitive mode of operation.

Table 11.30 (continued): Bearer capability information element

Logical link identifier negotiation (octet 5b)

Bit **4**	
0	Default, LLI = 256 only.
1	Full protocol negotiation (note 20).

NOTE 20: A connection over which protocol negotiation will be executed is indicated in bit 2 of octet 5b.

Assignor/assignee (octet 5b)

Bit **3**	
0	Message originator is "Default assignee".
1	Message originator is "Assignor only".

In-band/Out-band negotiation (octet 5b)

Bit **2**	
0	Negotiation is done with USER INFORMATION messages on a temporary signalling connection.
1	Negotiation is done in-band using logical link zero.

Number of stop bits (octet 5c)

Bits **7 6**	
0 0	Reserved, not used.
0 1	1 bit.
1 0	1,5 bits.
1 1	2 bits.

Number of data bits excluding parity bit if present (octet 5c)

Bits **5 4**	
0 0	reserved, not used
0 1	5 bits
1 0	7 bits
1 1	8 bits

Table 11.30 (continued): Bearer capability information element

Parity information (octet 5c)

Bits **3 2 1**	
0 0 0	Odd.
0 1 0	Even.
0 1 1	None.
1 0 0	Forced to 0.
1 0 1	Forced to 1.

All other values reserved.

Duplex mode (octet 5d)

Bit **7**	
0	Half duplex.
1	Full duplex.

Modem type (octet 5d)

Bits **654321**	
000000 through 000101	Reserved, national use.
010001	CCITT Recommendation V.21.
010010	CCITT Recommendation V.22.
010011	CCITT Recommendation V.22 bis.
010100	CCITT Recommendation V.23.
010101	CCITT Recommendation V.26.
010110	CCITT Recommendation V.26 bis.
010111	CCITT Recommendation V.26 ter.
011000	CCITT Recommendation V.27.
011001	CCITT Recommendation V.27 bis.
011010	CCITT Recommendation V.27 ter.
011011	CCITT Recommendation V.29.
011100	CCITT Recommendation V.32.
100000 through 101111	Reserved, national use.
110000 through 111111	User specified.

All other values are reserved.

User information Layer 2 protocol (octet 6)

Bits **5 4 3 2 1**	
0 0 0 1 0	CCITT Recommendation Q.921 (I.441).
0 0 1 1 0	CCITT Recommendation X.25, link level.

All other values are reserved.

NOTE 21: If the transfer mode is "packet mode", octet 6 is present. For other cases, if the user Layer 2 protocol is to be identified to the network, then octet 6 is present; otherwise octet 6 is omitted.

Table 11.30 (concluded): Bearer capability information element

User information Layer 3 protocol (octet 7)	
Bits	
5 4 3 2 1	
0 0 0 1 0	CCITT Recommendation Q.931 (I.451).
0 0 1 1 0	CCITT Recommendation X.25, packet layer.

All other values are reserved.

NOTE 22: If the user information Layer 3 protocol is to be identified to the network, then octet 7 is present; otherwise octet 7 is omitted.

11.3.5.6 Call identity

Reference: ETS 300 102-1, subclause 4.5.6.

Definition: The purpose of the Call identity information element is to identify the suspended call. The Call identity provided by the user is guaranteed by the network to be unique over the user-network interface on which the user resides. The Call identity is assigned at the start of the call suspension, and is available for re-use after the resume procedure has been completed successfully.

The Call identity information element is coded as shown in figure 11.11.

The maximum length of this information element is 10 octets.

8	7	6	5	4	3	2	1	Octet
0	Call Identity 0 0 0 I 0 0 0 0 Information element identifier							1
Length of the call identify contents								2
Call identity (any bit pattern allowed, e.g. IA5 characters)								3 etc.

Figure 11.11: Call identity information element

11.3.5.7 Call state

Reference: ETS 300 102-1, subclause 4.5.7.

Definition: The purpose of the Call state information element is to describe the current status of a call, (see subclause 11.1.1).

The Call state information element is coded as shown in figure 11.12 and table 11.31.

The maximum length of this information element is three octets when CCITT recommended coding is used.

8	7	6	5	4	3	2	1	Octet
0	Call state 0 0 0 I 0 1 0 0 Information element identifier							1
Length of the Call state contents								2
coding standard	Call state value/global interface state value (state value is coded in binary)							3

Figure 11.12: Call state information element

Table 11.31: Call state information element

Coding standard (octet 3)

Bits

8	7	
0	0	CCITT recommended coding, as described below.
0	1	Reserved for other international standards (note).
1	0	Reserved, national standard (note).
1	1	Reserved, standard defined for the network (either public or private) present on the network side of the interface (note).

NOTE: These other coding standards should be used only when the desired Call state cannot be represented with the CCITT recommended coding.

Call state value (octet 3)

Bits

6	5	4	3	2	1	User State	Network state
0	0	0	0	0	0	U0- Null	N0- Null
0	0	0	0	0	1	U1- Call initiated	N1- Call initiated
0	0	0	0	1	0	U2- Overlap sending	N2- Overlap sending
0	0	0	0	1	1	U3- Outgoing call proceeding	N3- Outgoing call proceeding
0	0	0	1	0	0	U4- Call delivered	N4- Call delivered
0	0	0	1	1	0	U6- Call present	N6- Call present
0	0	0	1	1	1	U7- Call received	N7- Call received
0	0	1	0	0	0	U8- Connect request	N8- Connect request
0	0	1	0	0	1	U9- Incoming call Proceeding	N9- Incoming call Proceeding
0	0	1	0	1	0	U10 - Active	N10 - Active
0	0	1	0	1	1	U11 - Disconnect request	N11 - Disconnect request
0	0	1	1	0	0	U12 - Disconnect indication	N12 - Disconnect indication
0	0	1	1	1	1	U15 - Suspend request	N15 - Suspend request
0	1	0	0	0	1	U17 - Resume request	N17 - Resume request
0	1	0	0	1	1	U19 - Release request	N19 - Release request
0	1	0	1	1	0		N22 - Call abort
0	1	1	0	0	1	U25 - Overlap receiving	N25 - Overlap receiving

All other values are reserved.

Global interface state value (octet 3)

Bits

6	5	4	3	2	1	State
0	0	0	0	0	0	REST 0 - Null
1	1	1	1	0	1	REST 1 - Restart request
1	1	1	1	1	0	REST 2 - Restart

All other values are reserved.

11.3.5.8 Called party number

Reference: ETS 300 102-1, subclause 4.5.8.

Definition: The purpose of the Called party number information element is to identify the called party of a call.

The Called party number information element is coded as shown in figure 11.13 and table 11.32.

The maximum length of this information element is 23 octets.

8	7	6	5	4	3	2	1	Octet
0	Called party number 1 1 1 0 0 0 0 Information element identifier							1
Length of Called party number contents								2
1 ext	Type of number			Numbering plan identification				3
0	Number digits (IA5 characters, see note)							4 etc.
NOTE: The number digits appear in multiple octets 4, in the same order in which they would be entered, that is, the number digit which would be entered first is located in the first octet 4.								

Figure 11.13: Called party number information element

Table 11.32: Called party number information element

Type of number (octet 3) (note 1)

Bits 7 6 5	
0 0 0	Unknown (note 2).
0 0 1	International number (note 3).
0 1 0	National number (note 3).
0 1 1	Network specific number (note 4).
1 0 0	Subscriber number (note 3).
1 1 0	Abbreviated number (note 5).
1 1 1	Reserved for extension.

All other values are reserved.

NOTE 1: For the definition of international, national and subscriber number, see CCITT Recommendation I.330.
NOTE 2: The type of number "unknown" is used when the user or the network has no knowledge of the type of number, e.g. international number, national number, etc. In this case the number digits field is organized according to the network dialling plan; e.g. prefix or escape digits might be present.
NOTE 3: Prefix or escape digits are not included.
NOTE 4: The type of number "network specific number" is used to indicate administration/service number specific to the serving network, e.g. used to access an operator.
NOTE 5: The support of this code is network dependent. The number provided in this information element presents a shorthand representation of the complete number in the specified numbering plan as supported by the network.

Numbering plan identification (octet 3)

Numbering plan (applies for type of number = 000, 001, 010 and 100)

Bits 4 3 2 1	
0 0 0 0	Unknown (note 6).
0 0 0 1	ISDN/Telephony numbering plan (CCITT Recommendation E.164/E.163).
0 0 1 1	Data numbering plan (CCITT Recommendation X.121).
0 1 0 0	Telex numbering plan (CCITT Recommendation F.69).
1 0 0 0	National standard numbering plan.
1 0 0 1	Private numbering plan.
1 1 1 1	Reserved for extension.

All other values are reserved.

NOTE 6: The numbering plan "unknown" is used when the user or the network has no knowledge of the numbering plan. In this case the number digits field is organized according to the network dialling plan; e.g. prefix or escape digits may be present.

Number digits (octets 4 etc.)

This field is coded with IA5 characters, according to the formats specified in the appropriate numbering/dialling plan.

11.3.5.9 Called party subaddress

Reference: ETS 300 102-1, subclause 4.5.9

Definition: The purpose of the Called party subaddress is to identify the subaddress of the called party of a call. For the definition of subaddress see CCITT Recommendation I.330.

The Called party subaddress is coded as shown in figure 11.14 and table 11.33.

The maximum length of this information element is 23 octets.

8	7	6	5	4	3	2	1	Octet
0	Called party subaddress 1	1	1	0	0	0	1 Information element identifier	1
Length of the Called party subaddress content								2
1 ext	Type of subaddress			odd/ even in- dicator	0	0 spare	0	3
Subaddress information								4 etc.

Figure 11.14: Called party subaddress information element

Table 11.33: Called party subaddress information element

Type of subaddress (octet 3)

Bits **7 6 5**	
0 0 0	NSAP (CCITT Recommendation X.213/ISO 8348 AD2).
0 1 0	User specified.

All other values are reserved.

Odd/even indicator (octet 3)

Bit **4**	
0	Even number or address signals.
1	Odd number or address signals.

NOTE 1: The odd/even indicator is used when the type of subaddress is "user specified" and the coding is BCD.

Subaddress information (octet 4, etc.)

The Network Service Access Point (NSAP) CCITT Recommendation X.213/ISO 8348 AD2 address, is formatted as specified by octet 4 which contains the Authority and Format Identifier (AFI). The encoding is made according to the "preferred binary encoding" as defined in CCITT Recommendation X.213/ISO 8348 AD2. For the definition of this type of subaddress, see CCITT Recommendation I.334.

For user specified subaddress, this field is encoded according to the user specification, subject to a maximum length of 20 octets. When interworking with X.25 networks BCD coding should be applied.

NOTE 2: It is recommended that users apply the NSAP subaddress type since this subaddress type allows the use of decimal, binary and IA5 syntaxes in a standardized manner.

NOTE 3: It is recommended that users apply the local IDI format when the subaddress is used for terminal selection purposes. In this case the IA5 character syntax using only digits 0 to 9 is used for the Domain Specific Part (DSP).

11.3.5.10 Cause

Reference: ETS 300 102-1, subclause 4.5.12.

Definition: The purpose of the Cause information element is to describe the reason for generating certain messages, to provide diagnostic information in the event of procedural errors and to indicate the location of the Cause originator.

The Cause information element is coded as shown in figure 11.15 and tables 11.35 and 11.36. The maximum length of this information element is 32 octets.

The Cause information element and diagnostic may be repeated in a message, e.g. to report multiple errors associated with a single call, but only one cause value is transferred to the remote user through the network.

8	7	6	5	4	3	2	1	Octet
0	Cause 0 0 0 1 0 0 0 Information element identifier							1
Length of the cause contents								2
0/1 etc.	Coding Standard		0 Spare	Location				3
1 ext	Recommendation							3a*
1 ext	Cause Value							4
Diagnostic(s) (if any)								5
NOTE: If the default value applies for the Recommendation field, octet 3a is omitted.								

Figure 11.15: Cause information element

Table 11.34: Cause information element

Coding standard (octet 3)

Bits **7 6**	
0 0	CCITT recommended coding, as described below.
0 1	Reserved for other international standards (note 1).
1 0	Reserved, national standard (note 1).
1 1	Reserved, standard specific to identified location (note 1).

NOTE 1: These other coding standards should be used only when the desired Cause cannot be represented with CCITT recommended coding.

Location (octet 3)

Bits **4 3 2 1**	
0 0 0 0	User.
0 0 0 1	Private network serving the local user.
0 0 1 0	Public network serving the local user.
0 0 1 1	Transit network.
0 1 0 0	Public network serving the remote user.
0 1 0 1	Private network serving the remote user.
0 1 1 1	International network.
1 0 1 0	Network beyond interworking point.

All other values are reserved.

NOTE 2: Depending on the location of the users, the local public network and remote public network may be the same network.

Table 11.34 (concluded): Cause information element

Recommendation (octet 3a) (note 3)

Bits 7 6 5 4 3 2 1	
0 0 0 0 0 0 0	CCITT Recommendation Q.931 (note 4).
0 0 0 0 0 1 1	CCITT Recommendation X.21.
0 0 0 0 1 0 0	CCITT Recommendation X.25.

All other values are reserved.

NOTE 3: If octet 3a is omitted, CCITT Recommendation Q.931 is assumed.
NOTE 4: This value is used only when octet 3a is extended and the Cause in octet 4 is from table 11.35.

Cause value (octet 4)

The cause value is divided in two fields, a class (bits 5 through 7) and a value within the class (bits 1 through 4).

The class indicates the general nature of the event.

Class (000):	Normal event.
Class (001):	Normal event.
Class (010):	Resource unavailable.
Class (011):	Service or option not available.
Class (100):	Service or option not implemented.
Class (101):	Invalid message (e.g. parameter out of range).
Class (110):	Protocol error (e.g. unknown message).
Class (111):	Interworking.

The cause values are listed in table 11.35 below.

Diagnostics (octet 5)

Diagnostic information is not available for every Cause, see table 11.35. The inclusion of diagnostics is optional. When available the coding of diagnostic(s) is the same as for the corresponding information element in subclause 11.3.

Table 11.35: Cause information element

Cause Value		Cause Number	Cause	Diagnostics
Class bits 7 6 5	Value bits 4 3 2 1			
0 0 0	0 0 0 1	1	Unallocated (unassigned) number	note 11
0 0 0	0 0 1 0	2	No route to specified transit network	Transit network identity (note 10)
0 0 0	0 0 1 1	3	No route to destination	note 11
0 0 0	0 1 1 0	6	Channel unacceptable	-
0 0 0	0 1 1 1	7	Call awarded and being delivered in an established channel	-
0 0 1	0 0 0 0	16	Normal call clearing	note 11
0 0 1	0 0 0 1	17	User busy	-
0 0 1	0 0 1 0	18	No user responding	-
0 0 1	0 0 1 1	19	No answer from user (user alerted)	-
0 0 1	0 1 0 1	21	Call rejected	note 11 User supplied diagnostic (note 4)
0 0 1	0 1 1 0	22	Number changed	New destination (note 5)
0 0 1	1 0 1 0	26	Non-selected user clearing	-
0 0 1	1 0 1 1	27	Destination out of order	-
0 0 1	1 1 0 0	28	Invalid number format	-
0 0 1	1 1 0 1	29	Facility rejected	Facility identification (note 1)
0 0 1	1 1 1 0	30	Response to STATUS ENQUIRY	-
0 0 1	1 1 1 1	31	Normal, unspecified	-
0 1 0	0 0 1 0	34	No circuit/channel available	-
0 1 0	0 1 1 0	38	Network out of order	-
0 1 0	1 0 0 1	41	Temporary failure	-
0 1 0	1 0 1 0	42	Switching equipment congestion	-
0 1 0	1 0 1 1	43	Access information discarded	Discarded information element identifier(s) (note 6)
0 1 0	1 1 0 0	44	Requested circuit/channel not available	-
0 1 0	1 1 1 1	47	Resources unavailable, unspecified	
0 1 1	0 0 0 1	49	Quality of service unavailable	note 11
0 1 1	0 0 1 0	50	Requested facility not subscribed	Facility identification (notes 1 & 3)
0 1 1	1 0 0 1	57	Bearer capability not authorized	
0 1 1	1 0 1 0	58	Bearer capability not presently available	(note 3)
0 1 1	1 1 1 1	63	Service or option not available, unspecified	-
1 0 0	0 0 0 1	65	Bearer capability not implemented	(note 3)
1 0 0	0 0 1 0	66	Channel type not implemented	Channel type (note 7)
1 0 0	0 1 0 1	69	Requested facility not implemented	Facility identification (note 1)
1 0 0	0 1 1 0	70	Only restricted digital information Bearer capability is available	-
1 0 0	1 1 1 1	79	Service or option not implemented, unspecified	-
1 0 1	0 0 0 1	81	Invalid Call reference value	-
1 0 1	0 0 1 0	82	Identified channel does not exist	Channel identity
1 0 1	0 0 1 1	83	A suspended call exists, but this Call identity does not	-

Table 11.35 (continued): Cause information element

Cause Value		Cause Number	Cause	Diagnostics
Class bits 7 6 5	Value bits 4 3 2 1			
1 0 1	1 0 0 0	88	Incompatible destination	Incompatible parameter (note 2)
1 0 1	1 0 1 1	91	Invalid transit network selection	-
1 0 1	1 1 1 1	95	Invalid message, unspecified	-
1 1 0	0 0 0 0	96	Mandatory information element is missing	Information element identifier(s) (note 6)
1 1 0	0 0 0 1	97	Message type non-existent or not implemented	Message type
1 1 0	0 0 1 0	98	Message not compatible with Call state or Message type non-existent or not implemented	Message type
1 1 0	0 0 1 1	99	Information element non-existent or not implemented	Information element identifier(s) (notes 6 & 8)
1 1 0	0 1 0 0	100	Invalid information element contents	Information element identifier(s) (note 6)
1 1 0	0 1 0 1	101	Message not compatible with Call state	Message type
1 1 0	0 1 1 0	102	Recovery on timer expiry	Timer number (note 9)
1 1 0	1 1 1 1	111	Protocol error, unspecified	-
1 1 1	1 1 1 1	127	Interworking, unspecified	-

All other values are reserved.

NOTE 1: The coding of facility identification is network dependent.
NOTE 2: Incompatible parameter is composed of incompatible information element identifier.
NOTE 3: The format of the diagnostic field for causes number 57, 58 and 65 is as shown in figure 11.16 and table 11.36.
NOTE 4: User supplied diagnostics field is encoded according to the user specification, subject to the maximum length of the Cause information element. The coding of user supplied diagnostics should be made in such a way that it does not conflict with the coding described in note 11 below.
NOTE 5: New destination is formatted as the Called party number information element, including information element identifier. Transit network selection may also be included.
NOTE 6: Locking and non-locking shift procedures described in subclause 11.3.5 are applied. In principle, information element identifiers are ordered in the same order as the information elements in the received message.
NOTE 7: The following coding is used:
bit 8: Extension bit;
bit 7-5: spare;
bit 4-1: according to the table 11.38 octet 3.2, channel type.
NOTE 8: When only Locking shift information element is included and no variable length information element identifier follows, it means that the codeset in the locking shift itself is not implemented.
NOTE 9: The timer number is coded in IA5 characters, e.g. T308 is coded as '3' '0' '8'. The following coding is used in each octet:
bit 8: Spare "0";
bit 7-1: IA5 character.

Table 11.35 (concluded): Cause information element

Cause Value		Cause Number	Cause	Diagnostics
Class bits 7 6 5	Value bits 4 3 2 1			
NOTE 10: The diagnostic field contains the entire Transit network selection or Network specific facilities information element, as applicable. NOTE 11: The following coding is used: bit 8: 1; bits 7-3: 00000 bits 2-1: condition as follows: 00 - unknown; 01 - permanent; 10 - transient.				

8	7	6	5	4	3	2	1	Octet
0/1 ext	Attribute number							5
0/1 ext	Rejected attribute							5a
1 ext	Available attribute							5b

NOTE 1: When diagnostics information is provided, octet 5 and 5a is present. Octet 5b is optional.

NOTE 2: Octets 5-5b may be repeated to report multiple rejected attributes.

Figure 11.16: Coding of the diagnostic field for causes number 57, 58 and 65

Table 11.36: Coding of the diagnostic field for causes number 57, 58 and 65

Attribute Number (octet 5)

Bits 7 6 5 4 3 2 1	No.	
0 1 1 0 0 0 1	1	Information transfer capability
0 1 1 0 0 1 0	2	Information transfer mode
0 1 1 0 0 1 1	3	Information transfer rate
0 1 1 0 1 0 0	4	Structure
0 1 1 0 1 0 1	5	Configuration
0 1 1 0 1 1 0	6	Establishment
0 1 1 0 1 1 1	7	Symmetry
0 1 1 1 0 0 0	8	Information transfer rate (dest → orig)
0 1 1 1 0 0 1	9	Layer identification

Rejected attribute (octet 5a)

Attribute No.

[1] **Information transfer capability:**

Bits 7-6: 00
Bits 5-1: according to table 11.30, octet 3.

[2] **Information transfer mode:**

Bits 7-6: according to table 11.30, octet 4.
Bits 5-1: 00000

[3] **Information transfer rate:**

Bits 7-6: 00
Bits 5-1: according to table 11.30, octet 4.

[4] **Structure:**

Bits 7-5: according to table 11.30, octet 4a.
Bits 4-1: 0000

[5] **Configuration:**

Bits 7-5: 000
Bits 4-3: according to table 11.30, octet 4a.
Bits 2-1: 00

[6] **Establishment:**

Bits 7-3: 00000
Bits 2-1: according to table 11.30, octet 4a.

[7] **Symmetry**

Bits 7-6: according to table 11.30, octet 4b.
Bits 5-1: 00000

Table 11.36 (concluded): Coding of the diagnostic field for causes number 57, 58 and 65

[8]	**Information transfer rate (dest → orig):** Bits 7-6: 00 Bits 5-1: according to table 11.30, octet 4b.
[9]	**Layer identification:** Bits **7 6** 0 1 (Layer 1) Bits 5-1 according to table 11.30, octet 5. 1 0 (Layer 2) Bits 5-1 according to table 11.30, octet 6. 1 1 (Layer 3) Bits 5-1 according to table 11.30, octet 7.
Available attributes (octet 5b) The same coding as octet 5a.	

ETSI Cause values:

The coding of octet 3 and 5 is the same as defined for CCITT recommended Cause values (see table 11.34). Coding standard (octet 3) is coded "1 0" (National standard).

For the Cause value (octet 4) it is recommended that in allocating national Cause values the classification used for the CCITT coding recommendation is used also for national standard. In coding the specific Cause values, the principle shown below should be followed.

Class	Value	
7 6 5	**4 3 2 1**	
X X X	0 X X X	national standard
X X X	1 X X X	ETSI standard

The ETSI Cause values are defined below:

Table 11.37: ETSI Cause values

Cause Value		Cause Number	Cause	Diagnostics
Class Bits 7 6 5	Value Bits 4 3 2 1			
1 0 1	1 0 0 0	88	Non-existent Closed User Group (CUG) (note)	-
1 0 1	1 0 0 1	89	Called user not member of CUG (note)	-
1 0 1	1 0 1 0	90	Called user belongs to CUG (note)	-
NOTE: This Cause value is used for the support of stimulus mode of the Closed User Group (CUG) supplementary service.				

11.3.5.11 Channel identification

Reference: ETS 300 102-1, subclause 4.5.13.

Definition: The purpose of the Channel identification information element is to identify a channel within the interface(s) controlled by these signalling procedures.

The Channel identification information element is coded as shown in figures 11.18 and table 11.38. The Channel identification information element may be repeated in a message; e.g. to list several acceptable channels during channel negotiation.

The default maximum length for this information element is network dependent.

8	7	6	5	4	3	2	1	Octet
0	Channel identification 0	0	1	1	0	0	0	1
	Information element identifier							
Length of Channel identification contents								2
1 ext	Int id present	Int. type	0 Spare	Pref./ excl.	D-chan- nel ind	Info. channel selection		3
0/1 ext	Interface identifier - not used							3.1* etc.
1 ext	Coding standard		Number	Channel type				3.2* (note 1)
Channel number (note 2)								3.3* (note 1) (note 3)

NOTE 1: When the "interface type" field in octet 3 indicates "basic interface", octets 3.2 and 3.3 are functionally replaced by the "information channel selection" field in octet 3, and thus omitted.

NOTE 2: When channel number is used, bit 8 is reserved for use as an extension bit and is thus set to "1".

NOTE 3: When channel number is used, this octet may be repeated to indicate multiple channels.

Figure 11.17: Channel identification information element

Table 11.38: Channel identification information element

Interface identifier present (octet 3)

Bit 7	
0	interface implicitly identified (note 1)
1	reserved

NOTE 1: The interface which includes the D-channel carrying this information element is indicated.

Interface type (octet 3)

Bit 6	
0	basic interface
1	primary rate interface

Preferred/exclusive (octet 3) (note 2)

Bit 4	
0	indicated channel is preferred
1	exclusive: only the indicated channel is acceptable

NOTE 2: Preferred/exclusive has significance only for B-channel selection.

D-channel indicator (octet 3) (note 3)

Bit 3	
0	the channel identified is not the D-channel
1	the channel identified is the D-channel

NOTE 3: D-channel indication has significance in D-channel use. No other information affects D-channel use.

Information channel selection (octet 3) (note 4)

Bits 2 1	Basic interface	Other interfaces
0 0	no channel	no channel
0 1	B1 channel	as indicated in following octets
1 0	B2 channel	reserved
1 1	any channel	any channel

NOTE 4: The information channel selection does not apply to the D-channel.

Table 11.38 (concluded): Channel identification information element

Coding standard (octet 3.2)

Bits 7 6	
0 0	CCITT recommended coding as described below
0 1	reserved for other international standards (note 5)
1 0	reserved, national standard (note 5)
1 1	reserved, standard defined for the network (either public or private) present on the network side of the interface (note 5)

NOTE 5: These other coding standards should be used only when the desired channel identification cannot be represented with the CCITT recommended coding.

Number (octet 3.2)

Bit 5	
0	channel is indicated by the number in the following octet
1	reserved

Channel type (octet 3.2)

Bits 4 3 2 1	
0 0 1 1	B-channel units
0 1 1 0	H0-channel units
1 0 0 0	H11-channel units
1 0 0 1	H12-channel units

All other values are reserved.

Channel number (octet 3.3)
Binary number assigned to the channel. For B-channels, the channel number equals the time slot number.

11.3.5.12 High layer compatibility

Reference: ETS 300 102-1, subclause 4.5.16.

Definition: The purpose of the High layer compatibility information element is to provide a means which should be used by the remote user for compatibility checking.

The High layer compatibility information element is coded as shown in figure 11.18 and table 11.39.

The maximum length of this information element is five octets.

NOTE: The High layer compatibility information element is transported transparently by an ISDN between a call originating entity, e.g. a calling user and the addressed entity, e.g. a remote user or high layer function network node addressed by the call originating entity. However, if explicitly requested by the user (at subscription time), a network which provides some capabilities to realise teleservices may interpret this information to provide a particular service.

8	7	6	5	4	3	2	1	Octet
0	1	1	High layer compatibility 1	1	1	0	1	1
			Information element identifier					
			Length of High layer compatibility contents					2
1 ext	Coding standard			Interpretation		Presentation method of protocol profile		3
0/1 ext	High layer characteristics identification							4
1 ext	Extended high layer characteristics identification							4a* (note)
NOTE: This octet may be present when octet 4 indicates Maintenance or Management.								

Figure 11.18: High layer compatibility information element

Table 11.39: High layer compatibility information element

Coding standard (octet 3)

Bits 7 6	
0 0	CCITT recommended coding as described below
0 1	Reserved for other international standards (note 1)
1 0	Reserved, national standard (note 1)
1 1	Reserved, standard defined for the network (either public or private) present on the network side of the interface (note 1).

NOTE 1: These other coding standards should be used only when the desired High layer compatibility cannot be represented with the CCITT-recommended coding.

Interpretation (octet 3)

Bits 5 4 3	
1 0 0	First (primary only) high layer characteristics identification (in octet 4) to be used in the call.

All other values are reserved.

NOTE 2: "Interpretation" indicates how the "High layer characteristics identification" (in octet 4) should be interpreted.

NOTE 3: Currently, "Interpretation" has only a single value. However, "Interpretation", when enhanced, will be able to indicate how the "High layer characteristics identification" in the same information element is interpreted when multiple "High layer characteristics identifications" are used and exact relationship among them needs to be indicated (e.g. sequential usage, alternative list, simultaneous usage). Such enhancements in conjunction with the possible negotiation procedures is left for further study.

Table 11.39 (continued): High layer compatibility information element

Presentation method of protocol profile (octet 3)

Bits 2 1	
0 1	High layer protocol profile (without specification of attributes)

All other values are reserved.

NOTE 4: Currently, "Presentation method of protocol profile" has only a single value, i.e. a "profile value" is used to indicate a service to be supported by high layer protocols as required. Necessity of other presentation methods, e.g. service indications in the form of layer-by-layer indication of protocols to be used in high layers, is left for further study.

High layer characteristics identification (octet 4)

Bits 7 6 5 4 3 2 1	
0 0 0 0 0 0 1	Telephony
0 0 0 0 1 0 0	Facsimile Group 2/3 (CCITT Recommendation F.182)
0 1 0 0 0 0 1	Facsimile Group 4 Class 1 (CCITT Recommendation F.184)
0 1 0 0 1 0 0	Teletex service, basic and mixed mode of operation (CCITT Recommendation F.230) and facsimile service Group 4, Classes II and III (CCITT Recommendation F.184)
0 1 0 1 0 0 0	Teletex service, basic and processable mode of operation (CCITT Recommendation F.220)
0 1 1 0 0 0 1	Teletex service, basic mode of operation (CCITT Recommendation F.200)
0 1 1 0 0 1 0	Syntax based Videotex (CCITT Recommendations F.300 and T.102)
0 1 1 0 0 1 1	International Videotex interworking via gateways or interworking units (CCITT Recommendations F.300 and T.101)
0 1 1 0 1 0 1	Telex service (CCITT Recommendation F.60)
0 1 1 1 0 0 0	Message Handling Systems (MHS) (CCITT Recommendation X.400 series)
1 0 0 0 0 0 1	OSI application (note 6) (CCITT Recommendation X.200 series)
1 0 1 1 1 1 0	Reserved for Maintenance (note 8)
1 0 1 1 1 1 1	Reserved for Management (note 8)
1 1 0 0 0 0 0	Videotelephony (Recommendation F.721) (note 8)
1 1 1 1 1 1 1	Reserved

All other values are reserved.

NOTE 5: The coding above applies in case of "Coding standard" = "CCITT Recommendation" and "Presentation method of protocol profile" = "High layer protocol profile".

NOTE 6: Further compatibility checking shall be executed by the OSI high layer protocol.

NOTE 7: Code points are added only to those services for which CCITT Recommendations are available. See also CCITT Recommendation I.241.

NOTE 8: When this coding is included, octet 4 may be followed by octet 4a.

Table 11.39 (concluded): High layer compatibility information element

Extended high layer characteristics identification (octet 4a)

To be used when octet 4 specifies Maintenance or Management

Bits 7 6 5 4 3 2 1	
0 0 0 0 0 0 1	Telephony
0 0 0 0 1 0 0	Facsimile Group 2/3 (CCITT Recommendation F.182)
0 1 0 0 0 0 1	Facsimile Group 4 Class I (CCITT Recommendation F.184)
0 1 0 0 1 0 0	Teletex service, basic and mixed mode of operation (CCITT Recommendation F.230) and facsimile service Group 4, Classes II and III (CCITT Recommendation F.184)
0 1 0 1 0 0 0	Teletex service, basic and processable mode of operation (CCITT Recommendation F.220)
0 1 1 0 0 0 1	Teletex service, basic mode of operation (CCITT Recommendation F.200)
0 1 1 0 0 1 0	Syntax based Videotex (CCITT Recommendations F.300 and T.102)
0 1 1 0 0 1 1	International Videotex interworking via gateways or interworking units (CCITT Recommendations F.300 and T.101)
0 1 1 0 1 0 1	Telex service (CCITT Recommendation F.60)
0 1 1 1 0 0 0	Message Handling Systems (MHS) (CCITT Recommendation X.400 series)
1 0 0 0 0 0 1	OSI application (CCITT Recommendation X.200 series)
1 0 1 1 1 1 0	Not available for assignment
1 0 1 1 1 1 1	Not available for assignment
1 1 1 1 1 1 1	Reserved

To be used when octet 4 specifies Videotelephony

Bits 7 6 5 4 3 2 1	
0 0 0 0 0 0 1	capability set of initial channel of CCITT Recommendation H.221
0 0 0 0 0 1 0	capability set of subsequent channel of CCITT Recommendation H.221

All other values are reserved.

11.3.5.13 Low layer compatibility

Reference: ETS 300 102-1, subclause 4.5.18.

Definition: The purpose of the Low layer compatibility information element is to provide a means which should be used for compatibility checking by an addressed entity (e.g. a remote user or an interworking unit or a high layer function network node addressed by the calling user). The Low layer compatibility information element is transferred transparently by an ISDN between the call originating entity (e.g. the calling user) and the addressed entity.

If Low layer compatibility negotiation is allowed by the network, the Low layer compatibility information element is also passed transparently from the addressed entity to the originating entity.

The Low layer compatibility information element is coded as shown in figure 11.19 and table 11.40. The maximum length of this information element is 16 octets.

8	7	6	5	4	3	2	1	Octet
0	Low layer compatibility 1	1	1	1	1	0	0	1
	Information element identifier							
Length of the Low layer compatibility contents								2
0/1 ext	coding standard		information transfer capability					3
1 ext	Negot. indic.	0	0	0 spare	0	0	0	3a* (note 5)
0/1 ext	transfer mode		information transfer rate					4
0/1 ext	structure			configuration		establishment		4a* (note 1)
1 ext	symmetry		information transfer rate (destination → origination)					4b* (note 1)
0/1 ext	0 1 ident. Layer 1,		user information Layer 1 protocol					5*
0/1 ext	synch./ asynch.	negot.	user rate					5a* (note 4)
0/1 ext	intermediate rate		NIC on Tx	NIC on Rx	Flow control on Tx	Flow control on Rx	0 Spare	5b* (note 2)
0/1 ext	Hdr/ no Hdr	MultI-frame support	Mode	LLI negot.	Assignor/ Assignee	Inband/ Outband negot.	0 Spare	5b* (note 3)
0/1 ext	number of stop bits		number of data bits		Parity			5c* (note 4)
1 ext	duplex mode	modem type						5d* (note 4)
0/1 ext	1 0 ident. Layer 2		user information Layer 2 protocol					6*
1 ext	Optional Layer 2 protocol information							6a*
0/1 ext	1 1 ident. Layer 3		user information Layer 3 protocol					7*
1 ext	Optional Layer 3 protocol information							7a*

NOTE 1: If default values are used for all fields of octets 4a and 4b, then these octets are not included. If default values are used for all fields of octet 4b, but not for one or more fields of octet 4a, then only octet 4a is included. Otherwise, both octets 4a and 4b are included.

NOTE 2: This octet may be present only if octet 5 indicates CCITT recommended rate adaption V.110/X.30.

NOTE 3: This octet is present only if octet 5 indicates CCITT recommended rate adaption V.120.

NOTE 4: This octet may be present if octet 5 indicates either of the CCITT recommended rate adaptions V.110/X.30 or V.120.

NOTE 5: This octet is present if out-band negotiation is required.

Figure 11.19: Low layer compatibility information element

Table 11.40: Low layer compatibility information element

Coding standard (octet 3)

Bits **7 6**	
0 0	CCITT recommended coding as described below
0 1	Reserved for other international standards (note 1)
1 0	Reserved, national standard (note 1)
1 1	Reserved, standard defined for the network (either public or private) present on the network side of the interface (note 1)

NOTE 1: These other coding standards should be used only when the desired Low layer compatibility cannot be represented with the CCITT recommended coding.

Information transfer capability (octet 3)

Bits **5 4 3 2 1**	
0 0 0 0 0	speech
0 1 0 0 0	unrestricted digital information
0 1 0 0 1	restricted digital information
1 0 0 0 0	3,1 kHz audio
1 0 0 0 1	unrestricted digital information with tones/announcements (previously 7 kHz audio in ETS 300 102-1)
1 1 0 0 0	video

All other values are reserved.

Negotiation indicator (octet 3a)

Bit **7**	
0	out-band negotiation not possible
1	out-band negotiation possible

NOTE 2: When octet 3a is omitted, "out-band negotiation not possible" is assumed.

Transfer mode (octet 4)

Bits **7 6**	
0 0	circuit mode
1 0	packet mode

All other values are reserved.

Information transfer rate (octets 4 and 4b)

Bits **5 4 3 2 1**	**Circuit Mode**	**Packet Mode**
0 0 0 0 0		- This code is used for packet-mode calls
1 0 0 0 0	64 kbit/s	-
1 0 0 0 1	2 x 64 kbit/s	-
1 0 0 1 1	384 kbit/s	-
1 0 1 0 1	1 536 kbit/s	-
1 0 1 1 1	1 920 kbit/s	-

All other values are reserved.

Table 11.40 (continued): Low layer compatibility information element

NOTE 3: When octet 4b is omitted, the Low layer compatibility is bi-directional symmetric at the information transfer rate specified in octet 4. When octet 4b is included, the information transfer rate in octet 4 refers to the origination → destination direction.

NOTE 4: When the information transfer rate 2 x 64 kbit/s is used, the coding of octets 3 and 4 refer to both 64 kbit/s channels.

Structure (octet 4)

Bits **7 6 5**	
0 0 0	default (see note 5)
0 0 1	8 kHz integrity (note 6)
1 0 0	service data unit integrity
1 1 1	unstructured

All other values are reserved.

NOTE 5: If octet 4a is omitted, or the structure field is coded "000", then the value of the structure attribute is according to the following:

Transfer mode	Transfer capability	Structure
circuit	speech	8 kHz integrity
circuit	unrestricted digital	8 kHz integrity
circuit	restricted digital	8 kHz integrity
circuit	audio	8 kHz integrity
circuit	video	8 kHz integrity
packet	unrestricted digital	service data unit integrity.

NOTE 6: When the information transfer rate 2 x 64 kbit/s is used, 8 kHz integrity with Restricted Differential Time Delay (RDTD) is offered.

Configuration (octet 4a)

Bits **4 3**	
0 0	point-to-point

All other values are reserved.

NOTE 7: If octet 4a is omitted, the configuration is assumed to be point-to-point.

Establishment (octet 4a)

Bits **2 1**	
0 0	demand

All other values are reserved.

NOTE 8: If octet 4a is omitted, the method of establishment is assumed to be "demand".

Table 11.40 (continued): Low layer compatibility information element

Symmetry (octet 4b)

Bits
7 6
0 0 bi-directional symmetric

All other values are reserved.

NOTE 9: If octet 4b is omitted, bi-directional symmetric is assumed.

User information Layer 1 protocol (octet 5)

Bits
5 4 3 2 1
0 0 0 0 1 CCITT recommended rate adaption V.110/X.30. This implies the presence of octet 5a and optionally octet 5b, 5c and 5d as defined below.
0 0 0 1 0 CCITT Recommendation G.711 [5] µ-law.
0 0 0 1 1 CCITT Recommendation G.711 [5] A-law.
0 0 1 0 0 CCITT Recommendation G.721 32 kbit/s ADPCM and Recommendation I.460.
0 0 1 0 1 CCITT Recommendations H. 221 and H.242.
0 0 1 1 0 CCITT Recommendation G.7xx 384 kbit/s video.
0 0 1 1 1 Non-CCITT recommended rate adaption. This implies the presence of octet 5a and optionally, octets 5b, 5c and 5d. The use of this code point indicates that the user rate specified in octet 5a is defined by the user. Additionally, octets 5b, 5c and 5d, if present, are defined consistent with the user specified rate adaption.
0 1 0 0 0 CCITT recommended rate adaption V.120. This implies the presence of octets 5a and 5b as defined below and optionally octets 5c and 5d.
0 1 0 0 1 CCITT recommended rate adaption X.31 HDLC flag stuffing.

All other values are reserved.

NOTE 10: If the transfer mode is "circuit mode" and if the information transfer capability is "unrestricted digital information" or "restricted digital information" and if the user information Layer 1 protocol is not to be identified to the network, octet 5 is omitted. If the transfer mode is "packet mode", octet 5 may be omitted. Otherwise, octet 5 is present.

Synchronous/asynchronous (octet 5a)

Bit
7
0 synchronous
1 asynchronous

NOTE 11: Octets 5b - 5d may be omitted in case of synchronous user rates.

Table 11.40 (continued): Low layer compatibility information element

Negotiation (octet 5a)

Bit
6
0 in-band negotiation not possible
1 in-band negotiation possible

NOTE 12: See CCITT Recommendations V.110 and X.30.

User rate (octet 5a)

Bits **5 4 3 2 1**		
0 0 0 0 0	rate is indicated by E-bits specified in CCITT Recommendation I.460	
0 0 0 0 1	0,6 kbit/s	CCITT Recommendations V.6 and X.1
0 0 0 1 0	1,2 kbit/s	CCITT Recommendation V.6
0 0 0 1 1	2,4 kbit/s	CCITT Recommendations V.6 and X.1
0 0 1 0 0	3,6 kbit/s	CCITT Recommendation V.6
0 0 1 0 1	4,8 kbit/s	CCITT Recommendations V.6 and X.1
0 0 1 1 0	7,2 kbit/s	CCITT Recommendation V.6
0 0 1 1 1	8 kbit/s	CCITT Recommendation I.460
0 1 0 0 0	9,6 kbit/s	CCITT Recommendations V.6 and X.1
0 1 0 0 1	14,4 kbit/s	CCITT Recommendation V.6
0 1 0 1 0	16 kbit/s	CCITT Recommendation I.460
0 1 0 1 1	19,2 kbit/s	CCITT Recommendation V.6
0 1 1 0 0	32 kbit/s	CCITT Recommendation I.460
0 1 1 1 0	48 kbit/s	CCITT Recommendation V.6 and X.1
0 1 1 1 1	56 kbit/s	CCITT Recommendation V.6
1 0 0 0 0	64 kbit/s	CCITT Recommendation X.1
1 0 1 0 1	0,1345 kbit/s	CCITT Recommendation X.1
1 0 1 1 0	0,100 kbit/s	CCITT Recommendation X.1
1 0 1 1 1	0,075/1,2 kbit/s	CCITT Recommendations V.6 and X.1 (note 13)
1 1 0 0 0	1,2/0,075 kbit/s	CCITT Recommendations V.6 and X.1 (note 13)
1 1 0 0 1	0,050 kbit/s	CCITT Recommendations V.6 and X.1
1 1 0 1 0	0,075 kbit/s	CCITT Recommendations V.6 and X.1
1 1 0 1 1	0,110 kbit/s	CCITT Recommendations V.6 and X.1
1 1 1 0 0	0,150 kbit/s	CCITT Recommendations V.6 and X.1
1 1 1 0 1	0,200 kbit/s	CCITT Recommendations V.6 and X.1
1 1 1 1 0	0,300 kbit/s	CCITT Recommendations V.6 and X.1
1 1 1 1 1	12 kbit/s	CCITT Recommendation V.6

All other values are reserved.

NOTE 13 The first rate is the transmit rate in the forward direction of the call. The second rate is the transmit rate in the backward direction of the call.

Table 11.40 (continued): Low layer compatibility information element

*** Octet 5b for V.110/X.30 rate adaption ***

Intermediate rate (octet 5b)

Bits **7 6**	
0 0	reserved, not used
0 1	8 kbit/s
1 0	16 kbit/s
1 1	32 kbit/s

Network Independent Clock (NIC) on Transmission (Tx) (octet 5b) (note 14)

Bit **5**	
0	not required to send data with Network Independent Clock
1	required to send data with Network Independent Clock

NOTE 14: Refers to transmission in the forward direction of the call.
NOTE 15: See CCITT Recommendations V.110 and X.30.

Network Independent Clock (NIC) on Reception (Rx) (octet 5b) (note 16)

Bit **4**	
0	cannot accept data with Network Independent Clock (i.e. sender does not support this optional procedure)
1	can accept data with Network Independent Clock (i.e. sender does support this optional procedure)

NOTE 16: Refers to transmission in the backward direction of the call.
NOTE 17: See CCITT Recommendations V.110 and X.30.

Flow control on Transmission (Tx) (octet 5b) (note 18)

Bit **3**	
0	Not required to send data with flow control mechanism
1	Required to send data with flow control mechanism

NOTE 18: Refers to transmission in the forward direction of the call.
NOTE 19: See CCITT Recommendations V.110 and X.30.

Flow control on Reception (Rx) (octet 5b)

Bit **2**	
0	cannot accept data with flow control mechanism (i.e. sender does not support this optional procedure)
1	can accept data with flow control mechanism (i.e. sender does support this optional procedure)

NOTE 20: Refers to transmission in the backward direction of the call.
NOTE 21: See CCITT Recommendations V.110 and X.30.

Table 11.40 (continued): Low layer compatibility information element

*** Octet 5b for V.120 rate adaption ***

Rate adaption header/no header (octet 5b)

Bit **7**	
0	rate adaption header not included
1	rate adaption header included

Multiple frame establishment support in Data link (octet 5b)

Bit **6**	
0	multiple frame establishment not supported, only UI-frames allowed.
1	multiple frame establishment supported.

Mode of operation (octet 5b)

Bit **5**	
0	bit transparent mode of operation
1	protocol sensitive mode of operation

Logical link identifier negotiation (octet 5b)

Bit **4**	
0	default, LLI = 256 only
1	full protocol negotiation (note 22)

NOTE 22: A connection over which protocol negotiation shall be executed is indicated in bit 2 of octet 5b.

Assignor/assignee (octet 5b)

Bit **3**	
0	message originator is "Default assignee"
1	message originator is "Assignor only"

In-band/outband negotiation (octet 5b)

Bit **2**	
0	negotiation is done with USER INFORMATION messages on a temporary signalling connection
1	negotiation is done in-band using logical link zero

Table 11.40 (continued): Low layer compatibility information element

Number of stop bits (octet 5c)

Bits **7 6**	
0 0	reserved, not used
0 1	1 bit
1 0	1,5 bits
1 1	2 bits

Number of data bits excluding parity bit if present (octet 5c)

Bits **5 4**	
0 0	reserved, not used
0 1	5 bits
1 0	7 bits
1 1	8 bits

Parity information (octet 5c)

Bits **3 2 1**	
0 0 0	odd
0 1 0	even
0 1 1	none
1 0 0	forced to 0
1 0 1	forced to 1

All other values are reserved.

Duplex mode (octet 5d)

Bit **7**	
0	half duplex
1	full duplex

Table 11.40 (continued): Low layer compatibility information element

Modem type (octet 5d)

Bits **654321**	
000000 through 000101	reserved, national use
010001	CCITT Recommendation V.21
010010	CCITT Recommendation V.22
010011	CCITT Recommendation V.22 bis
010100	CCITT Recommendation V.23
010101	CCITT Recommendation V.26
010110	CCITT Recommendation V.26 bis
010111	CCITT Recommendation V.26 ter
011000	CCITT Recommendation V.27
011001	CCITT Recommendation V.27 bis
011010	CCITT Recommendation V.27 ter
011011	CCITT Recommendation V.29
011100	CCITT Recommendation V.32
100000 through 101111	reserved, national use
110000 through 111111	user specified

All other values are reserved.

User information Layer 2 protocol (octet 6)

Bits **5 4 3 2 1**	
0 0 0 0 1	Basic mode ISO 1745
0 0 0 1 0	CCITT Recommendation Q.921 (I.441)
0 0 1 1 0	CCITT Recommendation X.25 link layer
0 0 1 1 1	CCITT Recommendation X.25 Multilink
0 1 0 0 0	Extended LAPB; for half duplex operation (T.71)
0 1 0 0 1	HDLC ARM (ISO 4335)
0 1 0 1 0	HDLC NRM (ISO 4335)
0 1 0 1 1	HDLC ABM (ISO 4335)
0 1 1 0 0	LAN Logical link control (ISO 8802/2)
0 1 1 0 1	CCITT Recommendation X.75 Single Link Procedure (SLP)
1 0 0 0 1	ISO 7776 DTE-DTE operation (note 23)

All other values are reserved.

NOTE 23: This TBR is compatible with CCITT Recommendation X.75 modified by the application rules defined in CCITT Recommendation T.90.

Optional Layer 2 protocol information (octet 6a)

User specified.

User information Layer 3 protocol (octet 7)

Bits **5 4 3 2 1**	
0 0 0 1 0	CCITT Recommendation Q.931 (I.451)
0 0 1 1 0	CCITT Recommendation X.25, packet layer
0 0 1 1 1	ISO 8208 (CCITT Recommendation X.25 packet level protocol for data TE)

Table 11.40 (concluded): Low layer compatibility information element

0 1 0 0 0 ISO 8348 (OSI connection oriented network service specific subset of ISO 8208 and CCITT Recommendation X.25) 0 1 0 0 1 ISO 8473 (OSI connectionless service) 0 1 0 1 0 CCITT Recommendation T.70 minimum network layer All other values are reserved.
Optional Layer 3 protocol information (octet 7a) User specified.

11.3.5.14 Notification indicator

Reference: ETS 300 102-1, subclause 4.5.21.

Definition: The purpose of the Notification indicator information element is to indicate information pertaining to a call.

The Notification indicator information element is coded as shown in figure 11.20 and table 11.41. The maximum length of this information element is three octets.

8	7	6	5	4	3	2	1	Octet
	Notification indicator							1
0	0	1	0	0	1	1	1	
	Information element identifier							
Length of the Notification indicator contents								2
1 ext	Notification description							3

NOTE: For the coding and use of this information element in relation to the provision of supplementary services see ETS 300 196.

Figure 11.20: Notification indicator information element

Table 11.41: Notification indicator information element

Notification description (octet 3)	
Bits 7 6 5 4 3 2 1	
0 0 0 0 0 0 0	user suspended
0 0 0 0 0 0 1	user resumed
All other values are reserved.	

11.3.5.15 Progress indicator

Reference: ETS 300 102-1, subclause 4.5.22.

Definition: The purpose of the Progress indicator information element is to describe an event which has occurred during the life of a call. The information element may occur two times in a message.

The Progress indicator information element is coded as shown in figure 11.21 and table 11.42. The default maximum length of this information element is 4 octets.

8	7	6	5	4	3	2	1	Octet
0	Progress indicator 0	0	1	1	1	1	0	1
	Information element identifier							
Length of the Progress indicator contents								2
1 ext	Coding standard		0 Spare	Location				3
1	Progress description							4

Figure 11.21: Progress indicator information element

Table 11.42: Progress indicator information element

Coding standard (octet 3)

Bits 7 6	
0 0	CCITT standardized coding as described below.
0 1	reserved for other international standards (note 1)
1 0	reserved, national standard (note 1)
1 1	reserved, standard specific to identified location (note 1)

NOTE 1: These other coding standards should be used only when the desired progress indication cannot be represented with the CCITT standardized coding.

Location (octet 3)

Bits 4 3 2 1	
0 0 0 0	user
0 0 0 1	private network serving the local user
0 0 1 0	public network serving the local user
0 1 0 0	public network serving the remote user
0 1 0 1	private network serving the remote user
0 1 1 1	international network
1 0 1 0	network beyond interworking point

All other values are reserved.

NOTE 2: Depending on the location of the users, the local public network and remote public network may be the same network.

Progress description (octet 4)

Bits 7 6 5 4 3 2 1	No.	
0 0 0 0 0 0 1	1.	Call is not end-to-end ISDN: further progress information may be available in-band.
0 0 0 0 0 1 0	2.	Destination address is non-ISDN.
0 0 0 0 0 1 1	3.	Origination address is non-ISDN.
0 0 0 0 1 0 0	4.	Call has returned to the ISDN.
0 0 0 0 1 0 1	5.	Interworking has occurred and has resulted in a telecommunication service change.
0 0 0 1 0 0 0	8.	In-band information or appropriate pattern now available.

All other values are reserved.

11.3.5.16 Restart indicator

Reference: ETS 300 102-1, subclause 4.5.24.

Definition: The purpose of the Restart indicator information element is to identify the class of the facility (i.e. channel or interface) to be restarted.

The Restart indicator information element is coded as shown in figure 11.22 and table 11.43. The maximum length of this information element is three octets.

8	7	6	5	4	3	2	1	Octet
0	Restart indicator 1	1	1	1	0	0	1	1
	Information element identifier							
Length of the Restart indicator contents								2
1 ext	0	0	0	0	Class			3

Figure 11.22: Restart indicator information element

Table 11.43: Restart indicator information element

Class (octet 3)	
Bits **3 2 1**	
0 0 0	Indicated channels (note 1)
1 1 0	Single interface (note 2)
1 1 1	All interfaces (note 2)
All other values are reserved.	
NOTE 1:	The Channel identification information element shall be included and indicates which channel(s) is to be restarted or has been restarted.
NOTE 2:	Since this TBR applies only to associated signalling, the Channel identification information element is not included to indicate the interface to be restarted. As a consequence, either code point can be used to perform the same function.

11.3.5.17 Sending complete

Reference: ETS 300 102-1, subclause 4.5.26.

Definition: The purpose of the Sending complete information element is to optionally indicate completion of Called party number, see subclauses 11.4.1.1, 11.4.1.2, 11.4.2.1 and 11.4.2.4.

It is a single octet information element coded as shown in figure 11.23.

8	7	6	5	4	3	2	1	Octet
1	Sending complete 0	1	0	0	0	0	1	1
	Information element identifier							

Figure 11.23: Sending complete information element

11.4 Circuit switched call control procedures

Reference: ETS 300 102-1, clause 5.

In addition to the messages exchanged as described in the following subclauses, INFORMATION messages for call control may be sent by the TE or by the network only after the first response to a

SETUP message has been sent or received, and before clearing of the Call reference is initiated. An INFORMATION message received in the Release request state may be ignored.

11.4.1 Call establishment at the originating interface

Reference: ETS 300 102-1, subclause 5.1.

Requirement: Before these procedures are invoked, a reliable data link connection shall be established between the TE and the network. All Layer 3 messages shall be sent to the data link layer using a DL-DATA-REQUEST primitive. The data link services described in clause 10 are assumed.

Test: This requirement shall be tested according to the procedures of annex D, test preamble PR30001.

11.4.1.1 Call request

Reference: ETS 300 102-1, subclause 5.1.1.

Requirement: A TE shall initiate call establishment by transferring a SETUP message across the user-network interface. Following the transmission of the SETUP message, the call shall be considered by the TE to be in the Call initiated state.

NOTE: Initiation of a call by the TE may require stimulation of the TE at some other point (e.g. the man-machine interface). The PIXIT in annex E requests information concerning the manner in which an outgoing call can be set up.

Test: This requirement shall be tested according to the procedures of annex D, test case TC20002.

11.4.1.2 Overlap sending

Reference: ETS 300 102-1, subclauses 5.1.2 and 5.1.3.

Requirement: If the SETUP message did not include the Sending complete information element and a SETUP ACKNOWLEDGE message is received, the TE shall enter the Overlap sending State.

If the SETUP ACKNOWLEDGE message contains progress indicator #8 "in-band information or appropriate pattern is now available" or progress indicator #1 "call is not end-to-end ISDN; further call progress information may be available in-band", the TE may also attach to the B-channel.

After receiving the SETUP ACKNOWEDGE message and if the TE has additional call information, the TE shall send the remainder of the call information (if any) in one or more INFORMATION messages.

The called number information shall be provided by the TE in the Called party number information element.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10104 and TC20204.

11.4.1.3 Call proceeding

11.4.1.3.1 Call proceeding, en-bloc sending

Reference: ETS 300 102-1, subclauses 5.1.2 and 5.1.5.1.

Requirement: If the TE receives the CALL PROCEEDING message when in the Call initiated state, the TE shall enter the Outgoing call proceeding state.

If the CALL PROCEEDING message contains progress indicator #8 "in-band information or appropriate pattern is now available" or progress indicator #1 "call is not end-to-end ISDN; further call progress information may be available in-band", the TE may also attach to the B-channel.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10101.

11.4.1.3.2 Call proceeding, overlap sending

Reference: ETS 300 102-1, subclauses 5.1.2 and 5.1.5.2.

Requirement: If the TE receives the CALL PROCEEDING message when in the Overlap sending state, the TE shall enter the Outgoing call proceeding state.

If the CALL PROCEEDING message contains progress indicator #8 "in-band information or appropriate pattern is now available" or progress indicator #1 "call is not end-to-end ISDN; further call progress information may be available in-band", the TE may also attach to the B-channel.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10203.

11.4.1.4 Call confirmation indication

Reference: ETS 300 102-1, subclauses 5.1.2 and 5.1.7.

Requirement: When the TE receives the ALERTING message, the TE shall enter the Call delivered state.

If the ALERTING message contains progress indicator #8 "in-band information or appropriate pattern is now available" or progress indicator #1 "call is not end-to-end ISDN; further call progress information may be available in-band", the TE may also attach to the B-channel.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10201 and TC10301.

11.4.1.5 Call connected

Reference: ETS 300 102-1, subclauses 5.1.2 and 5.1.8.

Requirement: On receipt of the CONNECT message, the TE may send a CONNECT ACKNOWLEDGE message; shall attach to the B-channel (if it has not already done so) and shall enter the Active state.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10202, TC10302 and TC10401.

11.4.2 Call establishment at the destination interface

Reference: ETS 300 102-1, subclause 5.2.

Requirement: Before responding to a SETUP message, a reliable data link connection shall be established between the TE and the network. All Layer 3 messages shall be sent to the data link layer using a DL-DATA-REQUEST primitive. The data link services described in clause 10 are assumed.

Test: This requirement is tested implicitly by all the incoming call handling tests.

11.4.2.1 Incoming call

Reference: ETS 300 102-1, subclause 5.2.1.

Requirement: When the TE is intended for use in a point-to-point configuration, and a SETUP message is received on a point-to-point data link, the TE shall enter the Call present state.

When the TE is intended for use in a point-to-multipoint configuration and a SETUP message is received on the broadcast data link, the TE shall enter the Call present state.

Depending on the contents of the received message, either en-bloc receiving procedure (see subclause 11.4.2.5.1) or overlap receiving procedure (see subclause 11.4.2.4) shall follow. However, if the SETUP message includes the Sending complete information element, en-bloc receiving procedure shall follow.

TEs supporting only the en-bloc receiving procedure need not recognise the Sending complete information element and may directly analyse the received SETUP message on the assumption that all the call information is contained in the message.

NOTE: Countries using an open numbering plan usually implement the Direct Dialling In (DDI) Supplementary Service using overlap receiving. Support of overlap receiving is therefore recommended for those terminals intended to support DDI.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10005 and TC10006.

11.4.2.2 Address and compatibility checking

Requirement: If the requirements of compatibility checking and address checking are met, and any other conditions for which no requirement are specified are met, the TE shall perform the remainder of the procedures of 11.4.2.

11.4.2.2.1 Compatibility checking

Reference: ETS 300 102-1, subclause 5.2.2.

Requirement: If the TE is capable of being incompatible with the Bearer capability information element contents, it shall perform compatibility checking as appropriate on receipt of a SETUP message before responding to that SETUP message.

When a SETUP message is delivered via the broadcast data link, and if the TE is capable of being incompatible with the High layer compatibility information element contents, it shall perform compatibility checking as appropriate on receipt of a SETUP message before responding to that SETUP message.

When a SETUP message is delivered via the broadcast data link, and if the TE is capable of being incompatible with the Low layer compatibility information element contents, it shall perform compatibility checking as appropriate on receipt of a SETUP message before responding to that SETUP message.

NOTE: It is for the user to determine, on whatever basis it chooses, whether it is compatible with the contents of the Bearer capability, High layer compatibility and Low layer compatibility information elements in the received SETUP message. The PIXIT in annex E contains questions concerning the contents of these information elements the TE responds to as compatible and incompatible. Further requirements may exist in Terminal TBRs.

When the SETUP message is delivered via a broadcast data link, an incompatible TE shall either:

a) ignore the incoming call; or,

b) respond by sending a RELEASE COMPLETE message, and enter the Null state.

When the SETUP message is delivered via a point-to-point data link, an incompatible TE shall respond with a RELEASE COMPLETE message, and enter the Null state.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10008 and TC10009.

11.4.2.2.2 Address checking

Reference: ETS 300 102-1, annex B.

Requirement: When a SETUP message is delivered via the broadcast data link, and if the TE is capable of being addressed with the Called party number information element contents, it shall perform address checking, as appropriate, on receipt of a SETUP before responding to that SETUP message.

When a SETUP message is delivered via the broadcast data link, and if the TE is capable of being addressed with the Called party subaddress information element contents, it shall perform address checking, as appropriate, on receipt of a SETUP before responding to that SETUP message.

Test: There is no test.

NOTE: No test is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.2.3 B-channel selection-destination

11.4.2.3.1 SETUP message delivered by point-to-point data link

Reference: ETS 300 102-1, subclause 5.2.3.1.

Requirement: When the SETUP message is delivered by a point-to-point data link, the TE shall apply the following B-channel selection procedures.

a) In the SETUP message, the network indicates one of the following:

   1) channel is indicated, no acceptable alternative; or,
   2) channel is indicated, any alternative is acceptable; or,
   3) any channel is acceptable; or,
   4) no B-channel available.

b) In cases 1) and 2), if the indicated channel is acceptable and available, the TE shall select it for the call.

   In case 2), if the TE cannot grant the indicated channel, it shall select any other available B-channel, and identify that channel in the Channel identification information element as "channel is indicated, no acceptable alternative" in the first message sent in response to the SETUP message.

   In case 3), the TE shall select any available B-channel, and identify that channel in the first message sent in response to the SETUP message.

   In case 4), no requirement shall apply.

Test: This requirement shall be tested according to the procedures of annex D, test preamble PR30801.

NOTE: No test for the second and third paragraphs of item b) is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.2.3.2 SETUP message delivered by broadcast data link.

Reference: ETS 300 102-1, subclause 5.2.3.2.

Requirement: When the SETUP message is delivered by a broadcast data link the channel selection procedure, provided in subclause 11.4.2.3.1, is not applicable. The network sends a SETUP message with the Channel identification information element indicating one of the following:

a) channel indicated, no alternative is acceptable; or,
b) no channel available.

In case (a), if the TE can accept the call on the indicated channel, the TE shall send the appropriate message (see subclauses 11.4.2.4 and 11.4.2.5). In case (b), no requirement shall apply.

NOTE: No test is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.2.4 Overlap receiving

Reference: ETS 300 102-1, subclause 5.2.4.

Requirement: When a TE implements overlap receiving and determines that a received SETUP message contains either:

a) no called number information; or,
b) incomplete called number information; or,
c) called number information which the TE cannot determine to be complete;

and when the TE:

d) is compatible with other call characteristics.

The TE shall send a SETUP ACKNOWLEDGE message to the network; and enter the Overlap receiving state.

Following the receipt of a Sending complete information element, or the determination that sufficient call information has been received, the TE shall send a CALL PROCEEDING, ALERTING or CONNECT message to the network.

If, following the receipt of a SETUP message or during overlap receiving, the TE determines that the received call information is invalid (e.g. invalid Called party number), it shall initiate call clearing in accordance with subclause 11.4.3.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10005 and TC12503.

NOTE: No test of clearance on receipt of invalid call information is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.2.5 Call confirmation

11.4.2.5.1 Response to en-bloc SETUP or completion of overlap receiving

Reference: ETS 300 102-1, subclause 5.2.5.1.

Requirement: When the TE determines that sufficient call setup information has been received and any compatibility requirements have been satisfied according to subclause 11.4.2.2, the TE shall respond with either a CALL PROCEEDING, ALERTING, or CONNECT message, and enter the Incoming call proceeding, Call received or Connect request state, respectively.

If, following the receipt of a SETUP message or during overlap receiving, the TE determines that the received call information is invalid (e.g. invalid Called party number), it shall initiate call clearing in accordance with subclause 11.4.3.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10005, TC10006 and TC12503.

11.4.2.6 Call accept

Reference: ETS 300 102-1, subclause 5.2.7.

Requirement: A TE shall indicate acceptance of an incoming call by sending a CONNECT message to the network.

Test: This requirement shall be tested according to the procedures of annex D, test preamble PR30801.

11.4.2.7 Active indication

Reference: ETS 300 102-1, subclause 5.2.8.

Requirement: Upon receipt of the CONNECT ACKNOWLEDGE message the TE shall enter the Active state.

NOTE: Only the TE that is awarded the call receives the CONNECT ACKNOWLEDGE message.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10801.

11.4.2.8 Non-selected user clearing

Reference: ETS 300 102-1, subclause 5.2.9.

Requirement: Any TE which having previously sent a CONNECT message and which subsequently receives a RELEASE message, shall follow the procedures of subclause 11.4.3.4.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10805.

11.4.3 Call clearing

11.4.3.1 Terminology

Reference: ETS 300 102-1, subclause 5.3.1.

Definition: The following terms are used in this TBR in the description of clearing procedures:

A channel is "released" when the channel is not part of a circuit switched ISDN connection and is available for use in a new connection. Similarly, a Call reference that is "released" is available for re-use.

11.4.3.2 Exception conditions

Reference: ETS 300 102-1, subclause 5.3.2.

Requirement: Except as described in this subclause, call clearing shall be initiated when the TE sends a DISCONNECT message and follows the procedures defined in subclauses 11.4.3.3 and 11.4.3.4 respectively. The only exceptions to the above rule are as follows:

a) in response to a SETUP message, the TE may reject a call (e.g. because of the unavailability of a suitable B-channel) by responding with a RELEASE COMPLETE message provided no other response has previously been sent (e.g. the SETUP ACKNOWLEDGE message in the case of overlap receiving); releasing the Call reference; and enter the Null state;

b) unsuccessful termination of the B-channel selection procedure by the side offering the call shall be accomplished by sending a RELEASE message as described in subclauses 11.4.3.3 and 11.4.3.4.

Test: There is no test.

NOTE: No test is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.3.3 Clearing initiated by the user

Reference: ETS 300 102-1, subclause 5.3.3.

Requirement: Apart from the exceptions identified in subclauses 11.4.3.2 and 11.4.6, the TE shall initiate clearing by sending a DISCONNECT message, starting timer T305, and entering the Disconnect request state.

NOTE: When a TE initiates call clearing by sending a RELEASE message, the procedures described in subclause 11.4.3.4 are followed.

On receipt of the RELEASE message the TE shall cancel timer T305; release the B-channel; send a RELEASE COMPLETE message; release the Call reference; and return to the Null state.

If timer T305 expires, the TE shall send a RELEASE message, start timer T308, enter the Release Request state and follow the procedures of subclause 11.4.3.4.3.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC11105, TC20203, TC20301, TC20401 and TC21003.

11.4.3.4 Clearing initiated by the network

11.4.3.4.1 Clearing when tones/announcements provided

Reference: ETS 300 102-1, subclause 5.3.4.1.

Requirement: On receipt of the DISCONNECT message with Progress indicator #8, the TE may enter the Disconnect indication state. Alternatively, the TE shall start timer T308, send a RELEASE message and enter the Release request state and follow the procedures of subclause 11.4.3.4.3.

NOTE 1: The first option is usually accompanied by connection to the B-channel to receive an in-band tone or announcement

If the TE follows the first option, the TE may subsequently continue clearing (before the receipt of a RELEASE message from the network) by sending a RELEASE message, starting timer T308, entering the Release request state and following the procedures of subclause 11.4.3.4.3.

On receipt of the RELEASE message, the TE shall act according to subclause 11.4.3.3.

Test: There is no test.

NOTE 2: No test is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.3.4.2 Clearing when tones/announcements not provided

Reference: ETS 300 102-1, subclause 5.3.4.2.

Requirement: On the receipt of the DISCONNECT message without Progress indicator #8, the TE shall send a RELEASE message, start timer T308, enter the Release request state and follow the procedures of subclause 11.4.3.4.3.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC11001, TC10204, TC10303, TC10402, TC10701, TC10802, TC10901, TC11501, TC11701 and TC12501.

11.4.3.4.3 Completion of clearing

Reference: ETS 300 102-1, subclause 5.3.4.3.

Requirement: Following the receipt of a RELEASE COMPLETE message from the network, the TE shall stop timer T308, release both the B-channel and the Call reference; and return to the Null state.

If a RELEASE COMPLETE message is not received before the first expiry of T308, the RELEASE message shall be retransmitted and timer T308 shall be restarted.

If no RELEASE COMPLETE message is received before the second expiry of T308, the TE shall release the call reference and return to the Null state.

Test: This requirement shall be tested according to the procedures of annex D, test case TC11903.

11.4.3.5 Clear collision

Reference: ETS 300 102-1, subclause 5.3.5.

Requirement: When the TE receives a DISCONNECT message whilst in the Disconnect request state, the TE shall send a RELEASE message; and enter the Release request state.

The TE, on receiving a RELEASE message whilst within the Release request state shall release the Call reference and B-channel; and enter the Null state without sending or receiving a RELEASE COMPLETE message.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC11101 and TC11904.

11.4.4 Call rearrangements

Reference: ETS 300 102-1, subclause 5.6.

NOTE: The elements of procedure in this subclause provide for physical layer and/or data link layer rearrangements after a call has entered the Active state. The procedure is restricted to use on the same interface, and resumption on the same B-channel.

The activation of this procedure at a user-network interface may correspond to a number of possible events such as the following:

a) physical disconnection of TE and reconnection;

b) physical replacement of one TE by another;

c) the human user moves from one TE to another;

d) suspension of call and its subsequent reactivation at the same TE.

These procedures have only local significance; i.e. the invocation of call rearrangement affects only states at the originating end, and it does not affect any terminating states.

The procedures in this subclause are described in terms of functional messages and information elements.

If the procedures for call suspension in this subclause are not followed prior to the physical disconnection of the TE from the interface, then the integrity of the call cannot be guaranteed by the network.

11.4.4.1 Call suspension

Reference: ETS 300 102-1, subclause 5.6.1.

Requirement: The procedure is initiated by the TE, which shall send a SUSPEND message containing the current Call reference; and enter the Suspend request state. The TE may include in this message a bit sequence (e.g. IA5 characters) to be known by the application or human user, and by the network, as the Call identity for subsequent reconnection.

Test: This requirement shall be tested according to the procedures of annex D, test case TC21005.

11.4.4.2 Call suspended

Reference: ETS 300 102-1, subclause 5.6.2.

Requirement: When the TE receives the SUSPEND ACKNOWLEDGE message, the TE shall release the B-channel and Call reference; and enter the Null state.

Test: This requirement shall be tested according to the procedures of annex D, test case TC11504.

11.4.4.3 Call suspend error

Reference: ETS 300 102-1, subclause 5.6.3.

Requirement: On receipt of a SUSPEND REJECT message the TE shall return to the Active state.

Test: This requirement shall be tested according to the procedures of annex D, test case TC11508.

11.4.4.4 Call re-establishment

Reference: ETS 300 102-1, subclause 5.6.4.

Requirement: At the connection end where suspension was initiated, the TE shall request re-establishment of a call by sending a RESUME message containing the Call identity exactly as that used at the time of call suspension; and entering the Resume request state. If the SUSPEND message did not include a Call identity information element, then the corresponding RESUME message shall also not include a Call identity information element.

On receipt of the RESUME ACKNOWLEDGE message, the TE shall enter the Active state.

NOTE: No compatibility checking is performed during the call re-establishment phase.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC11703 and TC20001.

11.4.4.5 Call resume errors

Reference: ETS 300 102-1, subclause 5.6.5.

Requirement: Upon receipt of the RESUME REJECT message the TE shall enter the Null state.

Test: This requirement shall be tested according to the procedures of annex D, test case TC11706.

11.4.4.6 Double suspension

Reference: ETS 300 102-1, subclause 5.6.6.

NOTE: Simultaneous suspension of the call at both ends is possible. The procedures do not prevent this from occurring. If double suspensions are not desired the TE should protect against this by other means; e.g. higher layer negotiation protocols.

11.4.5 Call collisions

Reference: ETS 300 102 Part 1, subclause 5.7.

NOTE: Call collisions as such cannot occur at the network. Any simultaneous incoming or outgoing calls are dealt with separately and assigned different Call references.

Channel selection conflicts may occur if an incoming call and outgoing call select the same channel. In the case of such conflicts, the network gives priority to the incoming call over the call request received from the TE. It clears the outgoing call whenever the B-channel cannot be allocated by the network or accepted by the TE originating the call.

11.4.6 Handling of error conditions

Where the TE implements the generic functional protocol defined in ETS 300 196, and ETS 300 196 defines an alternative procedure to any of those defined in this subclause, then the requirements of this subclause do not apply to the extent that the alternative procedure of ETS 300 196 is implemented. The alternative procedure defined in ETS 300 196 is not a requirement.

Subclauses 11.4.6.1 through 11.4.6.6 are listed in order of precedence.

The term "Ignore" in the following subclauses means to do nothing, as if the message had never been received.

11.4.6.1 Protocol discrimination error

Reference: ETS 300 102-1, subclause 5.8.1.

Requirement: When a message is received with a Protocol discriminator coded other than "Q.931(I.451) user-network call control message", no message shall be generated using a protocol discriminator coded as "Q.931(I.451) user-network call control message".

Test: This requirement shall be tested according to the procedures of annex D, test case TC10012.

11.4.6.2 Call reference procedural errors

Reference: ETS 300 102-1, subclause 5.8.3.2.

Requirement:

a) Whenever any message except SETUP, RELEASE, RELEASE COMPLETE, STATUS, STATUS ENQUIRY or (for networks supporting the call rearrangement procedures of subclause 11.4.4) RESUME is received specifying a Call reference which is not recognized as relating to an active call or to a call in progress, clearing shall be initiated by sending a RELEASE message and following the procedures in subclause 11.4.3, specifying the Call reference in the received message. Alternatively, the receiving entity shall send a RELEASE COMPLETE message and remain in the Null state.

When a STATUS ENQUIRY message is received specifying a call reference which is not recognized as relating to an active call or a call in progress, either the procedures of this subclause or of subclause 11.6.7 shall be followed.

b) When a RELEASE message is received that specified a Call reference which is not recognized as relating to an active call or to a call in progress, a RELEASE COMPLETE message is returned specifying the Call reference in the received message.

c) When a RELEASE COMPLETE message is received specifying a Call reference which is not recognized as relating to an active call or to a call in progress, no action shall be taken.

d) When a SETUP message is received specifying a Call reference which is recognized as relating to an active call or to a call in progress, this SETUP message shall be ignored.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10010, TC10002, TC10125 and TC10011.

11.4.6.3 Message type or message sequence errors

Reference: ETS 300 102-1, subclause 5.8.4 and 5.3.2 (b).

Requirement: Whenever an unexpected message, except RELEASE or RELEASE COMPLETE, or unrecognized message is received in any state other than the Null state, either

1) a STATUS message shall be returned with Cause #98 "message not compatible with Call state or Message type non-existent or not implemented" and, optionally, the corresponding diagnostic. If a TE can distinguish between un-implemented (or non-existent) Message types and implemented Message types which are incompatible with the Call state, then a STATUS message may be sent with one of the following Causes:

   a) Cause #97 "Message type non-existent or not implemented"; or,
   b) Cause #101 "message not compatible with Call state";

   or,

2) a STATUS ENQUIRY message shall be sent requesting the Call state of the network (see subclause 11.4.6.9).

No change in state shall be made in either case at this time.

Whenever the TE receives an unexpected RELEASE message, the TE shall release the B-channel; return a RELEASE COMPLETE message to the network; release the Call reference; stop all timers relating to that call and return to the Null state.

NOTE: This event occurs when the network clears a call because the calling party has cleared before the call is answered (see ETS 300 102-1, subclause 5.3.2(e)).

Whenever the TE receives an unexpected RELEASE COMPLETE message, the TE shall release the B-channel; release the Call reference; stop all timers relating to that call and enter the Null state.

If a DISCONNECT message is received while in the Release request state, the procedures described in the first paragraph of subclause 11.4.3.5 shall apply.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10107, TC10120, TC11008, TC11021, TC10103, TC11005, TC10102, and TC11004.

11.4.6.4 Duplicated information elements

Reference: ETS 300 102-1, subclause 5.8.5.2.

Requirement: If an information element is repeated in a message in which repetition of the Information element is not permitted, only the contents of information element appearing first shall be handled and all subsequent repetitions of the information element shall be ignored. When repetition of the information elements is permitted, only the contents of permitted information elements shall be handled. If the limit on repetition of information elements is exceeded, the contents of information elements appearing first up to the limit of repetitions shall be handled and all subsequent repetitions of the information element shall be ignored.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10024.

11.4.6.5 Mandatory information element errors

11.4.6.5.1 Mandatory information element missing

Reference: ETS 300 102-1, subclause 5.8.6.1.

Requirement: When a message other than SETUP, DISCONNECT, RELEASE or RELEASE COMPLETE is received which has one or more mandatory information elements missing, no action shall be taken on the message and no state change shall occur. A STATUS message shall then be returned with Cause #96 "mandatory information element is missing".

When a SETUP or RELEASE message is received which has one or more mandatory information elements missing, a RELEASE COMPLETE message shall be returned.

Other actions taken on receipt of a RELEASE message with the Cause information element missing shall be the same as if a RELEASE message with Cause # 31 "normal, unspecified" had been received.

When a RELEASE message is received as the first clearing message and with a Cause information element missing, the actions taken shall be the same as if a RELEASE message with Cause #31 "normal, unspecified" was received (see subclause 11.4.3).

When a DISCONNECT message is received with the Cause information element missing, the actions taken shall be the same as if a DISCONNECT message with Cause #31 "normal, unspecified" was received (see subclause 11.4.3).

When a RELEASE COMPLETE message is received with a Cause information element missing, it shall be assumed that a RELEASE COMPLETE message was received with Cause #31 "normal, unspecified".

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10015, TC10115, TC10222, TC11028 and TC11029.

NOTE: No test for the action on receipt of a DISCONNECT message with the Cause information element missing is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.6.5.2 Mandatory information element content error

Reference: ETS 300 102-1, subclause 5.8.6.2.

Requirement: When a message other than SETUP, DISCONNECT, RELEASE or RELEASE COMPLETE is received which has one or more mandatory information elements with invalid content, no action shall be taken on the message and no state change shall occur. A STATUS message shall then be returned with Cause #100 "invalid information element contents".

When a SETUP or RELEASE message is received which has one or more mandatory information elements with invalid content, a RELEASE COMPLETE message shall be returned.

Other actions taken on receipt of a RELEASE message with the Cause information element with invalid content shall be the same as if a RELEASE message with Cause # 31 "normal, unspecified" had been received.

When a DISCONNECT message is received with invalid content of the Cause information element, the actions taken shall be the same as if a DISCONNECT message with Cause #31 "normal unspecified" had been received (see subclause 11.4.3).

When a RELEASE COMPLETE message is received with invalid content of the Cause information element, it shall be assumed that a RELEASE COMPLETE message was received with Cause #31 "normal, unspecified".

Information elements with a length exceeding the maximum length (given in subclause 11.2) shall be treated as information element with content error.

NOTE 1: As an option of a TE (e.g. NT2), Cause values, location codes, and diagnostics which are not understood by the NT2 may be passed on to another entity (e.g. user or NT2) instead of treating the Cause value as if it were Cause # 31 "normal, unspecified". This option is intended to aid the TE to be compatible with future additions of Cause values, location codes and diagnostics to this TBR.

NOTE 2: No test for the action on receipt of a message with a mandatory information element length exceeding the maximum is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10026, TC10116, TC10223 and TC11032.

11.4.6.6 Non-mandatory information element errors

Reference: ETS 300 102-1, subclause 5.8.7.

The following subclauses identify actions on information elements not recognized as mandatory.

11.4.6.6.1 Unrecognized information element

Reference: ETS 300 102-1, subclause 5.8.7.1.

Requirement: When a message is received which has one or more unrecognized information elements, the TE shall check whether any are encoded to indicate "comprehension required" (refer to table 11.27 for information element identifiers reserved with this meaning). If any unrecognized information element is encoded to indicate "comprehension required", then the procedures in subclause 11.4.6.5.1 are followed; i.e. as if a "missing mandatory information element" error condition had occurred. If all unrecognized information elements are not encoded to indicate "comprehension required", then the TE shall proceed as follows.

Action shall be taken on the message and those information elements which are recognized and have valid content. When the received message is other than DISCONNECT, RELEASE or RELEASE COMPLETE, a STATUS message may be returned containing one Cause information element. The STATUS message shall indicate the Call state of the receiver after taking action on the message. The Cause information element shall contain Cause #99 "information element non-existent or not implemented", and the diagnostic field, if present, shall contain the information element identifier for each information element which was unrecognized.

Subsequent actions are determined by the sender of the unrecognized information elements. If a clearing message contains one or more unrecognized information elements, the error is reported to the local TE in the following manner:

a) when a DISCONNECT message is received which has one or more unrecognized information elements, a RELEASE message shall be returned;

b) when a RELEASE message is received which has one or more unrecognized information elements, a RELEASE COMPLETE shall be returned;

c) when a RELEASE COMPLETE message is received which has one or more unrecognized information elements, no action shall be taken on the unrecognized information.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10027, TC10028, TC10718, TC11118 and TC11920.

11.4.6.6.2 Non-mandatory information element content error

Reference: ETS 300 102-1, subclause 5.8.7.2.

Requirement: When a message is received which has one or more non-mandatory information elements with invalid content, action shall be taken on the message and those information elements which are recognized and have valid content. A STATUS message may be returned containing one Cause information element. The STATUS message indicates the Call state of the receiver after taking action on the message. The Cause information element shall contain Cause #100 "invalid information element contents", and the diagnostic field, if present, shall contain the information element identifier for each information element which has invalid contents.

Information elements with a length exceeding the maximum length (given in subclause 11.2) shall be treated as an information element with content error with the exception of:

- other access information elements (i.e. a user-to-user information, low layer compatibility, high layer compatibility, or subaddress information element) may be truncated and processed.

Also, for access information elements treated as information elements with content error, Cause #43 "access information discarded" shall be used instead of Cause #100 "invalid information element contents" in the STATUS message.

NOTE 1: As an option of a TE (e.g. NT2) Cause values, location codes, and diagnostics which are not understood by the NT2 may be accepted, or in the case of an NT2, passed on to another entity (e.g. user or NT2) instead of ignoring the Cause information element contents and optionally sending a STATUS message with Cause #100 "invalid information element contents". This option is intended to aid the TE to be compatible with future additions of Cause values, location codes, and diagnostics to this TBR.

Test: This requirement shall be tested according to the procedures of annex D, test case TC10029.

NOTE 2: No test for the action on receipt of a message containing an optional information element which is too long is specified in this version of the TBR because it was not possible to develop and verify a test due to shortage of time and resources. ETSI intends to develop and verify an appropriate test for inclusion in a later version.

11.4.6.7 Status enquiry procedure

Reference: ETS 300 102-1, subclause 5.8.10.

Requirement: When the TE is required to perform the procedures of this subclause, and a STATUS ENQUIRY message has not already been sent, a STATUS ENQUIRY message shall be sent. The TE shall treat any responding STATUS message according to the procedures of subclause 11.4.6.8.

Upon receipt of a STATUS ENQUIRY message, the receiver shall respond with a status message reporting the current Call state.

If the STATUS ENQUIRY message specifies a call reference which is not related to an active call or to a call in progress, then the receiver shall either respond with a STATUS message reporting the current call state, or the procedures of subclause 11.4.6.2 shall be followed.

Test: This requirement shall be tested according to the procedures of annex D, test case TC11107 and postamble CS59901.

11.4.6.8 Receiving a STATUS message

Reference: ETS 300 102-1, subclause 5.8.11.

Requirement:

a) If a STATUS message indicating any Call state except the Null state is received in the Null state, then the receiving entity shall either:

   1) send a RELEASE message; and then follow the procedures of subclause 11.4.3; or,
   2) send a RELEASE COMPLETE message; and remain in the Null state.

b) If a STATUS message indicating any Call state except the Null state is received in the Release request state, no action shall be taken.

c) If a STATUS message, indicating the Null state, is received in any state except the Null state, the receiver shall release all resources and move into the Null state.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC10004, TC10105, TC11007 and TC11906.

11.4.7 User notification procedure

Reference: ETS 300 102-1, subclause 5.9.

Requirement: No state change shall occur at the TE following the receipt of a NOTIFY message.

Test: This requirement shall be tested according to the procedures of annex D, test cases TC11003, TC11103 and TC11503.

11.4.8 Restart procedure

Reference: ETS 300 102-1, subclauses 5.5 and 5.5.2.

Requirement: When a point-to-point configuration exists using the point-to-point data link according to subclause 10.3 then the TE shall implement the following procedures.

Upon receiving a RESTART message the TE shall enter the Restart state associated to the global call reference; it shall then initiate the appropriate internal actions to return the specified channels to the idle condition and Call references to the Null state. Upon completion of internal clearing and within 2 minutes of receipt of the RESTART, a RESTART ACKNOWLEDGE message shall be transmitted to the network, and the Null state entered.

Test: This requirement shall be tested according to the procedures of annex D, test case TC19003.

11.5 TE timers

Definition: The duration of timer T305 is in the range 15 s to 45 s.

NOTE 1: A value of 30 s is recommended.

The duration of timer T308 is in the range 3 s to 15 s.

NOTE 2: A value of 4 s is recommended.

Annex A (normative): TBR Requirements Table (TBR-RT)

The purpose of this TBR-RT is to state the logical inter-relationship of the various requirements within this TBR, and their dependence on the implementation or non-implementation of options within particular items of TE.

The contents of this TBR-RT can also perform a similar function to that of an Implementation Conformance Statement (ICS). Therefore, in order to facilitate the provision of information by the manufacturers to test laboratories, a blank column for "Support" has been added so that the TBR-RT may be copied and used as part of an ICS proforma (additional information to identify uniquely the IUT shall be needed).

It is not a requirement of this TBR that information is provided to laboratories in this way, and other methods for providing information (e.g. ICSs for the base standards identified in the Scope) may be used.

A.1 Guidance for completion of the TBR-RT

For each layer, there are one or more tables of requirements.

The Number column, when taken with the table number, provides an unique identifier to each requirement (i.e. A1.6 is item 6 in table A.1).

The Reference column lists the subclause reference in the TBR where the requirement may be found.

The TBR Requirement column gives the clause title of the relevant clause, supplemented by any additional information necessary to identify the requirement.

The Status column contains one of the following items:

- m: support for the requirement is mandatory;
- cx: support for the requirement is mandatory if the relevant condition is met;
- o: support for the requirement is optional;
- ox: support for the requirement is optional, subject to certain options being selected according to the numbered footnote;
- n/a: support for the requirement is not applicable;
- x: support for the requirement is forbidden.

The outcome of a condition may be any of the other status values listed.

The Support column is blank for the user to complete.

A.2 Layer 1 and overvoltage requirements TBR-RT

Table A.1: Layer 1 and overvoltage conditions table

Reference	Condition	Status	Support (Y/N)	Comment
1	Is TE mains powered?	o		Affects requirements in clause 8.
2	Is TE PS1 powered?	o		Affects requirements in subclauses 9.4 and 9.5.
3	Does TE have a connection detector?	c1		Affects requirements in subclause 9.4.
4	Is the TE intended to operate as a designated TE?	c2		Affects requirements in subclause 9.5.
5	Does the TE have a connection to earth?	o		Affects requirements in subclause 9.5.
6	Is the TE intended for use only in a physical point-to-point configuration?	o		Affects requirements in subclauses 9.2 and 9.4.
7	Is the TE capable of transmitting INFO 3 within 5 ms of receipt of INFO 2 or INFO 4 in state F4?	o		Affects requirements in subclause 9.4.
c1 = n/a if A1.2 else o. c2 = o if A.12 else n/a.				

Table A.2: Overvoltage requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	8.1	Impulse transfer from mains, common mode.	c1	
2	8.2	Impulse transfer from mains, transverse mode.	c1	
3	8.3	Conversion of common mode to transverse mode.	m	
c1 = m if A1.1 else n/a.				

Table A.3: Layer 1 physical characteristics requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	9.1.1	Case A	o1	
2	9.1.2	Case B	o1	
3	9.1.3	Case C	o1	
o1. One or more options shall be chosen.				

Table A.4: Layer 1 electrical characteristics requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	9.2.1	Bit rate	m	
2	9.2.2.2	Timing extraction jitter, configuration 1)	m	
3	9.2.2.2	Timing extraction jitter, configuration 2)	c2	
4	9.2.2.2	Timing extraction jitter, configuration 3a)	c2	
5	9.2.2.2	Timing extraction jitter, configuration 3b)	c2	
6	9.2.2.2	Timing extraction jitter, configuration 4)	m	
7	9.2.2.3	Total phase deviation input to output, configuration 1)	m	
8	9.2.2.3	Total phase deviation input to output, configuration 2)	c2	
9	9.2.2.3	Total phase deviation input to output, configuration 3a)	c2	
10	9.2.2.3	Total phase deviation input to output, configuration 3b)	c2	
11	9.2.2.3	Total phase deviation input to output, configuration 4)	m	
12	9.2.3 a)	TE transmitter output impedance, requirement (a)	m	
13	9.2.3 b)	TE transmitter output impedance, requirement (b)	c2	
14	9.2.4	Pulse shape and amplitude (binary ZERO)	m	
15	9.2.5.1	Pulse amplitude when transmitting a high density pattern	m	
16	9.2.5.2	Pulse unbalance of an isolated couple of pulses	m	
17	9.2.6.1	Voltage on other test loads: 400 ohm load	c2	
18	9.2.6.2	Voltage on other test loads: 5,6 ohm load	c2	
19	9.2.7	Longitudinal Conversion Loss (LCL) of the transmitter outputs	m	
20	9.2.8	TE receiver input impedance	m	
21	9.2.9 (1)	Receiver sensitivity - Noise and distortion immunity, configuration (1)	m	
22	9.2.9 (2)	Receiver sensitivity - Noise and distortion immunity, configuration (2)	c2	
23	9.2.9 (3a)	Receiver sensitivity - Noise and distortion immunity, configuration (3a)	c2	
24	9.2.9 (3b)	Receiver sensitivity - Noise and distortion immunity, configuration (3b)	c2	
25	9.2.9 (4)	Receiver sensitivity - Noise and distortion immunity, configuration (4)	m	
26	9.2.10	Longitudinal Conversion Loss (LCL) of the receiver inputs	m	
c2 = n/a if A1.6 else m.				

Table A.5: Layer 1 functional characteristics requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	9.3.1.1	TE to NT	m	
2	9.3.1.3	Relative bit positions	m	
3	9.3.2	Line code	m	

Table A.6: Layer 1 interface procedure requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	9.4.1.1	Interframe (Layer 2) time fill	m	
2	9.4.1.2	Multipoint contention resolution mechanism	c3	
3	9.4.1.3	Collision detection	c3	
4	9.4.2.3.1	Activation/deactivation procedure for TEs powered from PS1, not including tests in state F5 (table 9.7).	c4	
5	9.4.2.3.1	Activation/deactivation procedure for TEs powered from PS1, state F5 tests.	c5	
6	9.4.2.3.1	Activation/deactivation procedure for TEs locally powered and without a connection detector, not including tests in state F5 (table 9.8).	c6	
7	9.4.2.3.1	Activation/deactivation procedure for TEs locally powered and without a connection detector, state F5 tests.	c7	
8	9.4.2.3.1	Activation/deactivation procedure for TEs locally powered and with a connection detector, not including tests in state F5 (table 9.9).	c8	
9	9.4.2.3.1	Activation/deactivation procedure for TEs locally powered and with a connection detector, state F5 tests.	c9	
10	9.4.2.3.2	Timer values	m	
11	9.4.2.4	TE activation times, not including tests in state F5.	m	
12	9.4.2.4	TE activation times, state F5 tests.	c10	
13	9.4.2.5	Deactivation times	m	
14	9.4.3	Frame alignment procedures	m	
15	9.4.4	Multiframing	m	
16	9.4.5	Idle Channel Code on the B-channels	c3	

c3 = n/a if A1.6 else m.
c4 = m if A.1.2 else n/a.
c5 = m if A6.4 and not A.1.7 else n/a.
c6 = m if not A1.3 else n/a.
c7 = m if A6.6 and not A1.7 else n/a.
c8 = m if A.1.3 and not A.1.2 else n/a.
c9 = m if A6.8 and not A1.7.
c10 = m if not A1.7 else n/a.

Table A.7: Layer 1 power feeding requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	9.5.2	Current transient	c11	
2	9.5.3.1	Normal power conditions, PS1 powered terminal	c11	
3	9.5.3.1	Normal power conditions, locally powered terminal	c12	
4	9.5.3.2.1	Power available to the TE "designated" for restricted power operation	c13	
5	9.5.3.2.2	Power available to locally powered and "non-designated" TEs	c14	
6	9.5.4	Galvanic isolation	c15	
7	9.5.5.1.1a	Current/time limitations for remotely powered TEs in normal mode, option a)	c16	
8	9.5.5.1.1b	Current/time limitations for remotely powered TEs in normal mode, option b)	c16	
9	9.5.5.1.2a	Current/time limitations for designated TEs in restricted mode, option a)	c17	
10	9.5.5.1.2b	Current/time limitations for designated TEs in restricted mode, option b)	c17	
11	9.5.5.1.3	Current/time limitations for non-designated and locally powered TEs in restricted mode.	c18	
12	9.5.5.1.4	Protection against PS1 interruption	c19	
13	9.5.5.2.1	Minimum TE start up current, restricted power mode	c13	
14	9.5.5.2.1	Minimum TE start up current, normal power mode	c11	
15	9.5.5.2.2	Protection against short term interruptions, restricted power mode	c13	
16	9.5.5.2.2	Protection against short term interruptions, normal power mode	c11	
17	9.5.5.2.3	Behaviour at the switch-over	c13	
18	9.5.5.3.1	DC unbalance of power sink 1	c11	
19	9.5.5.3.2	Current unbalance in a pair	m	

c11 = m if A1.2 else n/a.
c12 = n/a if A1.2 else m.
c13 = m if A1.4 else n/a.
c14 = n/a if A7.4 else m.
c15 = m if A1.5 else n/a.
c16 = o2 if A1.2 else n/a.
c17 = o3 if A1.4 else n/a.
c18 = n/a if A.1.4 else m.
c19 = m if A1.3 else n/a.
o2. Only one option shall be chosen.
o3. Only one option shall be chosen.

A.3 Layer 2 TBR-RT

Table A.8: Layer 2 point-to-point configuration requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.3	Does the TE support a configuration using only a single point-to-point data link?	o	

Table A.9: Layer 2 unacknowledged operation requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.4.1	Transmission of unacknowledged information	c20	
2	10.4.2	Receipt of unacknowledged information	c20	
c20 = n/a if A8.1 else m.				

Table A.10: Layer 2 TEI management requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.5.2	TEI assignment procedure, automatic TEIs	c21	
2	10.5.2	TEI assignment procedure, non-automatic TEIs	c21	
3	10.5.2.1	Expiry of timer T202	c22	
4	10.5.3.2	Operation of the TEI check procedure	c23	
5	10.5.4.1	Action taken by the data link layer entity receiving the MDL-REMOVE-REQUEST primitive	c22	
6	10.5.4.2	Conditions for TEI removal, receipt of an identity remove message	c22	
7	10.5.4.2	Conditions for TEI removal, receipt of MPH-II(d)	c22	
8	10.5.4.2	Conditions for TEI removal, receipt of MDL-ERROR INDICATION indicating possible multiple TEI assignment	c24	
9	10.5.5.2	Operation of the TEI identity verify procedure	c24	
10	10.5.5.3	Expiry of timer T202	c25	
c21 = n/a if A8.1 else o4. c22 = m if A10.1 else n/a. c23 = n/a if A8.1 else m. c24 = o5 if A10.1 else n/a. c25 = m if A10.9 else n/a. o4. One or more options shall be chosen. o5. One or more options shall be chosen.				

Table A.11: Layer 2 establishment and release procedures requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.6.1.1	General	m	
2	10.6.1.2	Establishment procedures	m	
3	10.6.1.3	Procedure on expiry of timer T200	m	
4	10.6.2	Termination of multiple frame operation	m	
5	10.6.3.1	Identical transmitted and received commands	m	

Table A.12: Layer 2 multiple frame operation requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.7.1	Transmitting I-frames	m	
2	10.7.2	Receiving I-frames	m	
3	10.7.2.1	P bit set to 1	m	
4	10.7.2.2	P bit set to 0	m	
5	10.7.3	Receiving acknowledgements	m	
6	10.7.4	Receiving REJ frames	m	
7	10.7.5.1	Receiving a valid RNR command or response	m	
8	10.7.5.2	Expiry of timer T200 during "peer receiver busy"	m	
9	10.7.5.3	Receiving a valid RNR command or response during "peer receiver busy"	m	
10	10.7.5.4	Receiving a valid RR or REJ command during "peer receiver busy"	m	
11	10.7.5.5	Appropriate supervisory response frame	m	
12	10.7.6	Waiting acknowledgement	m	
13	10.8	Re-establishment of multiple frame operation	m	

Table A.13: Layer 2 exception condition requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.9.1	N(S) sequence error	m	
2	10.9.2	Invalid frame condition	m	
3	10.9.3	Frame rejection condition	m	
4	10.9.4	Multiple-assignment of TEI value	c26	
c26 = m if A10.1 else n/a.				

Table A.14: Layer 2 system parameters requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	10.10.7	Layer 2 response time, TE not operating in accordance with subclause 10.3 (200 ms).	c27	
2	10.10.7	Layer 2 response time, TE operating in accordance with subclause 10.3 (500 ms).	c28	
c27 = n/a if A8.1 else m. c28 = m if A8.1 else n/a.				

A.4 Layer 3 TBR-RT

Table A.15: Layer 3 Call establishment at the originating interface requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	11.4.1	Call establishment at the originating interface	m	
2	11.4.1.1	Call request, SETUP message with Sending Complete information element	o6	
3	11.4.1.1	Call request, SETUP message with all called party address information, but without Sending Complete information element	o6	
4	11.4.1.1	Call request, SETUP message without all called party address information	o6	
5	11.4.1.2	Overlap sending, enter Overlap sending state	c29	
6	11.4.1.2	Overlap sending, send INFORMATION messages	c30	
7	11.4.1.3.1	Call proceeding, en-bloc sending	c31	
8	11.4.1.3.2	Call proceeding, overlap sending	c29	
9	11.4.1.4	Call confirmation indication	m	
10	11.4.1.5	Call connected	m	
c29 = m if A15.3 or A14.4 else n/a. c30 = m if A15.4. c31 = m if A15.2 or A15.3 else n/a. o6. One or more options shall be chosen.				

Table A.16: Layer 3 Call establishment at the destination interface requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	11.4.2	Call establishment at the destination interface	m	
2	11.4.2.1	Incoming call, SETUP message delivered by point-to-point data link	c32	
3	11.4.2.1	Incoming call, SETUP message delivered by broadcast data link	c33	
4	11.4.2.2.1	Compatibility checking on Bearer capability information element, SETUP message delivered by point-to-point data link	c34	
5	11.4.2.2.1	Compatibility checking on Bearer capability information element, SETUP message delivered by broadcast data link	c35	
6	11.4.2.2.1	Compatibility checking on High layer compatibility information element, SETUP message delivered by broadcast data link	c35	
7	11.4.2.2.1	Compatibility checking on Low layer compatibility information element, SETUP message delivered by broadcast data link	c35	
8	11.4.2.2.2	Address checking on the Called party number information element, SETUP message delivered by broadcast data link	c34	
9	11.4.2.2.2	Address checking on the Called party subaddress information element, SETUP message delivered by broadcast data link	c34	
10	11.4.2.3.1	B-channel selection-destination, SETUP message delivered by point-to-point data link	c32	
11	11.4.2.3.2	B-channel selection-destination, SETUP message delivered by broadcast data link.	c33	
12	11.4.2.4	Overlap receiving	o	
13	11.4.2.5.1	Response to en-bloc SETUP or completion of overlap receiving	m	
14	11.4.2.6	Call accept	m	
15	11.4.2.7	Active indication	m	
16	11.4.2.8	Non-selected user clearing	c35	
c32 = m if A8.1 else n/a. c33 = n/a if A8.1 else m. c34 = o if A8.1 else n/a. c35 = n/a if A8.1 else o.				

Table A.17: Layer 3 Call clearing requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	11.4.3.2	Exception conditions	m	
2	11.4.3.3	Clearing initiated by the user	m	
3	11.4.3.4.1	Clearing when tones/announcements provided, Disconnect Indication state entered	o7	
4	11.4.3.4.1	Clearing when tones/announcements provided, Release Request state entered	o7	
5	11.4.3.4.2	Clearing when tones/announcements not provided	m	
6	11.4.3.4.3	Completion of clearing	m	
7	11.4.3.5	Clear collision	m	
o7. One or more options shall be chosen.				

Table A.18: Layer 3 Call rearrangements requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	11.4.4.1	Call suspension	o	
2	11.4.4.2	Call suspended	c36	
3	11.4.4.3	Call suspend error	c36	
4	11.4.4.4	Call re-establishment	c36	
5	11.4.4.5	Call resume errors	c36	
c36 = m if A18.1 else n/a.				

Table A.19: Layer 3 error conditions requirements table

No.	Reference	TBR Requirement	Status	Support (Y/N)
1	11.4.6.1	Protocol discrimination error	m	
2	11.4.6.2	Call reference procedural errors	m	
3	11.4.6.3	Message type or message sequence errors	m	
4	11.4.6.4	Duplicated information elements	m	
5	11.4.6.5.1	Mandatory information element missing	m	
6	11.4.6.5.2	Mandatory information element content error	m	
7	11.4.6.6.1	Unrecognized information element	m	
8	11.4.6.6.2	Non-mandatory information element content error	m	
9	11.4.6.7	Status enquiry procedure	m	
10	11.4.6.8	Receiving a STATUS message	m	
11	11.4.7	User notification procedure	m	
12	11.4.8	Restart procedure	c37	
c37 = m if A8.1 else n/a.				

Annex B (normative): Conformance test principles for Layer 1

B.1 Scope and general information

B.1.1 Scope

Reference: ETS 300 012, annex D, subclause D.1.1.

This annex provides the test principles for the requirements of this TBR used to determine the compliance of an IUT to this TBR.

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 to be 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 (the measurement arrangements and the equipment suggested are only for example purposes).

B.1.2 General information

Reference: ETS 300 012, annex D, subclause D.1.2.

This annex is applicable to interface I_a. The field of applicability is reported at the beginning of each test.

In the case of a multi-access IUT supporting interface I_a, unless otherwise stated, only one access at a time shall receive the stimulus. All other accesses shall receive "no signal".

For conformance test purposes, it is desirable that a complete loopback 4 is provided by an IUT (see annex A, table A.1, Appendix I of ETS 300 012) and also a test pattern of INFO 3 frames with the B1 and B2 channels set to binary ZERO.

Ideal values for components and circuits are considered in the test principles.

Unless otherwise stated, the line termination resistors for both NT and TE side are considered inside the test equipment.

B.1.3 Definitions and abbreviations

Reference: ETS 300 012, annex D, subclause D.1.3.

For the purpose of this annex the following definition, together with those given in clause 3, applies:

Simulator — Device generating the stimulus signal for the IUT and monitoring the signal transmitted by the IUT to find the result.

B.1.4 Environmental conditions

Testing shall be performed at a temperature:

a) within the intended operational range of the TE;

and

b) within the range 19°C - 25°C.

Where there is not an overlap of at least 5°C, testing shall be performed at any temperature within the intended operational range.

Testing shall be performed at a humidity in the range 5 % - 75 %.

B.1.5 Test case selection

The selection of requirements made in annex A has an effect on the tests which are applicable to the TE. Tables B.2 and B.3 provide an index of layer 1 tests from clauses B.2, B.3 and B.5, indicating the circumstances under which each test is applicable. The status of each test is described by reference to the test case selection criteria described in table B.1. Where more than one selection criteria is named then the applicability of the test is according to the boolean combination of the criteria.

NOTE. The TTCN tests of the activation/deactivation procedures in clause B.4 have their own index.

The characteristics measured by the electrical tests of clause B.2 and some of the power feeding tests of clause B.5 can vary with the type of power source or power sink and the extremes of voltage provided by the network. It is, therefore, necessary to repeat some of the tests of clauses B.2 and B.5 at a number of dc voltage levels of PS1. For designated terminals both the conditions under PS1 normal power and PS1 restricted power apply. For non-designated terminals the conditions under PS1 normal power apply. Table B.2 therefore describes the applicability of each test at a number of voltages of PS1.

Table B.1: Test case selection criteria

Name	TBR-RT reference	Comments
PS	A1.2	PS1 powered TE
DES	A1.4	PS1 powered, designated TE
NDES	A.1.1 and not A1.4	PS1 powered, non-designated TE
LP	not A1.2	Locally powered TE
DET	A1.3	Locally powered TE with a connection detector
NDET	not A1.2 and not A1.3	Locally powered TE without a connection detector
PTMP	not A1.6	TE intended to operate in a multipoint configuration
ETH	A1.5	TE has a connection to earth
-	-	Test not performed
All	-	Test performed on all TEs

Table B.2: Test case index, tests involving different PS1 voltages

Test	Description	Status				
		PS1 = +42V	**PS1 = +24V**	**PS1 = -42V**	**PS1 = -32V**	**No PS1 power**
B.2.1	Bit rate when transmitting an INFO 1	PS	PS	DES	DES or LP	-
B.2.2.1	TE jitter measurement characteristics (test A), Bus configuration (1)	PS	PS	-	DES or LP	-
B.2.2.1	TE jitter measurement characteristics (test A), Bus configuration (2)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.1	TE jitter measurement characteristics (test A), Bus configuration (3b)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.1	TE jitter measurement characteristics (test A), Bus configuration (3a)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.1	TE jitter measurement characteristics (test A), Bus configuration (4)	PS	PS	-	DES or LP	-
B.2.2.2	TE output phase deviation (test B), Bus configuration (1)	PS	PS	-	DES or LP	-
B.2.2.2	TE output phase deviation (test B), Bus configuration (2)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.2	TE output phase deviation (test B), Bus configuration (3b)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.2	TE output phase deviation (test B), Bus configuration (3a)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.2.2	TE output phase deviation (test B), Bus configuration (4)	PS	PS	-	DES or LP	-
B.2.3.1	TE transmitter output impedance Test A	PS	PS	DES	DES or LP	-
B.2.3.2	TE transmitter output impedance Test B, 50 ohm load	PS	PS	DES	DES or LP	-
B.2.3.2	TE transmitter output impedance Test B, 400 ohm load	PS and PTMP	PS and PTMP	DES and PTMP	(DES or LP) and PTMP	-
B.2.3.3	TE transmitter output impedance Test C	PS	PS	DES	DES or LP	-
B.2.3.4	TE transmitter output impedance Test D, state F1	-	-	-	-	NDET or PS
B.2.3.4	TE transmitter output impedance Test D, state F1.0 and state F1.1	-	-	-	-	DET

(continued)

Table B.2 (continued): Test case index, tests involving different PS1 voltages

Test	Description	Status				
B.2.3.5	TE transmitter output impedance Test E, state F1	-	-	-	-	NDET or PS
B.2.3.5	TE transmitter output impedance Test E, state F1.0 and state F1.1	-	-	-	-	DET
B.2.4	Pulse shape and amplitude	PS	PS	DES	DES or LP	-
B.2.5.1	Pulse amplitude	All	All	LP	DES or LP	-
B.2.5.2	Pulse unbalance of an isolated couple of pulses	All	All	LP	DES or LP	-
B.2.6.1	Voltage on other test loads Test A	PS and PTMP	PS and PTMP	DES and PTMP	(DES or LP) and PTMP	-
B.2.6.2	Voltage on other test loads Test B	PS and PTMP	PS and PTMP	DES and PTMP	(DES or LP) and PTMP	-
B.2.7	Longitudinal conversion loss of transmitter output, state F3	All	All	DES or LP	DES or LP	-
B.2.7	Longitudinal conversion loss of transmitter output, state F1 and F1.0	-	-	-	-	All
B.2.8.1.1	TE receiver input impedance Test A	PS	PS or LP	DES	DES or LP	-
B.2.8.1.2	TE receiver input impedance Test B	PS	PS	DES	DES or LP	-
B.2.8.1.3	TE receiver input impedance Test C, state F1	-	-	-	-	PS or NDET
B.2.8.1.3	TE receiver input impedance Test C, state F1.0 and state F1.1	-	-	-	-	DET
B.2.8.1.4	TE receiver input impedance Test D, state F1	-	-	-	-	PS or NDET
B.2.8.1.4	TE receiver input impedance Test D, state F1.0 and state F1.1	-	-	-	-	DET
B.2.8.2	Receiver sensitivity - noise and distortion immunity, Bus configuration (1)	PS	PS	-	DES or LP	-

(continued)

Table B.2 (concluded): Test case index, tests involving different PS1 voltages

Test	Description	Status				
B.2.8.2	Receiver sensitivity - noise and distortion immunity, Bus configuration (2)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.8.2	Receiver sensitivity - noise and distortion immunity, Bus configuration (3a)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.8.2	Receiver sensitivity - noise and distortion immunity, Bus configuration (3b)	PS and PTMP	PS and PTMP	-	(DES or LP) and PTMP	-
B.2.8.2	Receiver sensitivity - noise and distortion immunity, Bus configuration (4)	PS	PS	-	DES or LP	-
B.2.8.3	Unbalance about earth of receiver input, state F3	All	All	DES or LP	DES or LP	-
B.2.8.3	Unbalance about earth of receiver input, state F1 and F1.0	-	-	-	-	All
B.5.1.1	Normal power provision (Test A)	PS	PS	-	-	-
B.5.1.2	Normal power provision (Test B)	PS	PS	-	-	-
B.5.1.3	Normal power provision (Test C)	PS	PS	-	-	-
B.5.1.4	Normal power provision (Test D)	LP	LP	-	-	-
B.5.2.1	Restricted power provision (Test A)	-	-	DES	DES	-
B.5.2.2	Restricted power provision (Test B)	-	-	DES	DES	-
B.5.2.3	Restricted power provision (Test C)	-	-	DES	DES	-
B.5.2.4	Restricted power provision (Test D)	-	-	LP	LP	-
B.5.2.5	Restricted power provision (Test F)	-	-	NDES	NDES	-
B.5.3	Current transient	PS	PS	DES	DES	-

Table B.3: Test case index, tests not involving different PS1 voltages

Test	Description	Status
B.3.1.1	Binary organisation of frame Test A	All
B.3.1.2	Binary organisation of frame Test B	All
B.5.4.1	Limitation on power sink during transient conditions, Current/time limitation for TE, test 1	PS and PTMP
B.5.4.1	Limitation on power sink during transient conditions, Current/time limitation for TE, test 2	PS and PTMP
B.5.4.2	Limitation on power sink during transient conditions, Current/time limitation for TE when connecting	(NDES or LP) and PTMP
B.5.4.3	Limitation on power sink during transient conditions, Behaviour of a TE using a connection detector	DET
B.5.4.4.1	Power start-up test after removal of short-circuit, test 1 restricted mode	DES
B.5.4.4.1	Power start-up test after removal of short-circuit, test 2 normal mode	PS
B.5.4.4.2	Power start-up test at low input voltage	PS
B.5.4.5.1	Protection against short-term interruptions, Normal power	PS
B.5.4.5.2	Protection against short-term interruptions, Restricted power	DES
B.5.4.6.1	Behaviour at the switch-over, normal power	DES
B.5.4.6.2	Behaviour at the switch-over, Restricted power	DES
B.5.4.7	DC unbalance of TEs using power sink 1	PS
B.5.4.8	Effect of current unbalance	All
B.5.5	Galvanic isolation	ETH

B.2 Electrical characteristics tests

Reference: ETS 300 012, annex D, subclause D.4.

Many of these tests require the interface to be stable in the activated state and transmitting a specific bit pattern, both with or without the connection to the NT1 receiving pair. As none of these requirements can be met with the network simulator operating normally it is anticipated that special arrangements will be made to permit this, for example the receiving section to the NT1 could be manually set in the appropriate state.

There is also the restriction imposed by access to the TE's B-channels.

B.2.1 Bit rate when transmitting an INFO 1

Reference: ETS 300 012, annex D, subclause D.4.1.

Purpose: The average frame rate when the TE is transmitting INFO 1 type frames.

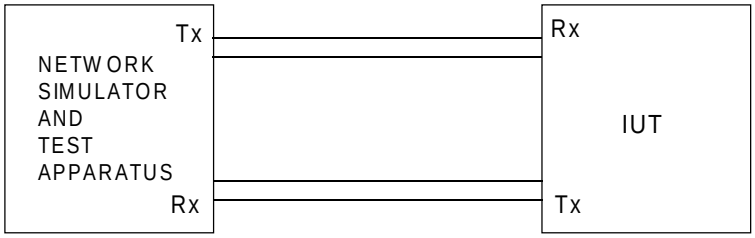


Figure B.1: Test configuration

System state: Awaiting signal (state F4).

Stimulus: INFO 0 type frames from the network (see note 5 to table 9.7, subclause 9.4.2.3.1).

Monitor: Frame rate.

Results: Nominal frame rate of 24 kHz ± 100 ppm.

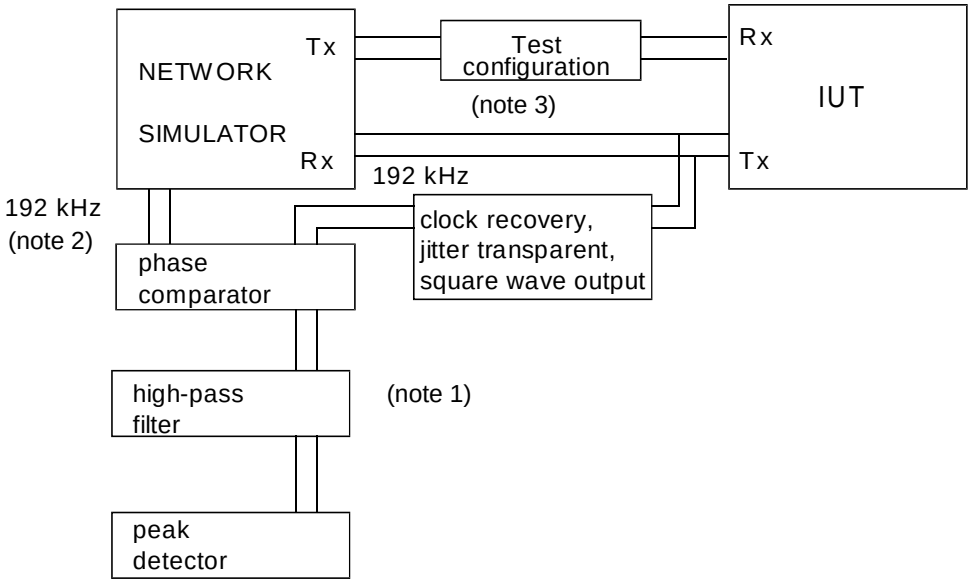
NOTE: The bit rate in kbit/s can be calculated by multiplying the frame rate by eight.

B.2.2 TE jitter characteristics

B.2.2.1 TE jitter measurement characteristics (test A)

Reference: ETS 300 012, annex D, subclause D.4.2.1.

Purpose: TE output jitter when transmitting INFO 3 type frames.



NOTE 1: For measurement purposes an additional low-pass filter with a cut-off frequency higher than 96 kHz can be added (see CCITT Recommendation O.171).

NOTE 2: The clock provided by the network simulator is synchronous with the signal received by the IUT.

NOTE 3: See subclause 9.2.2.1 for test configurations.

Figure B.2: Test configuration

System state: Activated (state F7).

Stimulus: INFO 4 type frames from the network containing:

a) all binary ONEs in D, D-echo and both B-channels;

b) a sequence repeated continuously for at least 10 s consisting of:

- 40 frames with continuous octets of 10101010 (the first bit to be transmitted is a binary ONE), in both B-channels and continuous binary ONEs in the D- and D-echo-channels, followed by:
- 40 frames with continuous binary ZEROs in D-, D-echo and both B-channels;

c) a sequence consisting of pseudo random pattern with a length of 2^{19}-1 in D-, D-echo and both B-channels.

Monitor: Peak-to-peak jitter measured using a peak detector through a high-pass filter and a phase comparator. The filter has a low-cut frequency (3 dB point) of 30 Hz and an asymptotic roll-off of 20 dB per decade. One input of the phase comparator is a 192 kHz signal synchronous with the NT simulator, the other input is a square wave signal at 192 kHz extracted from the analogue signal transmitted from the IUT. To obtain this digital signal a square wave generator can be used triggered by all the zero crossing transitions of all adjacent binary ZEROs.

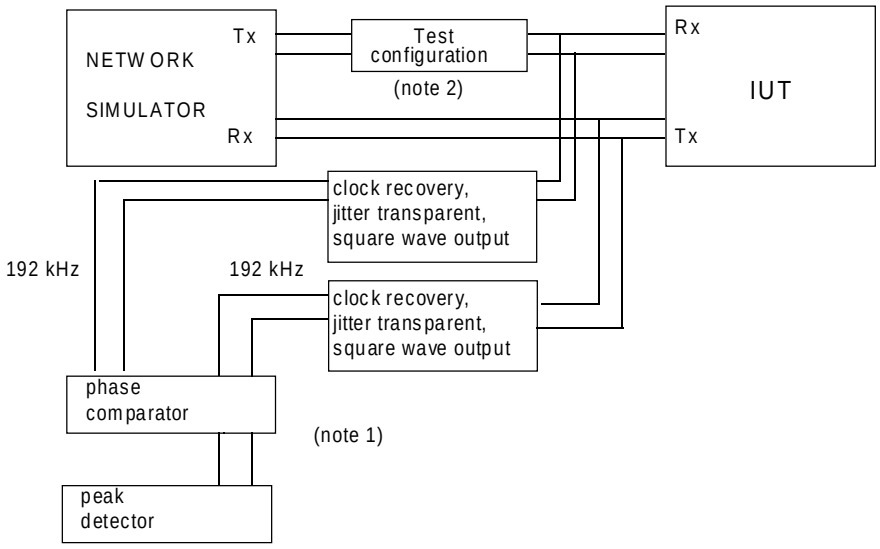
The block diagram in the figure is only a logical representation and it does not represent an actual implementation.

Results: The maximum jitter shall be less than ± 7 % of a bit period.

B.2.2.2 TE output phase deviation (test B)

Reference: ETS 300 012, annex D, subclause D.4.2.2.

Purpose: TE total phase deviation input to output.



NOTE 1: For measurement purposes an additional low-pass filter with a cut-off frequency higher than 96 kHz can be added (see CCITT Recommendation O.171).

NOTE 2: See subclause 9.2.2.1 for test configurations.

Figure B.3: Test configuration

System state: Activated (state F7).

Stimulus: INFO 4 type frames from the network containing:

a) a sequence consisting of continuous frames with all binary ONEs in the D-, D-echo and both B-channels;

b) a sequence consisting of continuous frames with the octet "10101010" (the first bit to be transmitted is binary ONE) in both B-channels and binary ONEs in D- and D-echo-channel;

c) a sequence of continuous frames with binary ZEROs in D-, D-echo and both B-channels;

d) a sequence of continuous frames with a pseudo-random pattern, as described in subclause 9.2.2.2 c), in D-, D-echo and both B-channels.

Superimposed jitter as specified in figure 9.3 in subclause 9.2.2.3 at frequencies of 5 Hz/0,5 UI, 20 Hz/0,125 UI, 50 Hz/0,05 UI and 2 015 Hz/0,05 UI shall also be applied to the input signal from the network.

Monitor: Peak to peak jitter measured using a peak voltmeter through an additional low-pass filter (see note above) and a phase comparator (see CCITT Recommendation O.171).

One input of the phase comparator is a 192 kHz signal synchronous with the NT simulator, the other input is a square wave signal extracted at 192 kHz from the analogue signal transmitted from the IUT. To obtain this digital signal a square wave generator can be used triggered by all the zero crossing transitions of all adjacent binary ZEROs.

The block diagram in the figure is only a logical representation and it does not represent an actual implementation.

Results: The maximum phase deviation shall be $-7\ \% \leq X \leq +15\ \%$ of a bit period.

(This phase deviation does not include the two-bit period between transmitted and received frames).

The measured deviation Y with included two bit period shall be equivalent to: $10{,}05\ \mu s \leq Y \leq 11{,}20\ \mu s$.

B.2.3 TE transmitter output impedance

B.2.3.1 Test A

Reference: ETS 300 012, annex D, subclause D.4.3.1.

Purpose: Output impedance of the transmitters when transmitting a binary ONE (no signal).

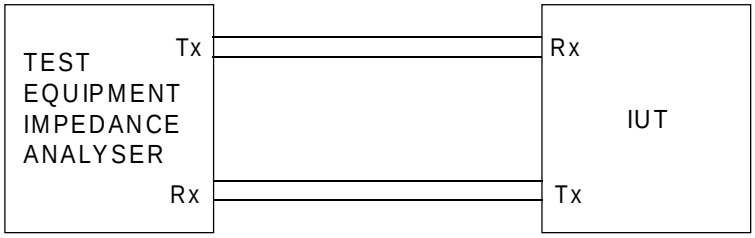


Figure B.4: Test configuration

System state: Deactivated(state F3).

Stimulus: Sinusoidal voltages of 100 mV rms, in the frequency range 2 kHz to 1 000 kHz.

Monitor: Impedance.

Results: The measured value shall exceed the lower limit of figure 9.4 given in subclause 9.2.3.

B.2.3.2 Test B

Reference: ETS 300 012, annex D, subclause D.4.3.2.

Purpose: Output impedance of the transmitters when transmitting a binary ZERO.

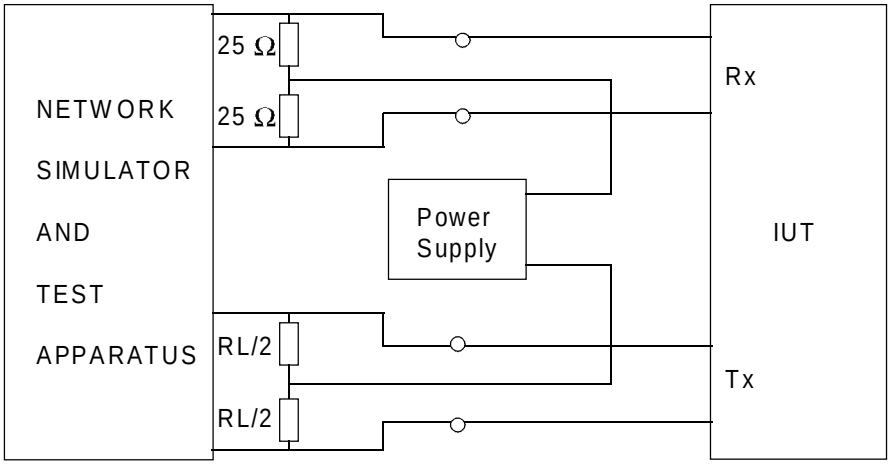


Figure B.5: Test configuration

System state: Activated (state F7). IUT transmitting positive and negative pulses into a load resistance (see subclause B.1.2 of this TBR).

Stimulus: INFO 4.

Monitor: Both positive and negative pulses.

The output impedance limit shall apply for 2 nominal load impedance (resistive) conditions: RL = 50 Ω and 400 Ω. The output impedance for each nominal load is defined by determining the peak pulse amplitude for loads equal to the nominal value ± 10 %. The peak amplitude is defined as the amplitude of the midpoint of the pulse. The test applies for pulses of both polarities.

Results: The output impedance shall be ≥ 20 Ω.

$$R = \frac{U^{+} - U^{-}}{U^{-}/R^{-} - U^{+}/R^{+}}$$

R^{+}: nominal resistance RL + 10 %.
R^{-}: nominal resistance RL - 10 %.
U^{+}: peak amplitude when R^{+} is applied.
U^{-}: peak amplitude when R^{-} is applied.

B.2.3.3 Test C

Reference: ETS 300 012, annex D, subclause D.4.3.3.

Purpose: Output peak current.

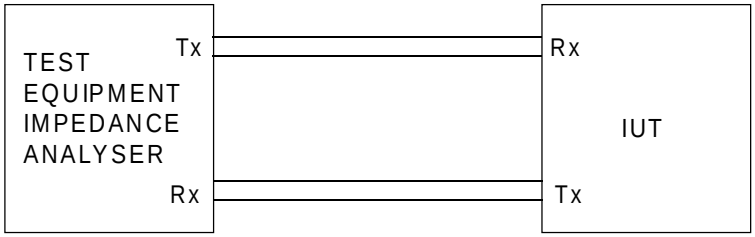


Figure B.6: Test configuration

System state: Deactivated (state F3).

Stimulus: Sinusoidal voltage up to 1,2 V (peak value) at a frequency of 96 kHz (the applied voltage to be monitored with oscilloscope to ensure peak values are correct).

Monitor: Peak current.

Results: Peak current shall not exceed 0,6 mA.

B.2.3.4 Test D

Reference: ETS 300 012, annex D, subclause D.4.3.4.

Purpose: Output impedance of the transmitters in the inactive state.

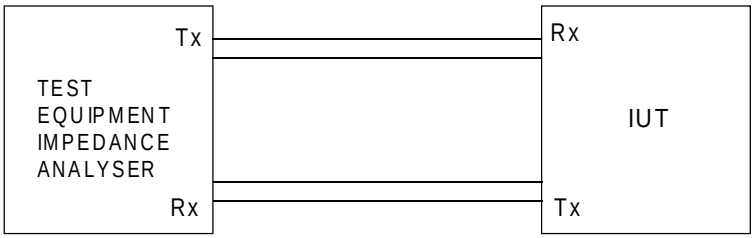


Figure B.7: Test configuration

System state: Inactive (state F1).

Stimulus: Sinusoidal voltage of 100 mV rms, in the frequency range 2 kHz to 1000 kHz.

Monitor: Impedance.

Results: The measured value shall exceed the lower limit of figure 9.4 given in subclause 9.2.3.

When the IUT is a locally powered TE able to detect PS1, two tests shall be performed (power off/power on without PS1).

B.2.3.5 Test E

Reference: ETS 300 012, annex D, subclause D.4.3.5.

Purpose: Output peak current.

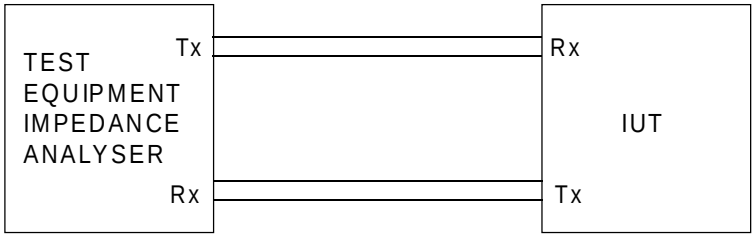


Figure B.8: Test configuration

System state: Inactive (state F1).

Stimulus: Sinusoidal voltage of 1,2 V (peak value) at a frequency of 96 kHz (the applied voltage to be monitored to ensure peak values are correct).

Monitor: Peak current.

Results: Peak current shall not exceed 0,6 mA.

When the IUT is a locally powered TE able to detect PS1, two tests shall be performed (power off/power on without PS1).

B.2.4 Pulse shape and amplitude

Reference: ETS 300 012, annex D, subclause D.4.4.

Purpose: Pulse shape and amplitude of isolated transmitted pulses.

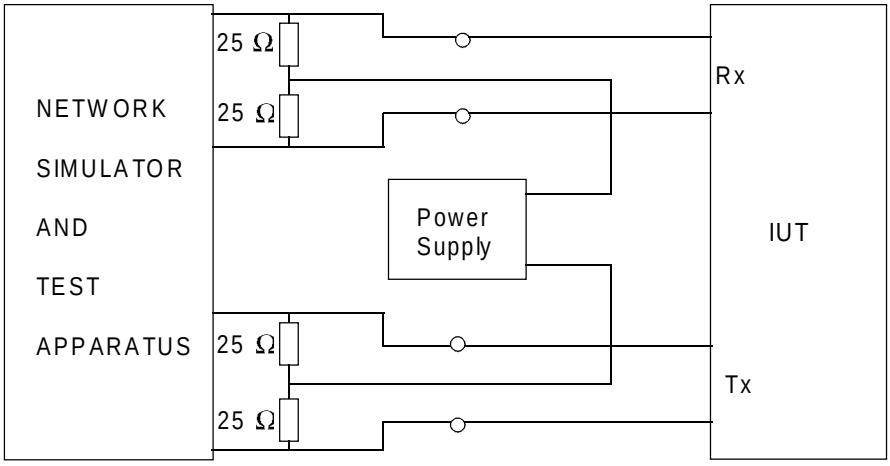


Figure B.9: Test configuration

User/network interface transmitting pair terminated in 50 Ω terminating resistor, i.e. NT1 receiving circuiting connected without its terminating resistor.

System state: Activated (state F7).

IUT transmitting isolated pulses (no adjacent pulses) into a normally terminated bus (see subclause B.1.2).

Stimulus: Isolated pulses of normal amplitude.

Monitor: Both positive and negative pulses.

Results: Both positive and negative pulses shall be within the mask of figure 9.5 with a nominal amplitude of 750 mV zero to peak.

B.2.5 Pulse unbalance

B.2.5.1 Pulse amplitude

Reference: ETS 300 012, annex D, subclause D.4.5.1.

Purpose: Pulse amplitude when transmitting a high density pattern.

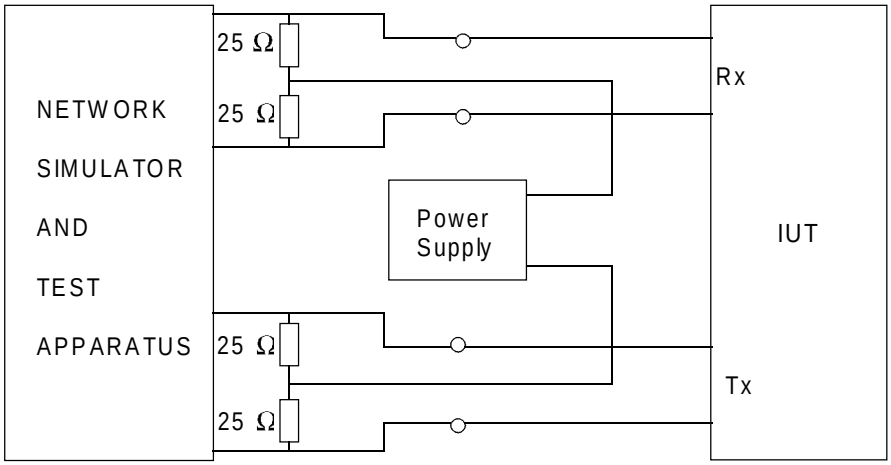


Figure B.10: Test configuration

System state: Activated (state F7).

IUT transmitting INFO 3 with both B-channels filled with binary ZEROs.

Stimulus: INFO 4.

Monitor: The amplitude of positive and negative pulses at the midpoint of the pulse.

Results: All pulses amplitude of 40 continuous frames in the midpoint of the pulse shall be within the ± 10 % of the nominal amplitude values.

B.2.5.2 Pulse unbalance of an isolated couple of pulses

Reference: ETS 300 012, annex D, subclause D.4.5.2.

Purpose: The relative difference in ∫U(t)dt for a positive and negative pulse.

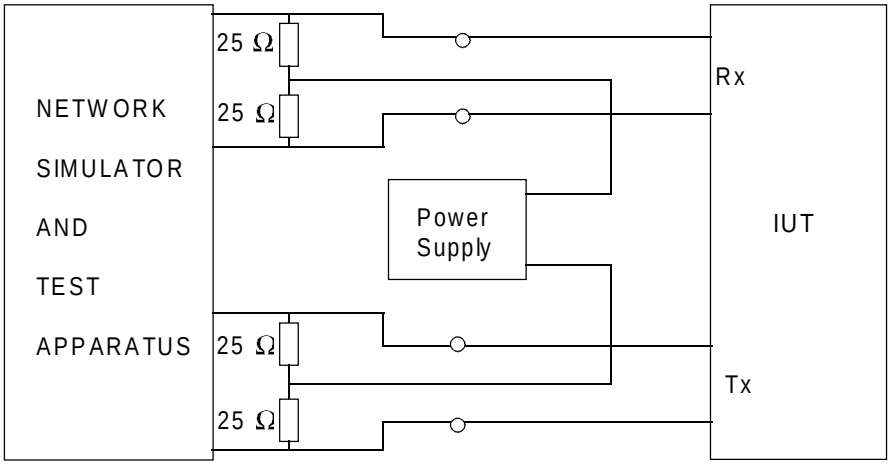


Figure B.11: Test configuration

System state: a) Deactivated (state F3), then

b) Synchronised (state F6).

IUT transmitting INFO 3 containing all binary ONEs in both B-channels (Idle pattern).

Stimulus: INFO 2.

Monitor: a) voltage when transmitting INFO 0.

b) first isolated couple of pulses of the first INFO 3 following INFO 0.

Results: The relative difference (note) in ∫U(t)dt for a positive pulse *(one bit)* and the ∫U(t)dt for a negative pulse *(one bit)* shall be less than 5 % of the nominal pulse. The zero reference voltage is given by the signal when transmitting INFO 0.

NOTE: The edge between the two adjacent pulses is the crossing of the zero voltage. From this edge, the integral is defined for a time period of 1,5 UI in each direction.

B.2.6 Voltage on other test loads

B.2.6.1 Test A

Reference: ETS 300 012, annex D, subclause D.4.6.1.

Purpose: Voltage, on a 400 Ω test load, to prevent pulses adding when 2 to 8 drivers are in parallel.

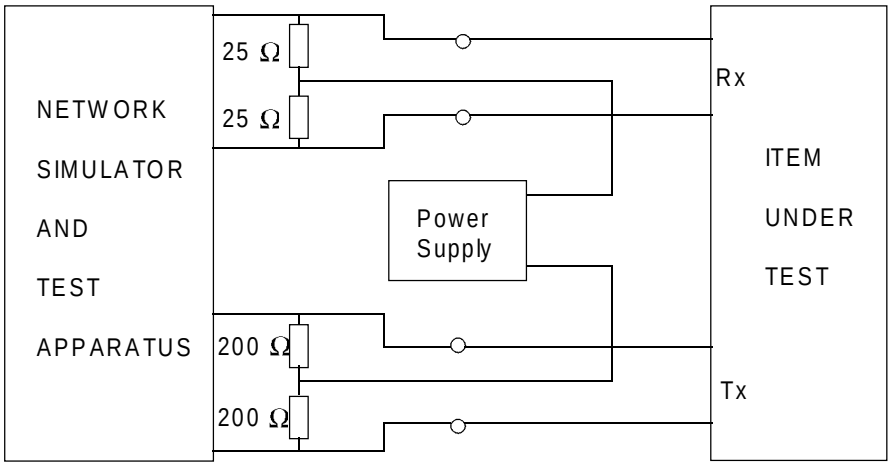


Figure B.12: Test configuration

System state: Activated (state F7).

TE transmitting isolated pulses (no adjacent pulses) into a 400 Ω load (see subclause B.1.2).

Stimulus: INFO 4.

Monitor: Both positive and negative pulses.

NOTE: The reference voltage corresponds to the amplitude at the mid-point of the binary ONE in front of the pulse to be measured.

Results: The pulses shall fit into the mask defined in figure 9.6.

B.2.6.2 Test B

Reference: ETS 300 012, annex D, subclause D.4.6.2.

Purpose: Voltage on a 5,6 Ω test load, to prevent current flow when two opposite polarity drivers are in parallel.

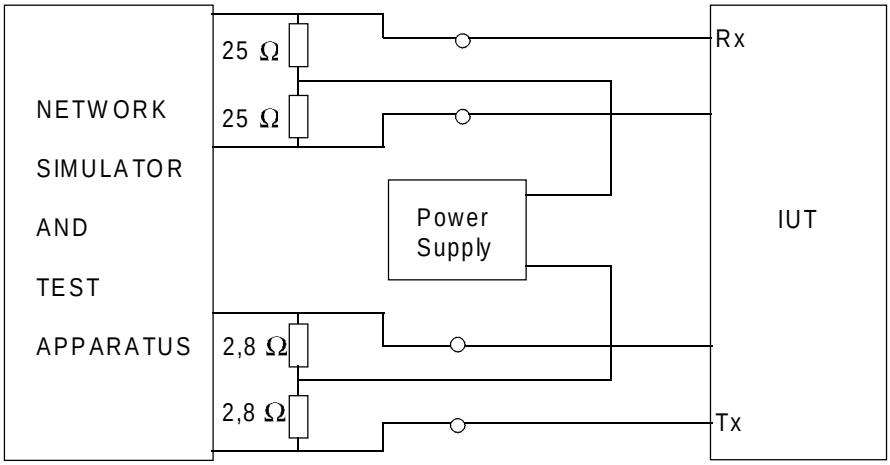


Figure B.13: Test configuration

System state: Activated (state F7).

Transmitting isolated pulses (no adjacent pulses) into 5,6 Ω load (see subclause B.1.2).

Stimulus: INFO 4.

Monitor: Both positive and negative pulses.

Results: The measured pulses shall be ≤ 20 % of the nominal pulse amplitude.

B.2.7 Longitudinal conversion loss of transmitter output

Reference: ETS 300 012, annex D, subclause D.4.7.

Purpose: Longitudinal Conversion Loss (LCL) (the ratio of longitudinal signal converted to a transverse signal as a result of the unbalance about earth of the terminal output).

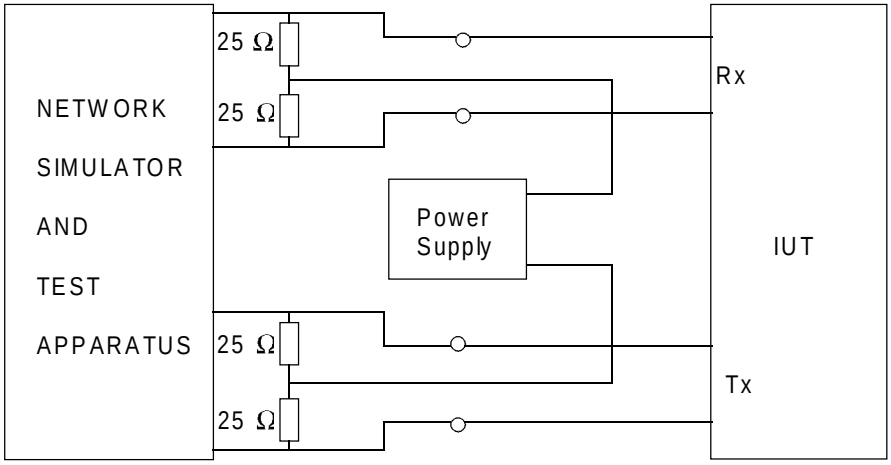


Figure B.14: Test configuration

Measurement test configuration: See figure 9.7.

System state: a) Deactivated (state F3).

b) Inactive (state F1).

Stimulus: 1 V rms longitudinal in accordance with figure 9.7 in subclause 9.2.7.

Monitor: Transverse voltage in accordance with figure 9.7 with selective level measuring instrument.

Results: 10 kHz ≤ f ≤ 300 kHz: ≥ 54 dB.

B.2.8 Receiver input characteristics

B.2.8.1 TE receiver input impedance

B.2.8.1.1 Test A

Reference: ETS 300 012, annex D, subclause D.4.8.1.1.

Purpose: To test the input impedance of terminals whilst in a deactive state.

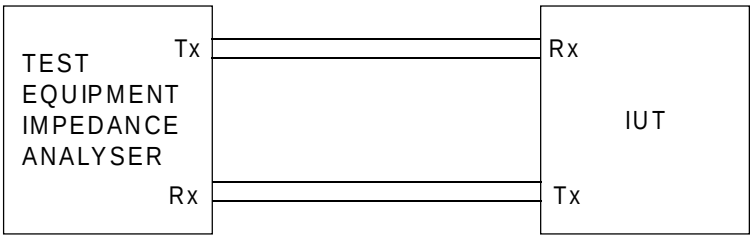


Figure B.15: Test configuration

System state: Deactivated (state F3).

Stimulus: Sinusoidal voltage of at least 100 mV rms, in the frequency range 2 kHz to 1 000 kHz.

Monitor: Impedance.

Results: Shall exceed the lower limit of figure 9.4 given in subclause 9.2.3.

B.2.8.1.2 Test B

Reference: ETS 300 012, annex D, subclause D.4.8.1.2.

Purpose: To test that the input impedance of the receiver when receiving an overvoltage signal is correct.

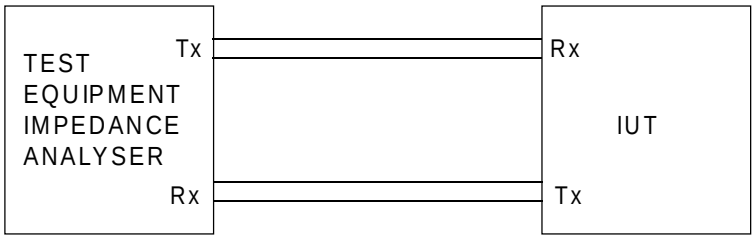


Figure B.16: Test configuration

System state: Deactivated (state F3).

Stimulus: Sinusoidal voltage up to 1,2 V (peak value) at a frequency of 96 kHz (the applied voltage to be monitored to ensure peak values are correct).

Monitor: Peak value of current.

Results: The peak current shall not exceed 0,6 mA peak value.

B.2.8.1.3 Test C

Reference: ETS 300 012, annex D, subclause D.4.8.1.3.

Purpose: To test the input impedance of TE receivers in the inactive state.

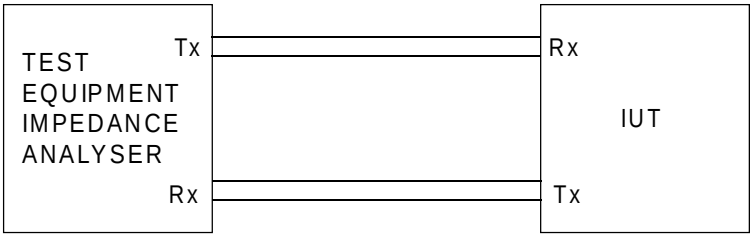


Figure B.17: Test configuration

System state: Inactive (state F1).

Stimulus: Sinusoidal voltage of at least 100 mV rms, in the frequency range 2 kHz to 1 000 kHz.

Monitor: Impedance.

Results: Shall exceed the lower limit of figure 9.4 given in subclause 9.2.3.

When the IUT is a locally powered TE able to detect PS1, two tests shall be performed (power off/power on without PS1).

B.2.8.1.4 Test D

Reference: ETS 300 012, annex D, subclause D.4.8.1.4.

Purpose: To test that the input impedance of the receiver when receiving an overvoltage signal is correct.

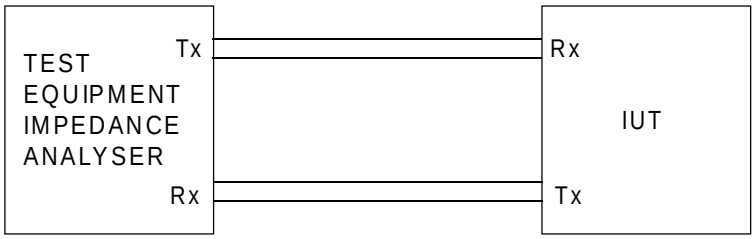


Figure B.18: Test configuration

System state: Inactive (state F1).

Stimulus: Sinusoidal voltage up to 1,2 V (peak value) at a frequency of 96 kHz (the applied voltage to be monitored to ensure peak values are correct).

Monitor: Peak value of current.

Results: The peak current shall not exceed 0,6 mA peak value.

When the IUT is a locally powered TE able to detect PS1, two tests shall be done (powered off/powered on without PS1).

B.2.8.2 Receiver sensitivity - noise and distortion immunity

Reference: ETS 300 012, annex D, subclause D.4.8.2.

Purpose: To test the receiver's function in the various wiring configurations.

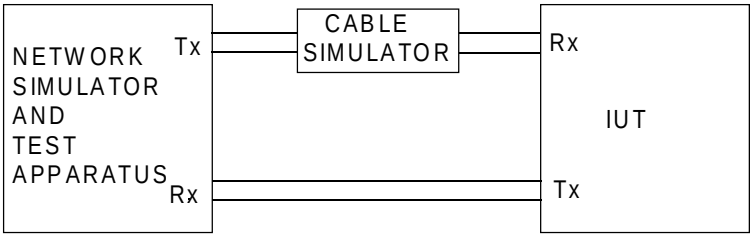


Figure B.19: Test configuration

When performing this test the error rate measurement can be made either after the receiver using a B-channel access port or at the TE transmitter. If the measurement is at the TE transmitter, then the connection to the NT receiver should be in the ideal test configuration.

System state: Activated (state F7).

Stimulus: Input signals are transmitted from the network simulator with a pseudo-random sequence (word length $\geq$ 511 bits) in both B-channels with amplitudes, delay and interfering signals as detailed in subclause 9.2.9.

Table B.4 indicates the amplitudes that are provided by the NT simulator corresponding to the bus configurations as given in subclause 9.2.2.1.

Table B.4: Amplitudes for the bus configurations

Configuration	Amplitude relative to the nominal one
1 (see note)	- 1,5 dB at the NT simulator output
2	- 1,5 dB and + 1,5 dB at the NT sim. output
3	- 1,5 dB and + 1,5 dB at the NT sim. output
4	+ 1,5 dB at the NT simulator output
NOTE: Additionally, the TEs shall operate with sinusoidal signals having an amplitude of 100 mV (peak-to-peak value) at frequencies of 200 kHz and 2 MHz superimposed individually on the input signals along with jitter.	

In addition, for each configuration jitter as specified in figure 9.3 at frequencies of 5 Hz/0.5 UI, 20 Hz/0.125 UI, 50 Hz/0.05 UI and 2015 Hz/0.05 UI shall be superimposed on the input signal.

Monitor: B-channels from IUT checking the error rate (see clause B.1.2).

Results: No error for a monitoring period of at least one minute.

B.2.8.3 Unbalance about earth of receiver input

Reference: ETS 300 012, annex D, subclause D.4.8.3.

Purpose: Longitudinal Conversion Loss (LCL) (the ratio of longitudinal signal converted to a transverse signal as a result of the unbalance about earth of the terminal output).

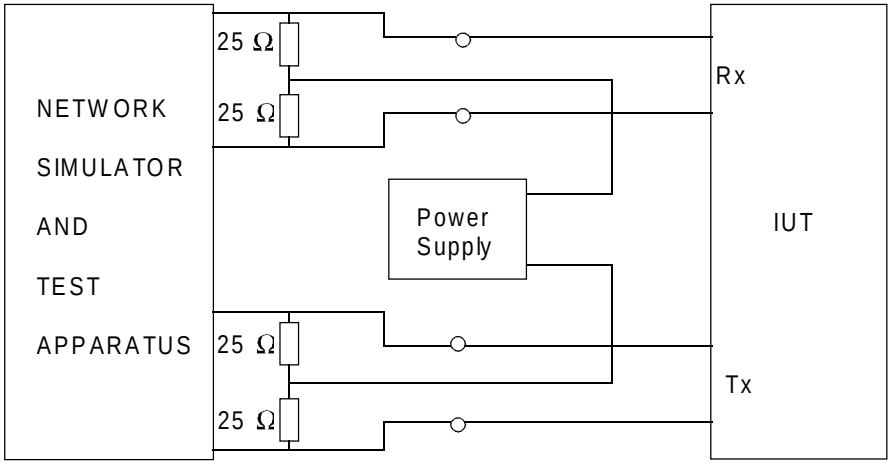


Figure B.20: Test configuration

Measurement test configuration: See figure 9.7.

System state: a) Deactivated (state F3).

b) Inactive (state F1).

Stimulus: 1 V rms longitudinal in accordance with figure 9.7 given in subclause 9.2.7.

Monitor: Transverse voltage in accordance with figure 9.7 with selective level measuring instrument.

Results: 10 kHz ≤ f ≤ 300 kHz: ≥ 54 dB.

B.3 Functional characteristic tests

B.3.1 Binary organisation of frame

B.3.1.1 Test A

Reference: ETS 300 012, annex D, subclause D.2.1.1.

Purpose: To check the binary organisation of INFO 3 frames.

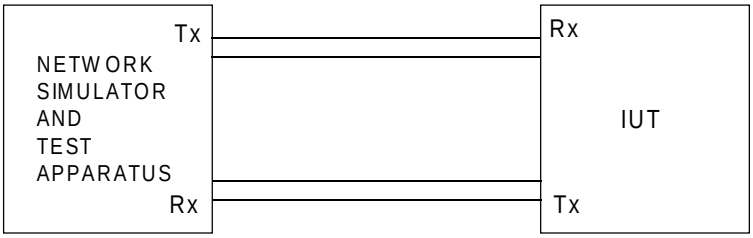


Figure B.21: Test configuration

System state: Activated by the network simulator (state F7). IUT transmitting a pseudo-random data pattern (word length $\leq 2^9 - 1$) in the B-channels and idle channel code or messages in the D-channel.

Stimulus: INFO 4 type frames from the NT simulator. F_A bit set to ZERO.

NOTE: If the IUT does not provide a loopback, an access to the B-channel of the IUT is used for sending pseudo-random pattern (see subclause B.1.2).

Monitor: The frame structure from the TE (positive pulses, negative pulses and bit and frame timing are available).

Results: See table B.5.

Table B.5: Results of test

BIT POSITION	DESCRIPTION	POLARITY
1	F-bit	positive pulse
2	L-bit	negative pulse
3-10	B1 octet	first binary ZERO coded negative, the following bits may be positive, negative or no pulse
11	L-bit	positive or no pulse
12	D-bit	negative or no pulse
13	L-bit	positive or no pulse
14	Fa	negative pulse
15	L-bit	positive pulse
16-23	B2 octet	first binary ZERO coded negative, the following bits may be positive, negative or no pulse
24	L-bit	positive or no pulse
25	D-bit	negative or no pulse
26	L-bit	positive or no pulse
27-34	B1 octet	first binary ZERO coded negative, the following bits may be positive, negative or no pulse
35	L-bit	positive or no pulse
36	D-bit	negative or no pulse
37	L-bit	positive or no pulse
38-45	B2 octet	first binary ZERO coded negative, the following bits may be positive, negative or no pulse
46	L-bit	positive or no pulse
47	D-bit	negative or no pulse
48	L-bit	positive or no pulse
NOTE 1: L = balance bit which is used to ensure even parity of data fields. NOTE 2: See figure 9.8, subclause 9.3.1 for details of pulse polarity. NOTE 3: Multiframing procedure is not covered by this test.		

B.3.1.2 Test B

Reference: ETS 300 012, annex D, subclause D.2.1.2.

Purpose: To check the binary organisation of INFO 1 frames.

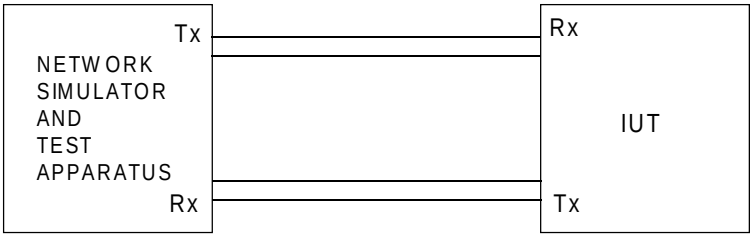


Figure B.22: Test configuration

System state: Awaiting signal (state F4).

Stimulus: Activation request from the IUT (PH-AR).

Monitor: Line signals.

Results: Check that the 8 bit pattern is contiguous and of the appropriate polarity.

B.4 Interface procedure tests

B.4.1 Test case selection

Table B.6 contains the test case selection criteria for the interface procedure tests.

Table B.6: Test case selection criteria for layer 1 interface procedure tests

Test case Identifier	Selection criteria
AD1aF1_PS&LP-on	PC_PS OR NOT PC_DE
AD1bF10_LP-on	NOT PC_PS AND PC_DE
AD1cF11_LP-off	NOT PC_PS AND PC_DE
AD1dF11_PS-on	NOT PC_PS AND PC_DE
AD2F11_CHK_T3	NOT PC_PS AND PC_DE
AD3aF2_PS-off	PC_PS OR NOT PC_PS AND PC_DE
AD3bF2_LP-off	NOT PC_PS
AD4F2_RX-I0	-
AD5F2_RX-I2	-
AD6F2_RX-I4	-
AD7F2_RX-IX	-
AD8F2_CHK_T3	NOT PC_PS AND PC_DE
CPF2PHAI	-
AD9aF3_PS-off	PC_PS OR NOT PC_PS AND PC_DE
AD9bF3_LP-off	NOT PC_PS
AD10F3_PH-AR	-
AD11F3_RX-I0	-
AD12F3_RX-I2	-
AD13F3_RX-I4	-
AD14F3_RX-IX	-
AD15F3_CHK_T3	-
CPF3MPHIID	NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI
CPF3PHAI	-
AD16aF4_PS-off	PC_PS OR NOT PC_PS AND PC_DE
AD16bF4_LP-off	NOT PC_PS
AD17F4_RX-I0	-
AD18F4_RX-I2	-
AD19F4_RX-I4	-
AD21F4_CHK_T3	-
CPF4MPHIID	NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI
CPF4PHAI	-
CPF4PHDI_T3exp	-
CPF4Tlayer2	T3_M > (4*T200) AND TEI_ON
AD22aF5_PS-off	PC_STATE_F5 AND (PC_PS OR NOT PC_PS AND PC_DE)
AD22bF5_LP-off	PC_STATE_F5 AND NOT PC_PS
AD23F5_RX-I0	PC_STATE_F5
AD24F5_RX-I2	PC_STATE_F5
AD25F5_RX-I4	PC_STATE_F5
AD26F5_RX-IX	PC_STATE_F5
AD27F5_CHK_T3	PC_STATE_F5

(continued)

Table B.6 (continued): Test case selection criteria for layer 1 interface procedure tests

Test case Identifier	Selection criteria
CPF5MPHIID	PC_STATE_F5 AND NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI
CPF5PHAI	PC_STATE_F5
CPF5PHDI_I0T3	PC_STATE_F5
CPF5PHDI_T3expa	TESTOK AND PC_STATE_F5
CPF5PHDI_T3expb	NOT TESTOK AND PC_STATE_F5
AD28aF6_PS-off	PC_PS
AD28bF6_LP-off	NOT PC_PS
AD28cF6_PS-off	NOT PC_PS AND PC_DE
AD29F6_Lostfr	-
AD30F6_PH-AR	-
AD31F6_RX-I0	-
AD32F6_RX-I2	-
AD33F6_RX-I4	-
AD34F6_CHK_T3	-
CPF6PHAIa	-
CPF6PHAIb	-
CPF6PHDI_T3exp	-
CPF6PHDI_I0T3	-
CPF6PHDI_I0	-
CPF6PHARa	TEI_ON
CPF6PHARb	TEI_ON
AD35aF7_PS-off	PC_PS
AD35bF7_LP-off	NOT PC_PS
AD35cF7_PS-off	NOT PC_PS AND PC_DE
AD36F7_Lostfr	-
AD37F7_RX-I0	-
AD38F7_RX-I2	-
AD39F7_RX-I4	-
CPF7PHDI_I0	-
CPF7DIS_I2	-
CPF7DIS_IX	-
AD40aF8_PS-off	PC_PS OR NOT PC_PS AND PC_DE
AD40bF8_LP-off	NOT PC_PS
AD41F8_PH-AR	-
AD42F8_RX-I0	-
AD43F8_RX-I2	-
AD44F8_RX-I4	-
AD45F8_RX-IX	-
AD46F8_CHK_T3	-
CPF8MPHIIDa	NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI
CPF8MPHIIDb	NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI
CPF8PHAIb	-
CPF8PHAIc	-
CPF8PHDI_T3exp	-
CPF8PHDI_I0T3	-
CPF8PHDI_I0b	-
CPF8PHARa	TEI_ON
CPF8PHARb	TEI_ON

(continued)

Table B.6 (concluded): Test case selection criteria for layer 1 interface procedure tests

Test case Identifier	Selection criteria
TIF3info2	-
TIF3info4	-
TIF4info2	-
TIF4info4	-
TItimerT3	-
TIF6physdeact	-
TIF7physdeact	-
TIF7compdeact1	-
TIF8compdeact1	-
FAinfA_1fr	-
FAinfB_1fr	-
FAinfD_1fr	-
FAinfA_kfr	-
FAinfB_kfr	-
FAinfD_kfr	-
FAregain	-
BCBinaryOne	PC_PTMP
DCBinaryOneCL1	PC_PTMP
DCNormalPL1CL1	PC_PTMP
DCNormalPL0CL1	PC_PTMP
DCPriorityClass1	TEI_ON AND PC_PTMP
DCNormtoLowPLCL1	TEI_ON AND PC_PTMP
DCLowtoNormPLCL1	LOWER_CL1 AND TEI_ON AND PC_PTMP

B.4.2 Layer 1 test suite

Suite overview

Test Suite Overview	
Suite Name:	TBR3_L1
Standards ref:	TBR3
PICS Proforma ref:	TBR3, annex A
PIXIT Proforma ref:	TBR3, annex E
PICS/PIXIT use:	
Test Method(s):	Remote Test Method
Comments:	Overall structure of the test suite. The following naming scheme has been used in order to identify test cases, test steps and default subtrees to indicate their position within the test suite hierarchy: <test case reference> ::= "ISDN1/"<tg0>"/"<tg1>"/"<tcid>" <tg0> ::= "AD"|"FA"|"TI"|"MU"|"DC"|"CP" <tg1> ::= "F1"|"F1.0"|"F1.1"|"F2"|"F3"|"F4"|"F5"|"F6"|"F7"|"F8" <tcid> ::= <test case identifier> <test step reference> ::= "ISDN1/"<ts1>"/"<tsid> <ts1> ::= "PREAMBLE" | "MISCELLANEOUS" <tsid> ::= <test step identifier> <default reference> ::= "ISDN1/DEFAULT/"<dsid> <dsid> ::= <default step identifier> <tg0> "Procedure" Test Case Group identifies the test category the test case belongs to. Test procedures are: - AD: Activation/Deactivation - FA: Frame Alignment - TI: Timer for Activation/Deactivation - MU: Multiframing - DC: D-Channel Access Control - CP: Compound part (for activation/deactivation) <tg1> "Starting State" Test Case Group identifies the IUT state where the test case is started. <ts1> "Type" Test Step Group distinguishes PREAMBLE subtrees from MISCELLANEOUS subtrees (to check the IUT state at the end of the test, etc.) EXAMPLE: TBR3_L1/AD/F3/AD13F3_RX-I4 It denotes a test case belonging to the TBR3_L1 test suite and to the activation-deactivation procedure test group. The test is started with the IUT in state F3. The test identifier denotes that a valid Info is sent to IUT in state F3, (Info 4), called I4.

Test suite methodology

Basic assumptions
The Remote method (see ISO/IEC DIS 9646-2 [6]) is adopted. Boundary between Layer 1 and 2 is assumed to be inaccessible. This means that the correct interaction between the IUT and on the one hand his upper layer and on the other hand the management entity is not directly testable.

Actions by the IUT are caused by either of the following events:
- with Layer 1 Protocol Data Units (PDUs) delivered to the IUT via the physical connection;
- with external actions on the IUT. These events are described with Tree and Tabular Combined Notation (TTCN) "implicit send events" whose practical execution is strictly related to the IUT features.

Only PDUs received from the IUT via the physical connection are directly accessible to the tester. By means of the PDUs received, the following is tested for conformance:
- correct response of the IUT to a stimulus from the tester;
- correct timer duration of the implemented timers;
- state transition.

Both "normal" and provocative testing are considered according to the tester behaviour.
When a Timer is used to check that something happens for a period of time, the corresponding TIMEOUT event is placed after the possible events, which shall be verified during the timer period.

Test case structure
Except for testing timer duration, each test case is structured in the following way:
- a preamble, intended to bring the IUT in the desired initial state;
- a body, eventually ended, if the observed outcome is the correct one, by a subtree checking IUT actual state.

Preambles and subtrees checking IUT current state are just possible sequences. Different ways to perform the same functions could be found out and applied.

Timers used for test synchronization
Three timers are declared for test synchronization:
- TNOAC: used to ensure no modification of the response from IUT. Therefore verdict for ?TIMEOUT TNOAC is usually "Pass";
- TRESP-I2 and TAC: used to stop the test when no response is received from the IUT and the tester is waiting for it. On timeout the verdict is usually "Fail";
- TWAIT: maximum time to receive a response from the IUT on the data link due to external procedure. It is used with the "Implicit Send" event and his value comes from TBR-RT.

Verdicts
Verdicts are given according to the ISO methodology documents (see ISO/IEC DIS 9646-1 [7] and ISO/IEC DIS 9646-2 [6]). In case of a test using an implicit send where the verdict is inconclusive due to timeout of the timer used for synchronization, the test shall be repeated using a greater value of the corresponding timer.

Particularities of physical layer
In upper layers, the tester and the IUT do not always send something, but in the physical layer to send nothing means to send Info 0. Info 0 is considered in the dynamic part as a frame like the other Layer 1 frames (i.e. 48 bits long) in order to simplify the test description.
It is quite long to specify each Info 4 sent by the tester to execute any upper layer operation like trying to establish Data Link Layer. Then some operations (as defined in ISO/IEC DIS 9646-3 [8]) are used which fill in continuously D-Bit positions inside Info 4.
For testing IUT activation (state F7), the tester needs to receive something on Data Link Layer. Then the tester uses a SETUP inside an UI-frame, so that it could be sure that the IUT will send something while in state F7, (this SETUP shall be provided by the implementer in the TBR-RT document).

TE that activates the physical layer for reasons other than the initiation of a call may fail certain of the layer 1 TTCN tests because the current version of the test suite assumes that layer 1 will be activated only in response to the initiation of a call. Failure of the TTCN tests for this reason shall not be treated as a reason for the TE failing its approval. test laboratories are permitted to find alternative methods of implementing the failed tests.
For terminals which are of the automatic TEI assignment category, (i.e. PC_AUTOMAT_TEI = TRUE) all tests whose test case reference starts with "TBR3_L1/CP", except those whose selection criteria includes TEI_ON, shall be performed twice, once with TEI_ON = TRUE, and once with TEI_ON = FALSE.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
AD1aF1_PS_LP_on	ISDN1/AD/F1/AD1aF1_PS_LP_on	254	To check the reaction to the appearance of power on an IUT in state F1.
AD1bF10_LP_on	ISDN1/AD/F10/AD1bF10_LP_on	254	To check the reaction to the appearance of local power on an IUT in state F1.0.
AD1cF11_LP_off	ISDN1/AD/F11/AD1cF11_LP_off	255	To check that IUT is inactive when there is a loss of power in state F1.1.
AD1dF11_PS_on	ISDN1/AD/F11/AD1dF11_PS_on	255	To check appearance of PS on IUT in state F1.1.
AD2F11_CHK_T3	ISDN1/AD/F1/AD2F11_CHK_T3	256	To check expiry of T3 in state F1.1.
AD3aF2_PS_off	ISDN1/AD/F2/AD3aF2_PS_off	256	To check that IUT is brought to state F1 or F1.1 in case of disappearance of PS (no local power)
AD3bF2_LP_off	ISDN1/AD/F2/AD3bF2_LP_off	257	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.
AD4F2_RX_I0	ISDN1/AD/F2/AD4F2_RX_I0	257	To check that IUT is brought to state F3 when receiving INFO 0 in state F2.
AD5F2_RX_I2	ISDN1/AD/F2/AD5F2_RX_I2	258	To check that IUT is brought to state F6 when receiving INFO 2 in state F2
AD6F2_RX_I4	ISDN1/AD/F2/AD6F2_RX_I4	258	To check that IUT is brought to state F7 when receiving INFO 4
AD7F2_RX_IX	ISDN1/AD/F2/AD7F2_RX_IX	258	To check that IUT stays in state F2 when receiving INFO X in state F2.
AD8F2_CHK_T3	ISDN1/AD/F2/AD8F2_CHK_T3	259	To check expiry of T3 in state F2.
CPF2PHAI	ISDN1/CP/F2/CPF2PHAI	260	To check that IUT when receiving INFO 4 in state F2 sends a PH-AI primitive.
AD9aF3_PS_off	ISDN1/AD/F3/AD9aF3_PS_off	260	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.
AD9bF3_LP_off	ISDN1/AD/F3/AD9bF3_LP_off	260	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.
AD10F3_PH_AR	ISDN1/AD/F3/AD10F3_PH_AR	261	To check that IUT is brought to state F4 when receiving a PH-AR.
AD11F3_RX_I0	ISDN1/AD/F3/AD11F3_RX_I0	261	To check that IUT stays in state F3 when receiving INFO 0.
AD12F3_RX_I2	ISDN1/AD/F3/AD12F3_RX_I2	261	To check that IUT is brought to state F6 when receiving INFO 2.
AD13F3_RX_I4	ISDN1/AD/F3/AD13F3_RX_I4	262	To check that IUT is brought to state F7 when receiving INFO 4.
AD14F3_RX_IX	ISDN1/AD/F3/AD14F3_RX_IX	262	To check that IUT stays in F3 state when receiving INFO X.
AD15F3_CHK_T3	ISDN1/AD/F3/AD15F3_CHK_T3	263	To check expiry of T3 in state F3.
CPF3MPHIID	ISDN1/CP/F3/CPF3MPHIID	264	To check that IUT sends a MPH-II(d) primitive in case of disappearance of power S.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
CPF5PHDI_T3expb	ISDN1/CP/F5/CPF5PHDI_T3expb	276	To check that IUT sends a PH-DI on T3 expiry.
AD28aF6_PS_off	ISDN1/AD/F6/AD28aF6_PS_off	276	To check that IUT is brought to state F1 in case of disappearance of power S.
AD28bF6_LP_off	ISDN1/AD/F6/AD28bF6_LP_off	277	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.
AD28cF6_PS_off	ISDN1/AD/F7/AD28cF6_PS_off	277	To check that IUT stays in state F6 in case of disappearance of power S.
AD29F6_Lostfr	ISDN1/AD/F6/AD29F6_Lostfr	277	To check that IUT is brought to state F8 in case of lost framing.
AD30F6_PH_AR	ISDN1/AD/F6/AD30F6_PH_AR	278	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.
AD31F6_RX_I0	ISDN1/AD/F6/AD31F6_RX_I0	278	To check that IUT is brought to state F3 when receiving INFO 0 in state F6.
AD32F6_RX_I2	ISDN1/AD/F6/AD32F6_RX_I2	278	To check that IUT stays in state F6 when receiving INFO 2.
AD33F6_RX_I4	ISDN1/AD/F6/AD33F6_RX_I4	279	To check that IUT is activated when receiving INFO 4 in state F6.
AD34F6_CHK_T3	ISDN1/AD/F6/AD34F6_CHK_T3	279	To check expiry of T3 in state F6.
CPF6PHAIa	ISDN1/CP/F6/CPF6PHAIa	280	To check that IUT is brought to state F7 when receiving INFO 4 in state F6 and that a PH-AI primitive is sent.
CPF6PHAIb	ISDN1/CP/F6/CPF6PHAIb	280	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F6 during T3 .
CPF6PHDI_T3exp	ISDN1/CP/F6/CPF6PHDI_T3exp	281	To check that IUT sends a PH-DI on T3 expiry.
CPF6PHDI_I0T3	ISDN1/CP/F6/CPF6PHDI_I0T3	282	To check that IUT goes from F6 to F3 on receipt of I0 while T3 is set on.
CPF6PHDI_I0	ISDN1/CP/F6/CPF6PHDI_I0	282	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F6.
CPF6PHARa	ISDN1/CP/F6/CPF6PHARa	283	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.
CPF6PHARb	ISDN1/CP/F6/CPF6PHARb	284	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.
AD35aF7_PS_off	ISDN1/AD/F7/AD35aF7_PS_off	284	To check that IUT is brought to state F1 in case of disappearance of power S.
AD35bF7_LP_off	ISDN1/AD/F7/AD35bF7_LP_off	285	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.
AD35cF7_PS_off	ISDN1/AD/F7/AD35cF7_PS_off	285	To check that IUT stays in state F7 in case of disappearance of power S.
AD36F7_Lostfr	ISDN1/AD/F7/AD36F7_Lostfr	285	To check that IUT goes to state F8 after receiving INFO X.
AD37F7_RX_I0	ISDN1/AD/F7/AD37F7_RX_I0	286	To check that IUT is brought to state F3 when receiving INFO 0 in state F7.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
AD38F7_RX_I2	ISDN1/AD/F7/AD38F7_RX_I2	286	To check that IUT is brought to state F6 when receiving INFO 2 in state F7.
AD39F7_RX_I4	ISDN1/AD/F7/AD39F7_RX_I4	287	To check that IUT stays in state F7 when receiving INFO 4.
CPF7PHDI_I0	ISDN1/CP/F7/CPF7PHDI_I0	287	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F7.
CPF7DIS_I2	ISDN1/CP/F7/CPF7DIS_I2	288	To check that IUT sends a MPH-II(d) primitive in case of disapearance of PS .
CPF7DIS_IX	ISDN1/CP/F7/CPF7DIS_IX	289	To check that the layer 2 status is still 7.0 after layer 1 disturbance.
AD40aF8_PS_off	ISDN1/AD/F8/AD40aF8_PS_off	289	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.
AD40bF8_LP_off	ISDN1/AD/F8/AD40bF8_LP_off	290	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.
AD41F8_PH_AR	ISDN1/AD/F8/AD41F8_PH_AR	290	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.
AD42F8_RX_I0	ISDN1/AD/F8/AD42F8_RX_I0	290	To check that IUT is brought to state F3 when receiving INFO 0 in state F8.
AD43F8_RX_I2	ISDN1/AD/F8/AD43F8_RX_I2	291	To check that IUT is brought to state F6 when receiving INFO 2 in state F8.
AD44F8_RX_I4	ISDN1/AD/F8/AD44F8_RX_I4	291	To check that IUT is activated when receiving INFO 4 in state F8.
AD45F8_RX_IX	ISDN1/AD/F8/AD45F8_RX_IX	291	To check that IUT stays in state F8 when receiving INFO X.
AD46F8_CHK_T3	ISDN1/AD/F8/AD46F8_CHK_T3	292	To check expiry of T3 in state F8.
CPF8MPHIIDa	ISDN1/CP/F8/CPF8MPHIIDa	293	To check that IUT sends a MPH-II(d) primitive in case of disapearance of PS .
CPF8MPHIIDb	ISDN1/CP/F8/CPF8MPHIIDb	294	To check that IUT sends a MPH-II(d) primitive in case of disapearance of power S.
CPF8PHAIb	ISDN1/CP/F8/CPF8PHAIb	295	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F8 .
CPF8PHAIc	ISDN1/CP/F8/CPF8PHAIc	296	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F8 during T3 .
CPF8PHDI_T3exp	ISDN1/CP/F8/CPF8PHDI_T3exp	297	To check that IUT return to F3 on T3 expiry.
CPF8PHDI_I0T3	ISDN1/CP/F8/CPF8PHDI_I0T3	298	To check that IUT goes from F8 to F3 on receipt of I0 while T3 is set on.
CPF8PHDI_I0b	ISDN1/CP/F8/CPF8PHDI_I0b	299	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F8.
CPF8PHARa	ISDN1/CP/F8/CPF8PHARa	300	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.
CPF8PHARb	ISDN1/CP/F8/CPF8PHARb	301	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.
TIF3info2	ISDN1/TI/F3/TIF3info2	301	To check the value of the TE activation times in the deactivated state.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TIF3info4	ISDN1/TI/F3/TIF3info4	302	To check the value of the TE activation times in the deactivated state.
TIF4info2	ISDN1/TI/F4/TIF4info2	302	To check the value of the TE activation times in the waiting for signal state.
TIF4info4	ISDN1/TI/F4/TIF4info4	303	To check the value of the TE activation times in the waiting for signal state.
TItimerT3	ISDN1/TI/F3/TItimerT3	304	To check the value of timer T3.
TIF6physdeact	ISDN1/TI/F6/TIF6physdeact	304	To check the value of the TE deactivation times.
TIF7physdeact	ISDN1/TI/F7/TIF7physdeact	305	To check the value of the TE deactivation times.
TIF7compdeact1	ISDN1/TI/F7/TIF7compdeact1	305	To check the value of the timer when leaving state F7 upon the reception of INFO 0.
TIF8compdeact1	ISDN1/TI/F8/TIF8compdeact1	306	To check the value of the timer when leaving state F8 upon the reception of INFO 0.
FAinfA_1fr	ISDN1/FA/F7/FAinfA_1fr	306	To test the no loss of frame alignment upon receipt of one bad frame.
FAinfB_1fr	ISDN1/FA/F7/FAinfB_1fr	306	To test the no loss of frame alignment upon receipt of one bad frame.
FAinfD_1fr	ISDN1/FA/F7/FAinfD_1fr	307	To test the no loss of frame alignment upon receipt of one bad frame.
FAinfA_kfr	ISDN1/FA/F7/FAinfA_kfr	307	To test the loss of frame alignment.
FAinfB_kfr	ISDN1/FA/F7/FAinfB_kfr	308	To test the loss of frame alignment.
FAinfD_kfr	ISDN1/FA/F7/FAinfD_kfr	308	To test the loss of frame alignment.
FAregain	ISDN1/FA/F7/FAregain	309	To test regain of frame alignment.
BCBinaryOne	ISDN1/BC/F7/BCBinaryOne	309	To check the B-channel contains the correct interframe time fill from the TE
DCBinaryOneCL1	ISDN1/DC/F7/DCBinaryOneCL1	310	To check the D-channel contains the correct interframe time fill from the TE for priority class 1.
DCNormalPL1CL1	ISDN1/DC/F7/DCNormalPL1CL1	310	To test a mismatch at the normal priority level binary 1 for priority class 1.
DCNormalPL0CL1	ISDN1/DC/F7/DCNormalPL0CL1	311	To test a mismatch at the normal priority level binary 0 for priority class 1.
DCPriorityClass1	ISDN1/DC/F7/DCPriorityClass1	312	To test the priority class.
DCNormtoLowPLCL1	ISDN1/DC/F7/DCNormtoLowPLCL1	313	To test the IUT changes to lower priority level after successful transmission for priority class 1.
DCLowtoNormPLCL1	ISDN1/DC/F7/DCLowtoNormPLCL1	314	To test the IUT changes back from lower to normal priority level for priority class 1.

Test Step Identifier	Test Step Reference	Page	Description
PRE_F1	ISDN1/PREAMBLE/PRE_F1	315	Bring IUT to state F1 or F1.1.
PRE_F2	ISDN1/PREAMBLE/PRE_F2	316	Bring IUT to state F2.
PRE_F3	ISDN1/PREAMBLE/PRE_F3	317	Bring IUT to state F3.
PRE_F3_CP	ISDN1/PREAMBLE/PRE_F3_CP	318	To bring IUT to state F3.
PRE_F4	ISDN1/PREAMBLE/PRE_F4	318	Bring IUT to state F4.
PRE_F4_CP	ISDN1/PREAMBLE/PRE_F4_CP	319	Bring IUT to state F4.
PRE_F5	ISDN1/PREAMBLE/PRE_F5	319	Bring IUT to state F5.
PRE_F5_CP	ISDN1/PREAMBLE/PRE_F5_CP	319	Bring IUT to state F5.
PRE_F6	ISDN1/PREAMBLE/PRE_F6	320	Bring IUT to state F6.
PRE_F6_CP	ISDN1/PREAMBLE/PRE_F6_CP	320	Bring IUT to state F6.
PRE_F7	ISDN1/PREAMBLE/PRE_F7	320	Bring IUT to state F7.
PRE_F7_CP	ISDN1/PREAMBLE/PRE_F7_CP	321	Bring IUT to state F7.
PRE_F7_COM	ISDN1/PREAMBLE/PRE_F7_COM	321	To bring IUT to state F7 and to establish a connection.
PRE_F7_COM_CP	ISDN1/PREAMBLE/PRE_F7_COM_CP	321	To bring IUT to state F7 and to establish a connection.
PRE_F8	ISDN1/PREAMBLE/PRE_F8	322	Bring IUT to state F8.
PRE_F8_CP	ISDN1/PREAMBLE/PRE_F8_CP	322	Bring IUT to state F8.
CHECK_F1	ISDN1/MISCELL/CHECK_F1	323	To check that IUT is in state F1 or F1.1.
CHECK_F2	ISDN1/MISCELL/CHECK_F2	323	To check that IUT is in state F2 (when it receives INFO X).
CHECK_F3	ISDN1/MISCELL/CHECK_F3	324	To check that IUT is in state F3
CHECK_F6	ISDN1/MISCELL/CHECK_F6	324	To check that IUT is in state F6.
CHECK_F7	ISDN1/MISCELL/CHECK_F7	324	To check that IUT is in state F7.
CHK_F7_L2	ISDN1/MISCELL/CHK_F7_L2	325	To check that layer 2 status is still 7.0.
CHK_F7_PHAIa	ISDN1/MISCELL/CHK_F7_PHAIa	325	To check if IUT is in state F7 and has sent a PH-AI primitive.
CHK_F7_PHAIb	ISDN1/MISCELL/CHK_F7_PHAIb	326	To check if IUT is in state F7 and has sent a PH-AI primitive.
CHECK_F8	ISDN1/MISCELL/CHECK_F8	326	To check that IUT is in state F8.
CHECK_F8S	ISDN1/MISCELL/CHECK_F8S	326	To check that IUT is in state F8.
Still_F6	ISDN1/MISCELL/Still_F6	327	To check that IUT is in state F6.

Test Step Identifier	Test Step Reference	Page	Description
Still_F8	ISDN1/MISCELL/Still_F8	327	To check that IUT is in state F8.
SendSETUP_EMPTY	ISDN1/MISCELL/SendSETUP_EMPTY	327	To send a layer 3 frame.
SendIX	ISDN1/MISCELL/SendIX	327	To send INFO X.
SendSABME	ISDN1/MISCELL/SendSABME	328	To send a SABME frame SAPI 0.
SendDISC	ISDN1/MISCELL/SendDISC	328	To send a layer 2 DISC frame SAPI 0.
SendUA	ISDN1/MISCELL/SendUA	328	To send a layer 2 UA frame SAPI 0.
SendI4_I0T3	ISDN1/MISCELL/SendI4_I0T3	329	To send INFO 4 in state F3 while T3 is set on and to ensure no respons from layer 2.
ReceiveUA	ISDN1/MISCELL/ReceiveUA	329	To receive a UA SAPI 0 frame from the IUT.
ReceiveSABME	ISDN1/MISCELL/ReceiveSABME	330	To receive a SABME SAPI 0 frame from the IUT.
D_WATCH	ISDN1/MISCELL/D_WATCH	330	To check that D-channel isn't blocked.
D_WATCH_F8	ISDN1/MISCELL/D_WATCH_F8	331	To check that D-channel isn't blocked in state F8.
CHK_TEI	ISDN1/MISCELL/CHK_TEI	332	To test if a TEI is assigned to the IUT.
CHK_DDE_TEI	ISDN1/MISCELL/CHK_DDE_TEI	333	To check if IUT asks for a TEI.
REMOVE_TEI	ISDN1/MISCELL/REMOVE_TEI	334	To remove a TEI eventually assigned to the IUT.
ASSIGN_TEI	ISDN1/MISCELL/ASSIGN_TEI	335	To initiate the TEI assignment procedure and assign a TEI to the IUT.

Default Identifier	Default Reference	Page	Description
DEF_1	DEF_1	335	Default subtree, the IUT may send nothing else.
DEF_2	DEF_2	335	Default subtree, the IUT may send nothing else in the D-channel and shall go on sending INFO 3.

Declarations Part

User Type Definitions			
Name	**Base Type**	**Definition**	**Comments**
Bit_Signal	IA5String	IA5String [1]	H means positive pulse, binary ZERO. L means negative pulse, binary ZERO. Every ZERO is coded with a signal different from the last one, when there is no bit violation. O means no signal, binary ONE.
Octet_Signal	Bit_Signal	Bit_Signal [8]	Eight bits coded as Bit_Signal
Octet_String	Octet_Signal	Octet_Signal [6]	Succession of Octet_Signal

User Operation Definition	
Operation Name:	BIT_CODE(Parameter:BITSTRING)
Result Type:	Bit_Signal
Description: Pseudo-ternary coding is used, and coding is performed in such a way that a binary ONE is represented by no line signal (0); whereas, a binary ZERO is represented by a positive or negative pulse. The first binary ZERO following the framing bit-balance bit is of the same polarity as the bit-balance bit. Subsequent binary ZEROs shall alternate in polarity. This operation returns the physical value needed for coding a bit.	

User Operation Definition	
Operation Name:	OCTET_CODE(Parameter:OCTETSTRING)
Result Type:	Octet_Signal
Description: This operation returns the physical value needed for coding B-channel inside Info 4 or Info 3 (According to the protocol, there may be a violation bit).	

User Operation Definition	
Operation Name:	IDLE_DCH
Result Type:	Bit_Signal
Description: This operation takes the next bit of repetitions of the octet "01111110" and fills in D-bit positions inside INFO 4. When such an octet has been sent, a new one is sent again, bit after bit. In fact this operation fills in D-channel with HDLC flags as interframe time fill (this is a choice because the tester also has the possibility to fill in D-channel with only binary ONE).	

User Operation Definition	
Operation Name:	D_SETUP_EMPTY_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 3 frame and fills in D-Bit positions inside INFO 4. That allows the tester to send such a frame in the D channel. When the frame has been sent, D-bit positions are filled in with IDLE_DCH. A SETUP_EMPTY frame is 11 octets long.	

User Operation Definition	
Operation Name:	D_COM_VALUE
Result Type:	Bit_Signal
Description: This operation fills in D-Bit positions inside INFO 4 (or INFO 3) so that it allows the tester to establish a connection with the IUT. It first sends a Layer 3 SETUP frame in a Layer 2 UI frame to initiate the connection and, further, it answers properly to the IUT according to Layer 2 and Layer 3 procedures. If necessary, TEI assignment and LAP/D establishment procedures may be used.	

User Operation Definition	
Operation Name:	ECHO
Result Type:	Bit_Signal
Description: This operation fills in the Echo bits of INFO 4 with the D Bits of the last INFO 3 received by the tester. There are 4 echo bits, corresponding to the received D bits.	

User Operation Definition	
Operation Name:	L2_FRAME
Result Type:	Bit_Signal
Description: This operation tests if the D-bits received inside INFO 3 belong to a Layer 2 frame, so that the tester is sure that a UI frame has been received from the IUT.	

User Operation Definition	
Operation Name:	FA_BIT
Result Type:	Bit_Signal
Description: This operation fills FA positions of frames sent from the tester to IUT. The multiframe structure is shown in ETS 300 012, § 6.3.3.2, table 7. The first FA value is binary ONE.	

User Operation Definition	
Operation Name:	N_BIT(FA:BITSTRING)
Result Type:	Bit_Signal
Description: This operation fills N positions of frames sent from tester to IUT. The multiframe structure is shown in ETS 300 012, § 6.3.3.2, table 7. The first FA value is binary ONE , and N=ZERO.	

User Operation Definition	
Operation Name:	M_BIT
Result Type:	Bit_Signal
Description: This operation fills M positions of frames sent from tester to IUT. The multiframe structure is shown in ETS 300 012, § 6.3.3.2, table 7. The first FA value is binary ONE.	

User Operation Definition	
Operation Name:	DC_BALANCE
Result Type:	Bit_Signal
Description: This operation gives back the value of the next L bit. This bit is used for balancing each complete frame (NT to TE) or each individual group of bits (TE to NT). A balance bit is a binary ZERO if the number of binary ZEROs following the previous balance bit is odd. A balance bit is a binary ONE if the number of binary ZEROs following the previous balance bit is even.	

User Operation Definition	
Operation Name:	D_SABME_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a Layer 2 SABME frame SAPI 0 and fills in D-Bit positions inside INFO 3 or INFO 4. That allows the tester to send such a frame in the D-channel. Such a frame is 7 octets long.	

User Operation Definition	
Operation Name:	D_DI_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 2 DISC frame SAPI 0 and fills in D-Bit positions inside INFO 4. That allows the tester to send such a frame in the D channel. Such a frame is 7 octets long.	

User Operation Definition	
Operation Name:	D_UA_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 2 UA frame SAPI 0 and fills in D-Bit positions inside INFO 3 or INFO 4. That allows the tester to send such a frame in the D channel. Such a frame is 7 octets long.	

User Operation Definition	
Operation Name:	D_DISC_VALUE
Result Type:	Bit_Signal
Description: This operation fills in D-Bit positions inside INFO 4 (or INFO 3) so that it allows the tester to disconnect with the IUT. It first sends a layer 3 DISCONNECT frame in a layer 2 I-frame to initiate the disconnection and further it answers properly to the IUT according to layer 2 and layer 3 procedures. When the connection has been broken, the boolean test case variable COM is set to FALSE and D-bit positions in INFO 4 are filled in with IDLE_DCH.	

User Operation Definition	
Operation Name:	D_TEI_RMV_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 2 UI frame whose information field is coded as a request for removal of all TEI values (Identity remove) and fills in D-Bit positions inside INFO 4. That allows the tester to send that kind of frame in the D channel in order to remove an eventual TEI assigned to the IUT. When the UI frame has been sent, D-bit positions are filled in with IDLE_DCH. Such a frame is 12 octets long.	

User Operation Definition	
Operation Name:	D_TEI_CHK_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 2 UI frame whose information field is coded as a check of all TEI values (Identity check request) and fills in D-Bit positions inside INFO 4. That allows the tester to send that kind of frame in the D channel in order to check an eventual TEI assigned to the IUT. When the UI frame has been sent, D-bit positions are filled in with IDLE_DCH. Such a frame is 12 octets long.	

User Operation Definition	
Operation Name:	D_TEI_RESP_VALUE
Result Type:	Bit_Signal
Description: This operation tests if the D-bits received inside INFO 3 belong to a Layer 2 UI frame whose information field contains an Identity check response (with the TEI value already assigned), so that the tester knows that a TEI is effectively assigned to the IUT.	

User Operation Definition	
Operation Name:	D_TEI_REQ_VALUE
Result Type:	Bit_Signal
Description: This operation tests if the D-bits received inside INFO 3 belong to a Layer 2 UI frame whose information field contains an Identity request. This way the IUT can ask for a TEI assignment. If the tester does not answer, no TEI is assigned to the IUT.	

User Operation Definition	
Operation Name:	D_TEI_ASS_VALUE
Result Type:	Bit_Signal
Description: This operation takes the next bit from a layer 2 UI frame whose information field is coded as an assigned TEI value (Identity Assigned) and fills in D-Bit positions inside INFO 4. That allows the tester to send that kind of frame in the D channel in order to assign a TEI to the IUT. When the UI frame has been sent, D-bit positions are filled in with IDLE_DCH. Such a frame is 12 octets long.	

User Operation Definition	
Operation Name:	TEST_COM
Result Type:	BOOLEAN
Description: This operation allows to establish a connection with the IUT using layers 2 and 3 call control procedures. If necessary TEI assignment procedure may be used. When the connection has been established properly the boolean is set to TRUE else FALSE.	

User Operation Definition	
Operation Name:	USERCALL
Result Type:	BOOLEAN
Description: This operation allows the IUT to initiate a connection with the network simulator using layers 2 and 3 call control procedures.	

Test Suite Parameters			
Name	**Type**	**PICS/PIXIT ref**	**Comments**
PC_PS	BOOLEAN	A1.2	TRUE if the IUT is powered across the interface (PS1), else FALSE.
PC_DE	BOOLEAN	A1.3	For IUT not powered across the interface, TRUE if able to detect PS1.
PC_PTMP	BOOLEAN	A1.6	TRUE if the IUT uses not only point to point configuration.
PC_STATE_F5	BOOLEAN	A1.7	TRUE if the IUT is not capable of beginning transmission of INFO 3 within 5 ms upon receipt of INFO 2 or INFO 4 in state F4.
PC_MP	BOOLEAN	A8.1	TRUE if the IUT uses a single point-to-point data link as described in subclause 10.3.
PC_AUTOMAT_TEI	BOOLEAN	A10.1	TRUE if the IUT is of the automatic TEI assignment category.
PX_SELF_TEST	INTEGER	E.3.1	Self Test duration plus tolerance 5 %.
PX_T3	INTEGER	E.3.2	T3 value(ms)
T3VMIN	INTEGER	E.3.2	T3 duration minus tolerance 5 %.
T3VMAX	INTEGER	E.3.2	T3 duration plus tolerance 5 %.
PX_T_APPLI1	INTEGER	E.3.3	Delay needed by the application to establish a call plus tolerance 5 %.
PX_T_APPLI2	INTEGER	E.3.4	Delay needed by the application to clear a call.
PC_TEI_CONNECT	BOOLEAN	E.3.5	TRUE if the IUT initiates activation followed by automatic TEI assignment immediately following connection to the network (after completing the selftest).
PX_NOTE6_CASE1	BOOLEAN	E.3.6	TRUE if the IUT implements Case 1 of note 6 of table 9.9.
PX_IUT_STA_S4	BOOLEAN	E.5.2	TRUE if the IUT is stable in state 4.

Test Suite Constants			
Name	**Type**	**Value**	**Comments**
T3MAXI	INTEGER	30	T3 maximum duration (sec).
TA	INTEGER	100	For timer test (ms).
TB	INTEGER	5	(ms)
TC	INTEGER	250	(us)
TFRAME	INTEGER	250	(us)
T4VMIN	INTEGER	380	T4 minimum duration minus 100 ms and tolerance 5 % (ms).
T4VMAX	INTEGER	1050	T4 maximum duration plus tolerance 5 % (ms).

Test Suite Variables			
Name	**Type**	**Value**	**Comments**
i	INTEGER	1	Used in SendIX

Test Case Variables			
Name	**Type**	**Value**	**Comments**
CHRONO	INTEGER	0	For time count.
k	INTEGER	0	For local count.
COM	BOOLEAN	FALSE	TRUE if a layer 3 connection is established between IUT and Tester, else FALSE.
LOWER_CL1	BOOLEAN	FALSE	TRUE if Test Case DCNormtoLowPLCL1 is Passed, else FALSE.
TEI_ON	BOOLEAN	FALSE	TRUE if a TEI shall be assigned to the IUT, else FALSE.
TEI_ASS	BOOLEAN	FALSE	TRUE if a TEI is assigned to the IUT, else FALSE.
TESTOK	BOOLEAN	TRUE	Next test is available.

PCO Type Declarations			
Name	**Type**	**Role**	**Comments**
L	SAP	LT	SAP at the IUT/Tester bound (SAP exists via the physical connection).
Ld	SAP	LT	SAP at the IUT/Tester bound. In activated state (state F7) IUT shall send INFO 3 and Tester shall send INFO 4. In this way only D-channel and D-echo- channel data extracted from INFO 3 and 4 are subjects of that PCO.
Lp	SAP	LT	Used to describe the PS1 and local power status.

Timer Declarations			
Timer Name	**Duration**	**Units**	**Comments**
T200	1	sec	Layer 2 timer T200.
T3_S	T3VMAX	ms	Activation request by TE, T3_S shall exceed T3.
TWAIT	189	sec	Used by the tester for test synchronization with external procedure.
TF5	5250	us	Ensure modification of response from IUT (in PRE_F5).
TAC	105	ms	Ensures modification of response from IUT.
TNOAC	525	ms	Ensures no modification of response from IUT.
TSELFTEST	PX_SELF_TEST	ms	Default value for self test duration.
TBLKLAYER2	1	sec	Ensure action from layer 2 for D-channel Tests cases.
TLAYER2	10	sec	Ensure action from layer 2.
TRESP_I2	105	ms	A TE in state F4 shall answer to INFO 2 within that duration.
TCDmin	T4VMIN	ms	For A/D timers tests.
TCDmax	T4VMAX	ms	For A/D timers tests.
TIMER_1	100250	us	For A/D timers tests.
TIMER_3	T3MAXI	sec	For A/D timers tests.
TIMER_4	25250	us	For A/D timers tests.
T_COM	60	sec	Large maximum duration for establishing a layer 3 connection between Tester and IUT.
T_BLK2	5	sec	Four times T200 and 1 sec more for D-channel blocking.
T_APPLI1	PX_T_APPLI1	sec	Application timer on B-channel (delay to establish a call).
T_APPLI2	PX_T_APPLI2	sec	Application timer on B-channel (delay to clear a call).
T3_M	T3VMIN	ms	Shorter than T3
T4	T4VMAX	ms	Value of T4 max plus 5 %.

Abbreviation Declarations		
Abbreviation	**Expansion**	**Comments**
Info_0	DATA_RQ<FU^Info_0>	Send a INFO 0 frame
Info_0r	DATA_IN<FU~Info_0>	Receive a INFO 0 frame
Info_1	DATA_IN<FU~Info_1>	Receive a INFO 1 frame
Info_n	DATA_RQ<FU^Info_n>	Send a NT INFO frame
Info_3	DATA_IN<FU~Info_3>	Receive a INFO 3 frame
D	D_DATA_RQ<BiT^D_bit>	Send a D-bit in D-channel within a INFO 4 frame
Dr	D_DATA_IN<BiT~D_bit>	Receive a D-bit within a INFO 3 frame
E	E_DATA_RQ<BiT^D_bit>	Send a E-bit in D-echo-channel within a INFO 4 frame

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DATA_IN	SAP	to receive the last frame
Service Parameter Information		
Field Name	**Type**	**Comments**
FU	Octet_String	Frame Unit

ASP Type Declaration		
ASP Name: DATA_RQ	**PCO Type:** SAP	**Comments:** to send the next frame
Service Parameter Information		
Field Name	**Type**	**Comments**
FU	Octet_String	Frame Unit

ASP Type Declaration		
ASP Name: D_DATA_IN	**PCO Type:** SAP	**Comments:** to receive the last D-bit within a INFO 3 frame .
Service Parameter Information		
Field Name	**Type**	**Comments**
BiT	Bit_Signal	

ASP Type Declaration		
ASP Name: D_DATA_RQ	**PCO Type:** SAP	**Comments:** to send the next D-bit within a INFO 4 frame .
Service Parameter Information		
Field Name	**Type**	**Comments**
BiT	Bit_Signal	

ASP Type Declaration		
ASP Name: E_DATA_RQ	**PCO Type:** SAP	**Comments:** to send the next E-bit within a INFO 4 frame .
Service Parameter Information		
Field Name	**Type**	**Comments**
BiT	Bit_Signal	

PDU Type Declaration		
PDU Name: Info_0	**PCO Type:** SAP	**Comments:** No signal (NT to TE, TE to NT) .
PDU Field Information		
Field Name	**Type**	**Comments**
NOTHING	Octet_String	48 bits set to 1.

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
Info_1	SAP	Continuous signal (TE to NT) At least six following patterns must be sent to be sure that the Network will recognize this signal.
PDU Field Information		
Field Name	**Type**	**Comments**
F1	Bit_Signal	Positive pulse
L1	Bit_Signal	Negative pulse
SIX_OTHERS1	GROUP	Six bits set to one
F2	Bit_Signal	Positive pulse
L2	Bit_Signal	Negative pulse
SIX_OTHERS2	GROUP	Six bits set to one
F3	Bit_Signal	Positive pulse
L3	Bit_Signal	Negative pulse
SIX_OTHERS3	GROUP	Six bits set to one
F4	Bit_Signal	Positive pulse
L4	Bit_Signal	Negative pulse
SIX_OTHERS4	GROUP	Six bits set to one
F5	Bit_Signal	Positive pulse
L5	Bit_Signal	Negative pulse
SIX_OTHERS5	GROUP	Six bits set to one
F6	Bit_Signal	Positive pulse
L6	Bit_Signal	Negative pulse
SIX_OTHERS6	GROUP	Six bits set to one

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
Info_n	SAP	Signals from NT to TE (INFO 2 and INFO 4)
PDU Field Information		
Field Name	**Type**	**Comments**
F	Bit_Signal	Framing bit
L1	Bit_Signal	D.C. balancing bit
B11	GROUP	B1 channel bits
E1	Bit_Signal	D echo channel bit
D1	Bit_Signal	D channel bit
A	Bit_Signal	Bit used for activation
FA	Bit_Signal	Auxiliary framing bit
N	Bit_Signal	N = NOT FA
B21	GROUP	B2 channel bits
E2	Bit_Signal	D echo channel bit
D2	Bit_Signal	D channel bit
M	Bit_Signal	Multiframing bit
B12	GROUP	B1 channel bits
E3	Bit_Signal	D echo channel bit
D3	Bit_Signal	D channel bit
S	Bit_Signal	For further study
B22	GROUP	B2 channel bits
E4	Bit_Signal	D echo channel bit
D4	Bit_Signal	D channel bit
L2	Bit_Signal	D.C. balancing bit

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
Info_3	SAP	Synchronized frame with operational data on B and D channels.
PDU Field Information		
Field Name	**Type**	**Comments**
F	Bit_Signal	Framing bit
L1	Bit_Signal	D.C. balancing bit
B11	GROUP	Operational Data, first bit is a violation bit.
L2	Bit_Signal	D.C. balancing bit
D1	Bit_Signal	Operational Data
L3	Bit_Signal	D.C. balancing bit
FA	Bit_Signal	Auxiliary framing bit
LA	Bit_Signal	D.C. balancing bit
B21	GROUP	Operational Data
L4	Bit_Signal	D.C. balancing bit
D2	Bit_Signal	Operational Data
L5	Bit_Signal	D.C. balancing bit
B12	GROUP	Operational Data
L6	Bit_Signal	D.C. balancing bit
D3	Bit_Signal	Operational Data
L7	Bit_Signal	D.C. balancing bit
B22	GROUP	Operational Data
L8	Bit_Signal	D.C. balancing bit
D4	Bit_Signal	Operational Data
L9	Bit_Signal	D.C. balancing bit

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
POWER_PS	SAP	See subclause 9.4.2.3.1.
PDU Field Information		
Field Name	**Type**	**Comments**
PS	BOOLEAN	Removal/connection of PS1

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
POWER_LP	SAP	See subclause 9.4.2.3.1.
PDU Field Information		
Field Name	**Type**	**Comments**
LP	BOOLEAN	Removal/connection of local power

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
D_bit	SAP	Bit in D-channel or D-echo-channel.
PDU Field Information		
Field Name	**Type**	**Comments**
SingleBit	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS1	**Comments:** Six bits (SIX_OTHERS1) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS2	**Comments:** Six bits (SIX_OTHERS2) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS3	**Comments:** Six bits (SIX_OTHERS3) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS4	**Comments:** Six bits (SIX_OTHERS4) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS5	**Comments:** Six bits (SIX_OTHERS5) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: SIX_OTHERS6	**Comments:** Six bits (SIX_OTHERS6) in Info_1

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: B11	**Comments:** Eight bits (B11) in Info_n and Info_3

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	
bit7	Bit_Signal	
bit8	Bit_Signal	

PDU Field Group Type Declaration	
Field Group Name: B12	**Comments:** Eight bits (B12) in Info_n and Info_3

PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	
bit7	Bit_Signal	
bit8	Bit_Signal	

PDU Field Group Type Declaration		
Field Group Name: B21	**Comments:** Eight bits (B21) in Info_n and Info_3	
PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	
bit7	Bit_Signal	
bit8	Bit_Signal	

PDU Field Group Type Declaration		
Field Group Name: B22	**Comments:** Eight bits (B22) in Info_n and Info_3	
PDU Field Information		
Field Name	**Type**	**Comments**
bit1	Bit_Signal	
bit2	Bit_Signal	
bit3	Bit_Signal	
bit4	Bit_Signal	
bit5	Bit_Signal	
bit6	Bit_Signal	
bit7	Bit_Signal	
bit8	Bit_Signal	

Constraints Part

PDU Constraint Declaration	
PDU Name: Info_0	**Constraint Name:** I0
Field Value Information	
Field Name	**Value**
NOTHING	OCTET_CODE('FFFFFFFFFFFF'O)
Comments: 48 bits set to 1.	

PDU Constraint Declaration	
PDU Name: Info_1	**Constraint Name:** I1
Field Value Information	
Field Name	**Value**
F1	H
L1	L
SIX_OTHERS1	SIX_OTHERS1_ONES_6
F2	H
L2	L
SIX_OTHERS2	SIX_OTHERS2_ONES_6
F3	H
L3	L
SIX_OTHERS3	SIX_OTHERS3_ONES_6
F4	H
L4	L
SIX_OTHERS4	SIX_OTHERS4_ONES_6
F5	H
L5	L
SIX_OTHERS5	SIX_OTHERS5_ONES_6
F6	H
L6	L
SIX_OTHERS6	SIX_OTHERS6_ONES_6

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I2
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_OCTET_LH
E1	L
D1	H
A	L
FA	H
N	O
B21	B21_OCTET_LH
E2	L
D2	H
M	L
B12	B12_OCTET_HL
E3	H
D3	L
S	H
B22	B22_OCTET_LH
E4	L
D4	H
L2	O

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_BASIC
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	?
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	?
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	?
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	?
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_COM
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	D_COM_VALUE
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	D_COM_VALUE
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	D_COM_VALUE
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	D_COM_VALUE
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_B_ONE
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
L2	DC_BALANCE
D1	?
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	B21_ONES_8
L4	DC_BALANCE
D2	?
L5	DC_BALANCE
B12	B12_ONES_8
L6	DC_BALANCE
D3	?
L7	DC_BALANCE
B22	B22_ONES_8
L8	DC_BALANCE
D4	?
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_LAP_D
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	L2_FRAME
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	L2_FRAME
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	L2_FRAME
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	L2_FRAME
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_SFL
Field Value Information	
Field Name	**Value**
F	O
L1	O
B11	B11_ONES_8
L2	DC_BALANCE
D1	O
L3	DC_BALANCE
FA	L
LA	H
B21	?
L4	DC_BALANCE
D2	?
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	?
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	?
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_SFAL
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	?
L3	DC_BALANCE
FA	O
LA	DC_BALANCE
B21	B21_ONES_8
L4	DC_BALANCE
D2	O
L5	DC_BALANCE
B12	B12_ONES_8
L6	DC_BALANCE
D3	O
L7	DC_BALANCE
B22	B22_ONES_8
L8	DC_BALANCE
D4	O
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_DISC
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	D_DISC_VALUE
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	D_DISC_VALUE
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	D_DISC_VALUE
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	D_DISC_VALUE
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_TEI_RESP
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	D_TEI_RESP_VALUE
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	D_TEI_RESP_VALUE
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	D_TEI_RESP_VALUE
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	D_TEI_RESP_VALUE
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_3	I3_TEI_REQ
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	?
L2	DC_BALANCE
D1	D_TEI_REQ_VALUE
L3	DC_BALANCE
FA	?
LA	DC_BALANCE
B21	?
L4	DC_BALANCE
D2	D_TEI_REQ_VALUE
L5	DC_BALANCE
B12	?
L6	DC_BALANCE
D3	D_TEI_REQ_VALUE
L7	DC_BALANCE
B22	?
L8	DC_BALANCE
D4	D_TEI_REQ_VALUE
L9	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_BASIC
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	IDLE_DCH
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	IDLE_DCH
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	IDLE_DCH
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	IDLE_DCH
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_COM
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	D_COM_VALUE
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	D_COM_VALUE
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	D_COM_VALUE
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	D_COM_VALUE
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_DISC
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	D_DISC_VALUE
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	D_DISC_VALUE
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	D_DISC_VALUE
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	D_DISC_VALUE
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_TEI_RMV
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	D_TEI_RMV_VALUE
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	D_TEI_RMV_VALUE
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	D_TEI_RMV_VALUE
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	D_TEI_RMV_VALUE
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_TEI_ASS
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	D_TEI_ASS_VALUE
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	D_TEI_ASS_VALUE
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	D_TEI_ASS_VALUE
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	D_TEI_ASS_VALUE
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	I4_TEI_CHK
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	ECHO
D1	D_TEI_CHK_VALUE
A	O
FA	FA_BIT
N	N_BIT
B21	B21_ONES_8
E2	ECHO
D2	D_TEI_CHK_VALUE
M	M_BIT
B12	B12_ONES_8
E3	ECHO
D3	D_TEI_CHK_VALUE
S	BIT_CODE(0)
B22	B22_ONES_8
E4	ECHO
D4	D_TEI_CHK_VALUE
L2	DC_BALANCE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	IX_96KHz
Field Value Information	
Field Name	**Value**
F	L
L1	H
B11	B11_OCTET_LH
E1	L
D1	H
A	L
FA	H
N	L
B21	B21_OCTET_HL
E2	H
D2	L
M	H
B12	B12_OCTET_LH
E3	L
D3	H
S	L
B22	B22_OCTET_HL
E4	H
D4	L
L2	H

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Info_n	IX_I4viol16
Field Value Information	
Field Name	**Value**
F	H
L1	L
B11	B11_ONES_8
E1	O
D1	O
A	O
FA	O
N	O
B21	B21_OCTET_L7O
E2	O
D2	O
M	H
B12	B12_ONES_8
E3	O
D3	O
S	L
B22	B22_ONES_8
E4	O
D4	O
L2	H

PDU Constraint Declaration	
PDU Name: Info_n	**Constraint Name:** IX_I4noflag
Field Value Information	
Field Name	**Value**
F	O
L1	O
B11	B11_ONES_8
E1	O
D1	O
A	O
FA	L
N	O
B21	B21_ONES_8
E2	O
D2	O
M	H
B12	B12_ONES_8
E3	O
D3	O
S	L
B22	B22_ONES_8
E4	O
D4	O
L2	H

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D(VAL:BITSTRING)
Field Value Information	
Field Name	**Value**
SingleBit	BIT_CODE(VAL)
Comments: D_bit set to VAL	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_any
Field Value Information	
Field Name	**Value**
SingleBit	any
Comments: Any value 0 or 1	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_DI
Field Value Information	
Field Name	**Value**
SingleBit	D_DI_VALUE
Comments: To send or receive DISC SAPI 0 bit after bit.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_UA
Field Value Information	
Field Name	**Value**
SingleBit	D_UA_VALUE
Comments: To send or receive UA SAPI 0 bit after bit.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_SABME
Field Value Information	
Field Name	**Value**
SingleBit	D_SABME_VALUE
Comments: To send or receive SABME SAPI 0 bit after bit.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_SETUP_EMPTY
Field Value Information	
Field Name	**Value**
SingleBit	D_SETUP_EMPTY_VALUE
Comments: To send SETUP_EMPTY bit after bit.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** D_BASIC
Field Value Information	
Field Name	**Value**
SingleBit	IDLE_DCH
Comments: To fill in D channel with flags.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** E(VAL:BITSTRING)
Field Value Information	
Field Name	**Value**
SingleBit	BIT_CODE(VAL)
Comments: To send E_bit set to VAL.	

PDU Constraint Declaration	
PDU Name: D_bit	**Constraint Name:** E_Echo
Field Value Information	
Field Name	**Value**
SingleBit	ECHO
Comments: Echo of the last D_bit received by the tester.	

PDU Constraint Declaration	
PDU Name: POWER_PS	**Constraint Name:** PS_ON
Field Value Information	
Field Name	**Value**
PS	TRUE

PDU Constraint Declaration	
PDU Name: POWER_LP	**Constraint Name:** LP_ON
Field Value Information	
Field Name	**Value**
LP	TRUE

PDU Constraint Declaration	
PDU Name: POWER_PS	**Constraint Name:** PS_OFF
Field Value Information	
Field Name	**Value**
PS	FALSE

PDU Constraint Declaration	
PDU Name: POWER_LP	**Constraint Name:** LP_OFF
Field Value Information	
Field Name	**Value**
LP	FALSE

PDU Field Group Constraint Declaration	
Field Group Name: SIX_OTHERS1	**Constraint Name:** SIX_OTHERS1_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name: SIX_OTHERS2	**Constraint Name:** SIX_OTHERS2_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
SIX_OTHERS3	SIX_OTHERS3_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
SIX_OTHERS4	SIX_OTHERS4_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
SIX_OTHERS5	SIX_OTHERS5_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
SIX_OTHERS6	SIX_OTHERS6_ONES_6
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B11	B11_OCTET_LH
Field Value Information	
Field Name	**Value**
bit1	L
bit2	H
bit3	L
bit4	H
bit5	L
bit6	H
bit7	L
bit8	H

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B12	B12_OCTET_LH
Field Value Information	
Field Name	**Value**
bit1	L
bit2	H
bit3	L
bit4	H
bit5	L
bit6	H
bit7	L
bit8	H

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B12	B12_OCTET_HL
Field Value Information	
Field Name	**Value**
bit1	H
bit2	L
bit3	H
bit4	L
bit5	H
bit6	L
bit7	H
bit8	L

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B21	B21_OCTET_LH
Field Value Information	
Field Name	**Value**
bit1	L
bit2	H
bit3	L
bit4	H
bit5	L
bit6	H
bit7	L
bit8	H

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B21	B21_OCTET_HL
Field Value Information	
Field Name	**Value**
bit1	H
bit2	L
bit3	H
bit4	L
bit5	H
bit6	L
bit7	H
bit8	L

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B22	B22_OCTET_LH
Field Value Information	
Field Name	**Value**
bit1	L
bit2	H
bit3	L
bit4	H
bit5	L
bit6	H
bit7	L
bit8	H

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B22	B22_OCTET_HL
Field Value Information	
Field Name	**Value**
bit1	H
bit2	L
bit3	H
bit4	L
bit5	H
bit6	L
bit7	H
bit8	L

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B11	B11_ONES_8
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O
bit7	O
bit8	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B12	B12_ONES_8
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O
bit7	O
bit8	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B21	B21_ONES_8
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O
bit7	O
bit8	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B22	B22_ONES_8
Field Value Information	
Field Name	**Value**
bit1	O
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O
bit7	O
bit8	O

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
B21	B21_OCTET_L7O
Field Value Information	
Field Name	**Value**
bit1	L
bit2	O
bit3	O
bit4	O
bit5	O
bit6	O
bit7	O
bit8	O

Dynamic Part

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F1/AD1aF1_PS_LP_on				
Identifier:	AD1aF1_PS_LP_on				
Purpose:	To check the reaction to the appearance of power on an IUT in stateF1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR NOT PC_DE]				(1)
2	+PRE_F1				
3	+SendIX				
4	Lp!POWER_PS		PS_ON		
5	[PC_PS]				
6	START TSELFTEST				
7	+SendIX	L1			
8	?TIMEOUT TSELFTEST			(P)	
9	+CHECK_F2				(2)
10	L?Info_0		I0		IUT in state F2
11	GOTO L1				
12	[NOT PC_PS AND NOT PC_DE]				
13	Lp!POWER_LP START TSELFTEST		LP_ON		
14	+SendIX	L2			
15	?TIMEOUT TSELFTEST			(P)	
16	+CHECK_F2				(2)
17	L?Info_0		I0		IUT in state F2
18	GOTO L2				
Extended Comments:					
(1) For IUT powered accross the interface or for locally powered IUT not using connected detector.					
(2) IUT should be in state F2 within TSELFTEST.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F10/AD1bF10_LP_on				
Identifier:	AD1bF10_LP_on				
Purpose:	To check the reaction to the appearance of local power on an IUT in state F1.0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				(1)
2	Lp!POWER_LP		LP_OFF		(2)
3	Lp!POWER_PS		PS_OFF		
4	Lp!POWER_LP START TSELFTEST		LP_ON		
5	L!Info_0	L1	I0		
6	?TIMEOUT TSELFTEST			(P)	
7	+CHECK_F1				
8	L?Info_0		I0		
9	GOTO L1				
Extended Comments:					
(1) For locally powered IUT using connected detector only.					
(2) No preamble.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F11/AD1cF11_LP_off				
Identifier:	AD1cF11_LP_off				
Purpose:	To check that IUT is inactive when there is a loss of power in state F1.1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				(1)
2	+PRE_F1				
3	Lp!POWER_LP		LP_OFF	(P)	
4	+CHECK_F1				
Extended Comments:					
(1) For locally powered IUT using connected detector only.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F11/AD1dF11_PS_on				
Identifier:	AD1dF11_PS_on				
Purpose:	To check appearance of PS on IUT in state F1.1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				(1)
2	+PRE_F1				
3	+SendIX				
4	Lp!POWER_PS		PS_ON	(P)	
5	+CHECK_F2				
Extended Comments:					
(1) For locally powered IUT using connected detector only.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F1/AD2F11_CHK_T3				
Identifier:	AD2F11_CHK_T3				
Purpose:	To check expiry of T3 in state F1.1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				
2	+PRE_F3				
3	[USERCALL]				(1)
4	START TWAIT				
5	L!Info_0	L1	I0		
6	?TIMEOUT TWAIT			F	
7	L?Info_0		I0		
8	GOTO L1				
9	L?Info_1 CANCEL TWAIT		I1		IUT in F4
10	START T3_S				
11	Lp!POWER_PS		PS_OFF		IUT in F1.1
12	L!Info_0	L2	I0		
13	?TIMEOUT T3_S			F	(2)
14	L?Info_1		I1		
15	GOTO L2				
16	L?Info_0		I0		
17	L!Info_0	L3	I0		
18	?TIMEOUT T3_S			(P)	
19	+CHECK_F1				
20	L?Info_0		I0		
21	GOTO L3				
Extended Comments:					
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					
(2) T3 is lower than T3_S					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD3aF2_PS_off				
Identifier:	AD3aF2_PS_off				
Purpose:	To check that IUT is brought to state F1 or F1.1 in case of disappearance of PS (no local power)				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR PC_DE]				
2	+PRE_F2				
3	Lp!POWER_PS		PS_OFF	(P)	(1)
4	+CHECK_F1				
Extended Comments:					
(1) IUT is brought to state F1 or F1.1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD3bF2_LP_off				
Identifier:	AD3bF2_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F2				
3	Lp!POWER_LP		LP_OFF	(P)	(2)
4	+CHECK_F1				
Extended Comments:					
(1) For locally powered IUT. (2) IUT is brought to state F1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD4F2_RX_I0				
Identifier:	AD4F2_RX_I0				
Purpose:	To check that IUT is brought to state F3 when receiving INFO 0 in state F2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	[NOT PC_AUTOMAT_TEI OR PC_AUTOMAT_TEI AND NOT PC_TEI_CONNECT]				
3	START TAC				
4	L!Info_0	L1	I0		
5	?TIMEOUT TAC				
6	+CHECK_F3			(P)	
7	L?Info_0		I0		(1)
8	GOTO L1				
9	[PC_AUTOMAT_TEI AND PC_TEI_CONNECT]				
10	START TNOAC				
11	L!Info_0	L2	I0		
12	?TIMEOUT TNOAC			F	
13	L?Info_0		I0		
14	GOTO L2				
15	L?Info_1		I1		
16	START T3_S				
17	CANCEL TNOAC				
18	L!Info_0	L3	I0		
19	?TIMEOUT T3_S			F	
20	L?Info_1		I1		
21	GOTO L3				
22	L?Info_0		I0		
23	L!Info_0	L4	I0		
24	?TIMEOUT T3_S			(P)	(1)
25	+CHECK_F3				
26	L?Info_0		I0		
27	GOTO L4				
Extended Comments:					
(1) IUT must be brought in state F3.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD5F2_RX_I2				
Identifier:	AD5F2_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2 in state F2				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2			F	(1)
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3		I3_BASIC		IUT in state F6
8	CANCEL TRESP_I2			(P)	
9	+CHECK_F6				
Extended Comments: (1) IUT in state F2 shall answer to INFO 2 within TAC. References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD6F2_RX_I4				
Identifier:	AD6F2_RX_I4				
Purpose:	To check that IUT is brought to state F7 when receiving INFO 4				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	(1)
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3		I3_BASIC	(P)	
8	CANCEL TAC				
9	+CHECK_F7				
Extended Comments: (1) IUT in state F2 shall answer to INFO 2 within TAC. References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD7F2_RX_IX				
Identifier:	AD7F2_RX_IX				
Purpose:	To check that IUT stays in state F2 when receiving INFO X in state F2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	START TNOAC				
3	+SendIX	L1			
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F2				
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments: References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F2/AD8F2_CHK_T3				
Identifier:	AD8F2_CHK_T3				
Purpose:	To check expiry of T3 in state F2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				
2	+PRE_F3				
3	[USERCALL]				(1)
4	START TWAIT				
5	L!Info_0	L1	I0		
6	?TIMEOUT TWAIT			F	
7	L?Info_0		I0		
8	GOTO L1				
9	L?Info_1 CANCEL TWAIT		I1		IUT in F4
10	START T3_S				
11	Lp!POWER_PS		PS_OFF		IUT in F1.1
12	START TNOAC				
13	+SendIX	L2			
14	?TIMEOUT TNOAC				
15	Lp!POWER_PS		PS_ON		IUT in F2
16	+SendIX				
17	?TIMEOUT T3_S			F	
18	L?Info_0		I0		
19	+SendIX	L3			
20	?TIMEOUT T3_S			(P)	(2)
21	+CHECK_F 2				
22	L?Info_0		I0		
23	GOTO L3				
24	L?OTHERWISE				
25	GOTO L2				

Extended Comments:
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.
(2) T3 is lower than T3_S.
References to Requirements: Subclause 9.4.2.3.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F2/CPF2PHAI				
Identifier:	CPF2PHAI				
Purpose:	To check that IUT when receiving INFO 4 in state F2 sends a PH-AI primitive.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TAC		I3_BASIC		
8	L!Info_n START TNOAC	L2	I4_BASIC		
9	?TIMEOUT TNOAC			(P)	
10	+CHK_F7_PHAIa				(2)
11	L?Info_3		I3_LAP_D		(1)
12	GOTO L2				
13	L?Info_3		I3_BASIC		
14	GOTO L2				
Extended Comments:					
(1) The TE can send a ID_REQ layer 2 frame.					
(2) To check if IUT is ready at layer 2.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD9aF3_PS_off				
Identifier:	AD9aF3_PS_off				
Purpose:	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR PC_DE]				
2	+PRE_F3				
3	Lp!POWER_PS		PS_OFF	(P)	
4	+CHECK_F1				(1)
Extended Comments:					
(1) IUT is in state F1 or in state F1.1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD9bF3_LP_off				
Identifier:	AD9bF3_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F3				
3	Lp!POWER_LP		LP_OFF	(P)	(2)
4	+CHECK_F1				
Extended Comments:					
(1) For locally powered IUT.					
(2) IUT is in state F1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD10F3_PH_AR				
Identifier:	AD10F3_PH_AR				
Purpose:	To check that IUT is brought to state F4 when receiving a PH-AR.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_0	L1	I0		
5	?TIMEOUT TWAIT			I	(3)
6	L?Info_0		I0		
7	GOTO L1				
8	L?Info_1 CANCEL TWAIT		I1	P	(2)
Extended Comments: (1) A PH-AR primitive shall be sent from the layer 2 to the layer 1. (2) The tester doesn't look after T3 duration. (3) IUT should send INFO 1 within TWAIT. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD11F3_RX_I0				
Identifier:	AD11F3_RX_I0				
Purpose:	To check that IUT stays in state F3 when receiving INFO 0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TNOAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F3				
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments: References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD12F3_RX_I2				
Identifier:	AD12F3_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TRESP_I2		I3_BASIC	(P)	
8	+CHECK_F6				IUT in F6
Extended Comments: References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD13F3_RX_I4				
Identifier:	AD13F3_RX_I4				
Purpose:	To check that IUT is brought to state F7 when receiving INFO 4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TAC		I3_BASIC	(P)	
8	+CHECK_F7				IUT in F7
Extended Comments: References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD14F3_RX_IX				
Identifier:	AD14F3_RX_IX				
Purpose:	To check that IUT stays in F3 state when receiving INFO X.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TNOAC				
3	+SendIX	L1			
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F3				
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments: References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F3/AD15F3_CHK_T3				
Identifier:	AD15F3_CHK_T3				
Purpose:	To check expiry of T3 in state F3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_0	L1	I0		
5	?TIMEOUT TWAIT			F	
6	L?Info_0		I0		
7	L!Info_0		I0		
8	GOTO L1				
9	L?Info_1 CANCEL TWAIT		I1		IUT in F4
10	START TRESP_I2, START T3_S				
11	L!Info_n	L2	I2		
12	?TIMEOUT TRESP_I2				
13	CANCEL T3_S			F	(3)
14	?TIMEOUT T3_S				
15	CANCEL TRESP_I2			F	
16	L?Info_1		I1		
17	GOTO L2				
18	L?Info_0		I0		
19	GOTO L2				
20	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
21	L!Info_0	L3	I0		
22	?TIMEOUT T3_S			F	(2)
23	L?Info_3		I3_BASIC		
24	GOTO L3				
25	L?Info_0		I0		IUT in F3
26	L!Info_0	L4	I0		
27	?TIMEOUT T3_S			(P)	
28	+CHECK_F3				
29	L?Info_0		I0		
30	GOTO L4				

Extended Comments:
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.
(2) T3 is lower than T3_S .
(3) IUT should answer to INFO 2 within TRESP_I2.
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F3/CPF3MPHIID				
Identifier:	CPF3MPHIID				
Purpose:	To check that IUT sends a MPH-II(d) primitive in case of disapearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI]				
2	+PRE_F3_CP				
3	Lp!POWER_PS START TNOAC		PS_OFF		(1)
4	+SendIX	L1			
5	?TIMEOUT TNOAC				
6	Lp!POWER_PS START T3_S		PS_ON		
7	+SendIX	L2			
8	?TIMEOUT T3_S				
9	START TAC				(2)
10	L!Info_n	L3	I4_BASIC		
11	?TIMEOUT TAC			F	
12	L?Info_0		I0		
13	GOTO L3				
14	L?Info_3		I3_BASIC		
15	CANCEL TAC			(P)	
16	+CHK_DDE_TEI				(3)
17	L?Info_0		I0		
18	GOTO L2				
19	L?OTHERWISE				
20	GOTO L1				
Extended Comments:					
(1) IUT is in state F1.1 and a MPHII(d) shall be sent from the layer 1 to the layer 2.					
(2) IUT shall answer to INFO 4 within 100ms.					
(3) IUT must ask for an another TEI.					
References to Requirements: Subclause 9.4.2.3.1 Subclause 10.5.4.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F3/CPF3PHAI				
Identifier:	CPF3PHAI				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3_CP				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TAC		I3_BASIC	(P)	IUT in F7
8	+CHK_F7_PHAIa				(1)
Extended Comments:					
(1) To check if IUT is ready at layer 2.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4 Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD16aF4_PS_off				
Identifier:	AD16aF4_PS_off				
Purpose:	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR PC_DE]				
2	+PRE_F4				(1)
3	READTIMER T3_S(CHRONO)				
4	[CHRONO < T3]				
5	Lp!POWER_PS		PS_OFF		
6	CANCEL T3_S			(P)	
7	+CHECK_F1				(2)
8	[CHRONO >= T3]			F	
9	CANCEL T3_S				
Extended Comments: (1)Timer T3_S is started in the preamble. (2) IUT is in state F1 or F1.1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD16bF4_LP_off				
Identifier:	AD16bF4_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F4				(2)
3	READTIMER T3_S(CHRONO)				
4	[CHRONO < T3]				
5	Lp!POWER_LP		LP_OFF		(3)
6	CANCEL T3_S			(P)	
7	+CHECK_F1				
8	[CHRONO >= T3]			F	
9	CANCEL T3_S				
Extended Comments: (1) For locally powered IUT. (2)Timer T3_S is started in the preamble. (3)IUT is in state F1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD17F4_RX_I0				
Identifier:	AD17F4_RX_I0				
Purpose:	To check that IUT stays in state F4 when receiving INFO 0 during T3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	L!Info_0	L1	I0		
3	?TIMEOUT T3_S			F	
4	L?Info_1		I1		
5	GOTO L1				
6	L?Info_0		I0		
7	L!Info_0	L2	I0		
8	?TIMEOUT T3_S			(P)	
9	+CHECK_F3				
10	L?Info_0		I0		
11	GOTO L2				
Extended Comments:					
(1) Timer T3_S is started in preamble.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD18F4_RX_I2				
Identifier:	AD18F4_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2 in state F4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2				(2)
5	CANCEL T3_S			F	
6	?TIMEOUT T3_S				
7	CANCEL TRESP_I2			F	
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_1		I1		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
13	CANCEL T3_S			(P)	
14	+CHECK_F6				
Extended Comments:					
(1) Timer T3_S is started in preamble.					
(2) A TE in state F4 shall answer to INFO 2 within 100ms.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD19F4_RX_I4				
Identifier:	AD19F4_RX_I4				
Purpose:	To check that IUT is activated when receiving INFO 4 in state F4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC CANCEL T3_S			F	(2)
5	?TIMEOUT T3_S				
6	CANCEL TAC			F	
7	L?Info_1		I1		
8	GOTO L1				
9	L?Info_0		I0		
10	GOTO L1				
11	L?Info_3 CANCEL TAC		I3_BASIC		
12	CANCEL T3_S			(P)	
13	+CHECK_F7				
Extended Comments:					
(1) Timer T3_S is started in preamble.					
(2) IUT must send INFO 3 within TAC.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F4/AD21F4_CHK_T3				
Identifier:	AD21F4_CHK_T3				
Purpose:	To check T3 in state F4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	L!Info_0	L1	I0		
3	?TIMEOUT T3_S			F	
4	L?Info_1		I1		
5	GOTO L1				
6	L?Info_0		I0		
7	L!Info_0	L2	I0		
8	?TIMEOUT T3_S			(P)	
9	+CHECK_F3				
10	L?Info_0		I0		
11	GOTO L2				
Extended Comments:					
(1) Timer T3_S is started in preamble.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F4/CPF4MPHIID				
Identifier:	CPF4MPHIID				
Purpose:	To check that IUT sends a MPH-II(d) primitive in case of disapearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI]				
2	+PRE_F4_CP				(1)
3	Lp!POWER_PS		PS_OFF		(2)
4	+SendIX	L1			
5	?TIMEOUT T3_S				
6	Lp!POWER_PS START T3_S		PS_ON		
7	+SendIX	L2			
8	?TIMEOUT T3_S				
9	START TAC				(3)
10	L!Info_n	L3	I4_BASIC		
11	?TIMEOUT TAC			F	
12	L?Info_0		I0		
13	GOTO L3				
14	L?Info_3		I3_BASIC		
15	CANCEL TAC			(P)	
16	+CHK_DDE_TEI				(4)
17	L?Info_0		I0		
18	GOTO L2				
19	L?Info_0		I0		
20	GOTO L1				

Extended Comments:
(1) T3_S is already started in the preamble.
(2) IUT is in state F1.1 and a MPHII(d) shall be sent from the layer 1 to the layer 2.
(3) IUT shall answer to INFO 4 within 100ms.
(4) IUT must ask for an another TEI.
References to Requirements: Subclause 9.4.2.3.1 Subclause 10.5.4.2

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F4/CPF4PHAI				
Identifier:	CPF4PHAI				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F4 .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC				
5	CANCEL T3_S			F	(3)
6	?TIMEOUT T3_S				
7	CANCEL TAC			F	
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3 CANCEL TAC		I3_BASIC		
13	CANCEL T3_S			(P)	
14	+CHK_F7_PHAIb				(2)
Extended Comments:					
(1) Timer T3_S is started in preamble.					
(2) To check if IUT is ready at layer 2.					
(3) IUT must send INFO 3 within TAC.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4. Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F4/CPF4PHDI_T3exp				
Identifier:	CPF4PHDI_T3exp				
Purpose:	To check that IUT sends a PH-DI on T3 expiry.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	L!Info_0	L1	I0		
3	?TIMEOUT T3_S			F	
4	L?Info_1		I1		IUT still in F4
5	GOTO L1				
6	L?Info_0		I0		IUT back in F3
7	L!Info_0	L2	I0		
8	?TIMEOUT T3_S			(P)	(2)
9	+CHECK_F3				
10	L?Info_0		I0		
11	GOTO L2				
Extended Comments:					
(1) A PH-AR primitive has been sent and T3_S is started.					
(2) IUT shall send a PH-DI primitive on T3 expiry.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F4/CPF4Tlayer2				
Identifier:	CPF4Tlayer2				
Purpose:	To check that IUT doesn't set on a layer 2 timer in the same time as T3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				
2	+PRE_F4_CP				(1)
3	START T3_M				
4	L!Info_0	L1	I0		
5	?TIMEOUT T3_M				(2)
6	START TNOAC				
7	L!Info_n	L2	I4_BASIC		
8	?TIMEOUT TNOAC			F	(3)
9	L?Info_0		I0		
10	GOTO L2				
11	L?Info_1		I1		IUT still in F4
12	GOTO L2				
13	L?Info_3		I3_LAP_D		
14	CANCEL TNOAC			P	
15	L?Info_3		I3_BASIC		
16	GOTO L2				
17	L?Info_1		I1		IUT still in F4
18	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive has been sent and T3_S is started.					
(2) IUT shall send a PH-DI primitive on T3 expiry.					
(3) T3 goes on. A timer was set on in upper layers.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD22aF5_PS_off				
Identifier:	AD22aF5_PS_off				
Purpose:	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR PC_DE]				
2	+PRE_F5				
3	READTIMER T3_S(CHRONO)				
4	[CHRONO < T3]				
5	Lp!POWER_PS		PS_OFF		(1)
6	CANCEL T3_S			(P)	
7	+CHECK_F1				
8	[CHRONO >= T3]			F	
9	CANCEL T3_S				
Extended Comments:					
(1) IUT is in state F1 or F1.1					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD22bF5_LP_off				
Identifier:	AD22bF5_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F5				
3	READTIMER T3_S(CHRONO)				
4	[CHRONO < T3]				
5	Lp!POWER_LP		LP_OFF		(2)
6	CANCEL T3_S			(P)	
7	+CHECK_F1				
8	[CHRONO >= T3]			F	
9	CANCEL T3_S				
Extended Comments: (1) For locally powered IUT. References to Requirements: Subclause 9.4.2.3.1. (2) IUT is in state F1 or F1.0 .					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD23F5_RX_I0				
Identifier:	AD23F5_RX_I0				
Purpose:	To check that IUT stays in state F5 when receiving INFO 0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5				
2	L!Info_0	L1	I0		
3	?TIMEOUT T3_S			(P)	
4	+CHECK_F3				
5	L?Info_0		I0		
6	GOTO L1				
Extended Comments: References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD24F5_RX_I2				
Identifier:	AD24F5_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2 in state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5				
2	START TRESP_I2				
3	L!Info_n	L1	I2		IUT in F5
4	?TIMEOUT TRESP_I2				
5	CANCEL T3_S			F	(1)
6	?TIMEOUT T3_S				
7	CANCEL TRESP_I2			F	
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_3 CANCEL TRESP_I2		I3_BASIC	(P)	IUT in F6
11	CANCEL T3_S				
12	+CHECK_F6				
Extended Comments:					
(1) A TE in state F4 shall answer to INFO 2 within 100ms.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD25F5_RX_I4				
Identifier:	AD25F5_RX_I4				
Purpose:	To check that IUT is activated when receiving INFO 4 in state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC				(1)
5	CANCEL T3_S			F	
6	?TIMEOUT T3_S				
7	CANCEL TAC			F	
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_3 CANCEL TAC		I3_BASIC		
11	CANCEL T3_S			(P)	
12	+CHECK_F7				
Extended Comments:					
(1) IUT is sending INFO 0 and must send INFO 3 within TAC.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD26F5_RX_IX				
Identifier:	AD26F5_RX_IX				
Purpose:	To check that IUT stays in F5 after receiving INFO X during T3 and return to state F3 after expiry of T3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5				
2	+SendIX	L1			
3	?TIMEOUT T3_S			(P)	(2)
4	+CHECK_F3				
5	L?Info_0		I0		(1)
6	GOTO L1				
Extended Comments: (1) IUT in state F5 is already sending INFO 0. (2) T3_S is already started in preamble. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F5/AD27F5_CHK_T3				
Identifier:	AD27F5_CHK_T3				
Purpose:	To check expiry of T3 in state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5				
2	+SendIX	L1			
3	?TIMEOUT T3_S			(P)	(1)
4	+CHECK_F3				
5	L?Info_0		I0		
6	GOTO L1				
Extended Comments: (1) T3_S is already started in preamble. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F5/CPF5MPHIID				
Identifier:	CPF5MPHIID				
Purpose:	To check that IUT sends a MPH-II(d) primitive in case of disapearance of PS .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI]				
2	+PRE_F5_CP				(1)
3	Lp!POWER_PS		PS_OFF		(2)
4	+SendIX	L1			
5	?TIMEOUT T3_S				
6	Lp!POWER_PS START T3_S		PS_ON		
7	+SendIX	L2			
8	?TIMEOUT T3_S				
9	START TAC				(3)
10	L!Info_n	L3	I4_BASIC		
11	?TIMEOUT TAC			F	
12	L?Info_0		I0		
13	GOTO L3				
14	L?Info_3		I3_BASIC		
15	CANCEL TAC			(P)	
16	+CHK_DDE_TEI				(4)
17	L?Info_0		I0		
18	GOTO L2				
19	L?Info_0		I0		
20	GOTO L1				
Extended Comments:					
(1) T3_S is already started in the preambule.					
(2) IUT is in state F1.1 and a MPHII(d) shall be sent from the layer 1 to the layer 2.					
(3) IUT shall answer to INFO 4 within 100ms.					
(4) IUT must ask for an another TEI.					
References to Requirements: Subclause 9.4.2.3.1 Subclause 10.5.4.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F5/CPF5PHAI				
Identifier:	CPF5PHAI				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F5 .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5_CP				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC				
5	CANCEL T3_S			F	(2)
6	?TIMEOUT T3_S				
7	CANCEL TAC			F	
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_3 CANCEL TAC		I3_BASIC		
11	CANCEL T3_S			(P)	
12	+CHK_F7_PHAIb				(1)
Extended Comments:					
(1) To check if IUT is ready at layer 2.					
(2) IUT is sending INFO 0 and must send INFO 3 within TAC.					
References to Requirements: Subclauses 9.4.2.3.1 , 9.4.2.4. Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F5/CPF5PHDI_I0T3				
Identifier:	CPF5PHDI_I0T3				
Purpose:	To check that IUT has no action on receipt of INFO 0 in state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F5_CP				(1)
2	START TAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TAC				
5	START TIMER_1				
6	L!Info_n	L2	I4_BASIC		
7	?TIMEOUT TIMER_1				
8	CANCEL T3_S			F	
9	?TIMEOUT T3_S				
10	CANCEL TIMER_1			F	
11	L?Info_0		I0		
12	GOTO L2				
13	L?Info_3 CANCEL T3_S		I3_LAP_D		
14	CANCEL TIMER_1				
15	(TESTOK ::= TRUE)			P	
16	L?Info_3		I3_BASIC		
17	CANCEL TIMER_1				
18	L!Info_n	L3	I4_BASIC		
19	?TIMEOUT T3_S				
20	(TESTOK ::= FALSE)			F	
21	L?Info_3		I3_LAP_D		
22	(TESTOK ::= TRUE)			P	
23	L?Info_3		I3_BASIC		
24	GOTO L3				
25	L?Info_0		I0		
26	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive has been sent and T3_S is started.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F5/CPF5PHDI_T3expa				
Identifier:	CPF5PHDI_T3expa				
Purpose:	To check that IUT sends a PH-DI on T3 expiry.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TESTOK]				
2	+PRE_F5_CP				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT T3_S			(P)	(2)
5	+CHECK_F3				
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive has been sent and T3_S is started.					
(2) IUT shall send a PH-DI primitive on T3 expiry.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F5/CPF5PHDI_T3expb				
Identifier:	CPF5PHDI_T3expb				
Purpose:	To check that IUT sends a PH-DI on T3 expiry.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT TESTOK]				
2	+PRE_F5_CP				(1)
3	+SendIX	L1			
4	?TIMEOUT T3_S				(2)
5	START TIMER_1				
6	L!Info_n	L2	I4_BASIC		
7	?TIMEOUT TIMER_1			F	
8	L?Info_0		I0		
9	GOTO L2				
10	L?Info_3		I3_LAP_D	F	
11	L?Info_3		I3_BASIC		
12	CANCEL TIMER_1				
13	START TNOAC				
14	L!Info_n	L3	I4_BASIC		
15	?TIMEOUT TNOAC			P	
16	L?Info_3		I3_LAP_D	F	
17	L?Info_3		I3_BASIC		
18	GOTO L3				
19	L?Info_0		I0		
20	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive has been sent and T3_S is started.					
(2) IUT shall send a PH-DI primitive on T3 expiry.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD28aF6_PS_off				
Identifier:	AD28aF6_PS_off				
Purpose:	To check that IUT is brought to state F1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS]				
2	+PRE_F6				
3	Lp!POWER_PS		PS_OFF	(P)	(1)
4	+CHECK_F1				
Extended Comments:					
(1) IUT is in state F1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD28bF6_LP_off				
Identifier:	AD28bF6_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F6				
3	Lp!POWER_LP		LP_OFF	(P)	(2)
4	+CHECK_F1				
Extended Comments: (1) For locally powered IUT. (2) IUT is in state F1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD28cF6_PS_off				
Identifier:	AD28cF6_PS_off				
Purpose:	To check that IUT stays in state F6 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				(1)
2	+PRE_F6				
3	Lp!POWER_PS		PS_OFF	(P)	(2)
4	+CHECK_F6				
Extended Comments: (1) For locally powered IUT using connected detector. (2) IUT stays in state F6. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD29F6_Lostfr				
Identifier:	AD29F6_Lostfr				
Purpose:	To check that IUT is brought to state F8 in case of lost framing.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	(1)
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	
8	+CHECK_F8				
Extended Comments: (1) Tester should send INFO X only twice to bring IUT in state F8, but checking it is not the aim of this test. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD30F6_PH_AR				
Identifier:	AD30F6_PH_AR				
Purpose:	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_n	L1	I2		
5	?TIMEOUT TWAIT			(P)	
6	+CHECK_F6				
7	L?Info_3		I3_BASIC		
8	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD31F6_RX_I0				
Identifier:	AD31F6_RX_I0				
Purpose:	To check that IUT is brought to state F3 when receiving INFO 0 in state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	START TAC				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	
8	+CHECK_F3				
Extended Comments:					
(1) IUT must be brought to state F3 within TAC.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD32F6_RX_I2				
Identifier:	AD32F6_RX_I2				
Purpose:	To check that IUT stays in state F6 when receiving INFO 2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	START TNOAC				
3	L!Info_n	L1	I2		
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F6				
6	L?Info_3		I3_BASIC		(1)
7	GOTO L1				
Extended Comments:					
(1) IUT is already sending INFO 3.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD33F6_RX_I4				
Identifier:	AD33F6_RX_I4				
Purpose:	To check that IUT is activated when receiving INFO 4 in state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		(1)
4	?TIMEOUT TAC			(P)	
5	+CHECK_F7				
6	L?Info_3		I3_BASIC		
7	GOTO L1				
Extended Comments:					
(1) There is no timer because IUT can't send anything else than INFO 3.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F6/AD34F6_CHK_T3				
Identifier:	AD34F6_CHK_T3				
Purpose:	To check expiry of T3 in state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				
7	CANCEL T3_S			F	(2)
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_1		I1		
11	GOTO L1				
12	L?Info_3		I3_BASIC		IUT in F6
13	CANCEL TRESP_I2				
14	L!Info_n	L2	I2		
15	?TIMEOUT T3_S			(P)	
16	+CHECK_F6				
17	L?Info_3		I3_BASIC		
18	GOTO L2				
Extended Comments:					
(1) Timer T3_S is started in preamble.					
(2) A TE in state F4 shall answer to Info2 within 100ms .					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHAIa				
Identifier:	CPF6PHAIa				
Purpose:	To check that IUT is brought to state F7 when receiving INFO 4 in state F6 and that a PH-AI primitive is sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6_CP				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			(P)	
5	+CHK_F7_PHAIa				(1)
6	L?Info_3		I3_BASIC		
7	GOTO L1				
Extended Comments:					
(1) To check if IUT is ready at layer 2.					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHAIb				
Identifier:	CPF6PHAIb				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F6 during T3 .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				
7	CANCEL T3_S			F	
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
13	(k ::= 1)				
14	L!Info_n	L2	I4_BASIC		
15	(k ::= k + 1)				
16	L?Info_3		I3_BASIC		
17	[k < 3]				
18	GOTO L2				
19	[k = 3]				
20	CANCEL T3_S			(P)	
21	+CHK_F7_PHAIb				(2)
Extended Comments:					
(1) Timer T3_S is started in the preamble.					
(2)To check if IUT is ready at layer 2.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4 Subclauses 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHDI_T3exp				
Identifier:	CPF6PHDI_T3exp				
Purpose:	To check that IUT sends a PH-DI on T3 expiry.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				
7	CANCEL T3_S			F	
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3		I3_BASIC		IUT in F6
13	CANCEL TRESP_I2				
14	L!Info_n	L2	I2		
15	?TIMEOUT T3_S				(2)
16	START TNOAC				
17	L!Info_n	L3	I4_BASIC		
18	?TIMEOUT TNOAC			(P)	
19	+CHK_F7_PHAIa				
20	L?Info_3		I3_LAP_D	F	
21	L?Info_3		I3_BASIC		
22	GOTO L3				
23	L?Info_3		I3_BASIC		
24	GOTO L2				

Extended Comments:
(1) A PH-AR primitive has been sent and timer T3_S is started.
(2) IUT shall send a PH-DI primitive on T3 expiry.
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4 Subclauses 10.6.2.1 ; 10.4.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHDI_I0T3				
Identifier:	CPF6PHDI_I0T3				
Purpose:	To check that IUT goes from F6 to F3 on receipt of I0 while T3 is set on.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				
7	CANCEL T3_S			F	
8	L?Info_0		I0		
9	GOTO L1				
10	L?Info_1		I1		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
13	L!Info_0	L2	I0		
14	?TIMEOUT T3_S			F	
15	L?Info_3		I3_BASIC		IUT still in F6
16	GOTO L2				
17	L?Info_0		I0	(P)	IUT in F3
18	+SendI4_I0T3				
Extended Comments:					
(1) T3_S is already started in preamble.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.4 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHDI_I0				
Identifier:	CPF6PHDI_I0				
Purpose:	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6_CP				
2	START TAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	
8	+CHECK_F3				
Extended Comments:					
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHARa				
Identifier:	CPF6PHARa				
Purpose:	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				
2	+PRE_F6_CP				
3	[USERCALL]				(1)
4	START TWAIT				
5	L!Info_n	L1	I2		
6	?TIMEOUT TWAIT				(2)
7	[PX_T_APPLI1 > 0]				
8	START T_APPLI1				
9	L!Info_n	L2	I2		
10	?TIMEOUT T_APPLI1			(P)	
11	+D_WATCH				(3)
12	L?Info_3		I3_BASIC		
13	GOTO L2				
14	[PX_T_APPLI1 = 0]			(P)	
15	+D_WATCH				(3)
16	L?Info_3		I3_BASIC		
17	GOTO L1				

Extended Comments:
(1) A PH-AR primitive shall have been sent but layer 1 stays inactivated (no PH-AI primitive sent).
(2) No action during TWAIT : IUT stays in F6.
(3) A PH-AI primitive shall be sent to layer 2.
References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.2.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F6/CPF6PHARb				
Identifier:	CPF6PHARb				
Purpose:	To check that a PH-AR generates no action from IUT in state F6 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				
2	+PRE_F7_CP				
3	START TAC				
4	L!Info_n	L1	I2		
5	?TIMEOUT TAC				IUT in F6
6	[USERCALL]				(1)
7	START TWAIT				
8	L!Info_n	L2	I2		
9	?TIMEOUT TWAIT				(2)
10	[PX_T_APPLI1 > 0]				
11	START T_APPLI1				
12	L!Info_n	L3	I2		
13	?TIMEOUT T_APPLI1			(P)	
14	+D_WATCH				(3)
15	L?Info_3		I3_BASIC		
16	GOTO L3				
17	[PX_T_APPLI1 = 0]				
18	START T_BLK2				
19	L!Info_n	L4	I2		
20	?TIMEOUT T_BLK2			(P)	
21	+D_WATCH				(3)
22	L?Info_3		I3_BASIC		
23	GOTO L4				
24	L?Info_3		I3_BASIC		
25	GOTO L2				
26	L?Info_3		I3_BASIC		
27	GOTO L1				
Extended Comments: (1) A PH-AR primitive shall have been sent but layer 1 stays inactivated (no PH-AI primitive sent). (2) No action during TWAIT : IUT stays in F6. (3) A PH-AI primitive shall be sent to layer 2. References to Requirements: Subclause 9.4.2.3.1 Subclauses 10.6.1.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD35aF7_PS_off				
Identifier:	AD35aF7_PS_off				
Purpose:	To check that IUT is brought to state F1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS]				
2	+PRE_F7				
3	Lp!POWER_PS		PS_OFF	(P)	(1)
4	+CHECK_F1				
Extended Comments: (1) IUT is in state F1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD35bF7_LP_off				
Identifier:	AD35bF7_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F7				
3	Lp!POWER_LP		LP_OFF	(P)	(2)
4	+CHECK_F1				
Extended Comments: (1) For locally powered IUT. (2) IUT is in state F1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD35cF7_PS_off				
Identifier:	AD35cF7_PS_off				
Purpose:	To check that IUT stays in state F7 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				(1)
2	+PRE_F7				
3	Lp!POWER_PS		PS_OFF	(P)	(2)
4	+CHECK_F7				
Extended Comments: (1) For locally powered IUT using connected detector. (2) IUT stays in state F7. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD36F7_Lostfr				
Identifier:	AD36F7_Lostfr				
Purpose:	To check that IUT goes to state F8 after receiving INFO X.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	(1)
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	IUT in state F8
8	+CHECK_F8				
Extended Comments: (1) IUT must must be brought to state F8 before TAC expiry. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD37F7_RX_I0				
Identifier:	AD37F7_RX_I0				
Purpose:	To check that IUT is brought to state F3 when receiving INFO 0 in state F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TAC				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0		
8	START TCDmax				
9	L!Info_0	L2	I0		
10	?TIMEOUT TCDmax			(P)	
11	+CHECK_F3				
12	L?Info_0		I0		
13	GOTO L2				
Extended Comments:					
(1) IUT must be brought to state F3 within TAC.					
References to Requirements: Subclauses 9.4.2.3.1 ; 9.4.2.5					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD38F7_RX_I2				
Identifier:	AD38F7_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2 in state F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TAC				
3	L!Info_n	L1	I2		
4	?TIMEOUT TAC			(P)	
5	+CHECK_F6				
6	L?Info_3		I3_BASIC		(1)
7	GOTO L1				
Extended Comments:					
(1) IUT is already sending INFO 3.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F7/AD39F7_RX_I4				
Identifier:	AD39F7_RX_I4				
Purpose:	To check that IUT stays in state F7 when receiving INFO 4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TNOAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F7				
6	L?Info_3		I3_BASIC		(1)
7	GOTO L1				
Extended Comments:					
(1) IUT is already sending INFO 3.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F7/CPF7PHDI_I0				
Identifier:	CPF7PHDI_I0				
Purpose:	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_CP				
2	START TAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC, START T4		I0		
8	L!Info_0	L2	I0		
9	?TIMEOUT T4			(P)	
10	+CHECK_F3				
11	L?Info_0		I0		
12	GOTO L2				
Extended Comments:					
References to Requirements: Subclauses 9.4.2.3.1 ; 10.6.2.1 ; 10.4.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F7/CPF7DIS_I2				
Identifier:	CPF7DIS_I2				
Purpose:	To check that the layer 2 status is still 7.0 after layer 1 disturbance.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_COM				
2	START T_APPLI2				
3	START TAC				
4	L!Info_n	L1	I2		
5	?TIMEOUT TAC				IUT in F6
6	+Still_F6				IUT stays in F6
7	START TAC				
8	L!Info_n	L2	I4_BASIC		
9	?TIMEOUT T_APPLI2			I	
10	?TIMEOUT TAC			(P)	IUT back to F7
11	CANCEL T_APPLI2				
12	+CHK_F7_L2				(1)
13	L?Info_3		I3_BASIC		
14	GOTO L2				
15	?TIMEOUT T_APPLI2			I	
16	L?Info_3		I3_BASIC		
17	GOTO L1				

Extended Comments:
(1) The layer 2 status shall be 7,0. No PH-DI delivered by layer 1 after disturbance (move from F7/F6/F7).
References to Requirements: Subclause 9.4.2.3.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F7/CPF7DIS_IX				
Identifier:	CPF7DIS_IX				
Purpose:	To check that the layer 2 status is still 7.0 after layer 1 disturbance.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_COM				
2	START T_APPLI2				
3	START TAC				
4	+SendIX	L1			
5	?TIMEOUT T_APPLI2			I	
6	?TIMEOUT TAC			F	
7	L?Info_0 CANCEL TAC		I0		IUT in F8
8	+Still_F8				IUT stays in F8
9	START TAC				
10	L!Info_n	L2	I4_BASIC		
11	?TIMEOUT T_APPLI2			I	
12	?TIMEOUT TAC			F	
13	L?Info_3		I3_BASIC	(P)	IUT back to F7
14	CANCEL TAC, CANCEL T_APPLI2				
15	+CHK_F7_L2				
16	L?Info_0		I0		
17	GOTO L2				
18	L?Info_3		I3_BASIC		
19	GOTO L1				
Extended Comments: (1) The layer 2 status shall be 7,0. No PH-DI delivered by layer 1 after disturbance (move from F7/F6/F7). References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD40aF8_PS_off				
Identifier:	AD40aF8_PS_off				
Purpose:	To check that IUT is brought to state F1 or F1.1 in case of disappearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_PS OR PC_DE]				
2	+PRE_F8				
3	Lp!POWER_PS		PS_OFF	(P)	(1)
4	+CHECK_F1				
Extended Comments: (1) IUT is in state F1 or F1.1. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD40bF8_LP_off				
Identifier:	AD40bF8_LP_off				
Purpose:	To check that IUT is brought to state F1 or F1.0 in case of disappearance of local power.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS]				(1)
2	+PRE_F8				
3	Lp!POWER_LP		LP_OFF	(P)	(2)
4	+CHECK_F1				
Extended Comments:					
(1) For locally powered IUT.					
(2) IUT is in state F1.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD41F8_PH_AR				
Identifier:	AD41F8_PH_AR				
Purpose:	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	[USERCALL]				(1)
3	START TWAIT				
4	+SendIX	L1			
5	?TIMEOUT TWAIT			(P)	
6	+CHECK_F8				
7	L?Info_0		I0		(2)
8	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					
(2) IUT must send nothing if in state F8.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD42F8_RX_I0				
Identifier:	AD42F8_RX_I0				
Purpose:	To check that IUT is brought to state F3 when receiving INFO 0 in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	START TCDmax				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT TCDmax			(P)	
5	+CHECK_F3				
6	L?Info_0		I0		(2)
7	GOTO L1				
Extended Comments:					
(1) IUT must be brought to state F3 within TCDmax.					
(2) IUT is already sending INFO 0 in state F8, then it can't send anything else.					
References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD43F8_RX_I2				
Identifier:	AD43F8_RX_I2				
Purpose:	To check that IUT is brought to state F6 when receiving INFO 2 in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TRESP_I2		I3_BASIC	(P)	
8	+CHECK_F6				
Extended Comments: References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD44F8_RX_I4				
Identifier:	AD44F8_RX_I4				
Purpose:	To check that IUT is activated when receiving INFO 4 in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TAC		I3_BASIC	(P)	(1)
8	+CHECK_F7				
Extended Comments: (1) IUT must send INFO 3 within TAC. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD45F8_RX_IX				
Identifier:	AD45F8_RX_IX				
Purpose:	To check that IUT stays in state F8 when receiving INFO X.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	START TNOAC				
3	+SendIX	L1			
4	?TIMEOUT TNOAC			(P)	
5	+CHECK_F8				
6	L?Info_0		I0		(1)
7	GOTO L1				
Extended Comments: (1) IUT is already sending INFO 0. References to Requirements: Subclause 9.4.2.3.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/AD/F8/AD46F8_CHK_T3				
Identifier:	AD46F8_CHK_T3				
Purpose:	To check expiry of T3 in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2				
5	CANCEL T3_S			F	(2)
6	?TIMEOUT T3_S				
7	CANCEL TRESP_I2			F	
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in state F6
13	+SendIX	L2			
14	?TIMEOUT T3_S			F	
15	L?Info_3		I3_BASIC		
16	GOTO L2				
17	L?Info_0		I0		
18	+SendIX	L3			
19	?TIMEOUT T3_S				
20	L!Info_0		I0	(P)	
21	+CHECK_F3				IUT must return to F3
22	L?Info_0		I0		
23	GOTO L3				

Extended Comments:
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.
(2) A TE in state F5 shall answer to INFO 2 within 100ms.
References to Requirements: Subclauses 9.4.2.3.1; 9.4.2.4

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8MPHIIDa				
Identifier:	CPF8MPHIIDa				
Purpose:	To check that IUT sends a MPH-II(d) primitive in case of disapearance of PS .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI]				
2	+PRE_F8_CP				
3	Lp!POWER_PS		PS_OFF		(1)
4	START TNOAC				
5	+SendIX	L1			
6	?TIMEOUT TNOAC				
7	Lp!POWER_PS START T3_S		PS_ON		
8	+SendIX	L2			
9	?TIMEOUT T3_S				
10	START TAC				(2)
11	L!Info_n	L3	I4_BASIC		
12	?TIMEOUT TAC			F	
13	L?Info_0		I0		
14	GOTO L3				
15	L?Info_3		I3_BASIC		
16	CANCEL TAC			(P)	
17	+CHK_DDE_TEI				(3)
18	L?Info_0		I0		
19	GOTO L2				
20	L?OTHERWISE				
21	GOTO L1				

Extended Comments:

(1) IUT is in state F1.1 and a MPHII(d) shall be sent from the layer 1 to the layer 2.
(2) IUT shall answer to INFO 4 within 100ms.
(3) IUT must ask for an another TEI.
References to Requirements: Subclauses 9.4.2.3.1; 10.5.4.2

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8MPHIIDb				
Identifier:	CPF8MPHIIDb				
Purpose:	To check that IUT sends a MPH-II(d) primitive in case of disapearance of power S.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE AND TEI_ON AND PC_AUTOMAT_TEI]				
2	+PRE_F4_CP				(1)
3	L!Info_n START TRESP_I2	L1	I2		
4	?TIMEOUT T3_S CANCEL TRESP_I2			F	
5	?TIMEOUT TRESP_I2				
6	CANCEL T3_S			F	
7	L?Info_0		I0		
8	GOTO L1				
9	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
10	START TAC				
11	+SendIX	L2			
12	?TIMEOUT TAC CANCEL T3_S			F	
13	?TIMEOUT T3_S CANCEL TAC			F	
14	L?Info_3		I3_BASIC		
15	GOTO L2				
16	L?Info_0 CANCEL TAC		I0		(2) IUT in F8
17	Lp!POWER_PS		PS_OFF		(3)
18	+SendIX	L3			
19	?TIMEOUT T3_S				
20	Lp!POWER_PS START T3_S		PS_ON		
21	+SendIX	L4			
22	?TIMEOUT T3_S				
23	L!Info_n START TAC	L5			
24	?TIMEOUT TAC			F	(4)
25	L?Info_0		I0		
26	GOTO L5				
27	L?Info_3 CANCEL TAC		I3_BASIC	(P)	
28	+CHK_DDE_TEI				(5)
29	L?Info_0		I0		
30	GOTO L4				
31	L?Info_0		I0		
32	GOTO L3				

Extended Comments:
(1) T3_S is already started in the preambule.
(2) IUT goes in state F8 without going by F7.
(3) IUT is in state F1.1 and a MPHII(d) shall be sent from the layer 1 to the layer 2.
(4) IUT shall answer to INFO 4 within 100ms.
(5) IUT must ask for an another TEI.
References to Requirements: Subclauses 9.4.2.3.1; 9.4.2.4; 10.5.4.2

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHAIb				
Identifier:	CPF8PHAIb				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F8 .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6_CP				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0		IUT in F8
8	START TAC				
9	L!Info_n	L2	I4_BASIC		
10	?TIMEOUT TAC			F	
11	L?Info_0		I0		
12	GOTO L2				
13	L?Info_3 CANCEL TAC		I3_BASIC	(P)	
14	+CHK_F7_PHAIa				(1)
Extended Comments:					
(1) To check if IUT is ready at layer 2.					
References to Requirements: Subclauses 9.4.2.3.1; 10.6.1.2 ; 10.5.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHAIc				
Identifier:	CPF8PHAIc				
Purpose:	To check that IUT sends a PH-AI primitive when receiving INFO 4 in state F8 during T3 .				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S CANCEL TRESP_I2			F	
5	?TIMEOUT TRESP_I2				
6	CANCEL T3_S			F	
7	L?Info_1		I1		
8	GOTO L1				
9	L?Info_0		I0		
10	GOTO L1				
11	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in F6
12	START TAC				
13	+SendIX	L2			
14	?TIMEOUT TAC CANCEL T3_S			F	
15	?TIMEOUT T3_S CANCEL TAC			F	
16	L?Info_3		I3_BASIC		
17	GOTO L2				
18	L?Info_0 CANCEL TAC		I0		(2) IUT in F8
19	START TNOAC				
20	L!Info_n	L3	I4_BASIC		
21	?TIMEOUT TNOAC				
22	CANCEL T3_S			F	
23	L?Info_0		I0		
24	GOTO L3				
25	L?Info_3		I3_BASIC		(3)
26	CANCEL TNOAC				
27	CANCEL T3_S			(P)	
28	+CHK_F7_PHAIb				(4)

Extended Comments:
(1) Timer T3_S is started in the preamble .
(2) IUT goes in F8 without going by F7.
(3) IUT must send INFO 3 within TNOAC.
(4) To check if IUT is ready at layer 2.
References to Requirements: Subclauses 9.4.2.3.1; 9.4.2.4 ; 10.6.1.2; 10.5.2

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHDI_T3exp				
Identifier:	CPF8PHDI_T3exp				
Purpose:	To check that IUT return to F3 on T3 expiry.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				(2)
7	CANCEL T3_S			F	
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in state F6
13	+SendIX	L2			
14	?TIMEOUT T3_S			F	
15	L?Info_3		I3_BASIC		
16	GOTO L2				
17	L?Info_0		I0		
18	+SendIX	L3			
19	?TIMEOUT T3_S				
20	L!Info_0		I0	(P)	
21	+CHECK_F3				
22	L?Info_0		I0		IUT still in F8
23	GOTO L3				

Extended Comments:
(1) T3_S is already started in preamble.
(2) A TE in state F5 shall answer to INFO 2 within 100ms.
References to Requirements: Subclauses 9.4.2.3.1; 9.4.2.4; 10.6.2.1; 10.4.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHDI_I0T3				
Identifier:	CPF8PHDI_I0T3				
Purpose:	To check that IUT goes from F8 to F3 on receipt of I0 while T3 is set on.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4_CP				(1)
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT T3_S				
5	CANCEL TRESP_I2			F	
6	?TIMEOUT TRESP_I2				
7	CANCEL T3_S			F	(3)
8	L?Info_1		I1		
9	GOTO L1				
10	L?Info_0		I0		
11	GOTO L1				
12	L?Info_3 CANCEL TRESP_I2		I3_BASIC		IUT in state F6
13	+SendIX	L2			
14	?TIMEOUT T3_S			F	
15	L?Info_3		I3_BASIC		
16	GOTO L2				
17	L?Info_0 START T4		I0		IUT is in F8
18	L!Info_0	L3	I0		(2)
19	?TIMEOUT T4			(P)	IUT shall be
20	+SendI4_I0T3				in F3 now
21	?TIMEOUT T3_S				
22	CANCEL T4			F	
23	L?Info_0		I0		
24	GOTO L3				

Extended Comments:
(1) T3_S is already started in preamble.
(2) IUT has 25 ms to go from F8 to F3.
(3) A TE in state F5 shall answer to INFO 2 within 100ms.
References to Requirements: Subclauses 9.4.2.3.1; 9.4.2.4; 10.6.2.1; 10.4.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHDI_I0b				
Identifier:	CPF8PHDI_I0b				
Purpose:	To check that IUT does send a PH-DI primitive upon receipt of INFO 0 in F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6_CP				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0		(1) IUT in F8
8	START T4				
9	L!Info_0	L2	I0		
10	?TIMEOUT T4			(P)	
11	+CHECK_F3				
12	L?Info_0		I0		
13	GOTO L2				

Extended Comments:
(1) Loss of frame alignement: IUT shall be in state F8.
References to Requirements: Subclauses 9.4.2.3.1; 10.6.2.1; 10.4.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHARa				
Identifier:	CPF8PHARa				
Purpose:	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				Only if TEI ass.
2	+PRE_F6_CP				IUT in F6
3	START TAC				
4	+SendIX	L1			
5	?TIMEOUT TAC			F	
6	L?Info_3		I3_BASIC		
7	GOTO L1				
8	L?Info_0 CANCEL TAC		I0		(1) IUT in F8
9	[USERCALL]				(2)
10	START TWAIT				
11	+SendIX	L2			
12	?TIMEOUT TWAIT				(3)
13	[PX_T_APPLI1 > 0]				
14	START T_APPLI1				
15	+SendIX	L3			
16	?TIMEOUT T_APPLI1			(P)	
17	+D_WATCH_F8				(4)
18	L?Info_0		I0		
19	GOTO L3				
20	[PX_T_APPLI1 = 0]			(P)	
21	+D_WATCH_F8				(4)
22	L?Info_0		I0		
23	GOTO L2				

Extended Comments:
(1) No PH-AI primitive has been sent to layer 2.
(2) A PH-AR primitive shall be sent.
(3) No action during TWAIT: IUT stays in F8.
(4) A PH-AI primitive shall be sent to layer 2.
References to Requirements: Subclauses 9.4.2.3.1; 10.6.2.1

Test Case Dynamic Behaviour					
Reference:	ISDN1/CP/F8/CPF8PHARb				
Identifier:	CPF8PHARb				
Purpose:	To check that a PH-AR generates no action from IUT in state F8 but has really been sent.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				Only if TEI ass.
2	+PRE_F8_CP				IUT in F8
3	[USERCALL]				(2)
4	START TWAIT				
5	+SendIX	L1			
6	?TIMEOUT TWAIT				(2)
7	[PX_T_APPLI1 > 0]				
8	START T_APPLI1				
9	+SendIX	L2			
10	?TIMEOUT T_APPLI1			(P)	
11	+D_WATCH_F8				(3)
12	L?Info_0		I0		
13	GOTO L2				
14	[PX_T_APPLI1 = 0]				
15	START T_BLK2				
16	+SendIX	L3			
17	?TIMEOUT T_BLK2			(P)	
18	+D_WATCH_F8				(3)
19	L?Info_0		I0		
20	GOTO L3				
21	L?Info_0		I0		
22	GOTO L1				
Extended Comments:					
(1) A PH-AR primitive shall be sent.					
(2) No action during TWAIT: IUT stays in F8.					
(3) A PH-AI primitive shall be sent to layer 2.					
References to Requirements: Subclauses 9.4.2.3.1; 10.6.1.2					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F3/TIF3info2				
Identifier:	TIF3info2				
Purpose:	To check the value of the TE activation times in the deactivated state.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TIMER_1				(1)
3	L!Info_n	L1	I2		
4	?TIMEOUT TIMER_1			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3		I3_SFL		
8	GOTO L1				
9	L?Info_3 CANCEL TIMER_1		I3_BASIC	P	
Extended Comments:					
(1) Timer duration is 100.250ms. An event is indeed to begin sending a frame or to receive a complete frame from IUT. So the following diagram will explain this duration.					
References to Requirements: Subclause 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F3/TIF3info4				
Identifier:	TIF3info4				
Purpose:	To check the value of the TE activation times in the deactivated state.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TIMER_1				(1)
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TIMER_1			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3		I3_SFL		
8	GOTO L1				
9	L?Info_3 CANCEL TIMER_1		I3_BASIC	P	
Extended Comments: (1) Timer duration is 100.250ms. An event is indeed to begin sending a frame or to receive a complete frame from IUT. So the following diagram will explain this duration. References to Requirements: Subclause 9.4.2.4					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F4/TIF4info2				
Identifier:	TIF4info2				
Purpose:	To check the value of the TE activation times in the waiting for signal state.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F4				
2	START TIMER_1				(1)
3	L!Info_n	L1	I2		
4	?TIMEOUT TIMER_1			F	
5	L?Info_1		I1		
6	READTIMER TIMER_1(CHRONO)				
7	[CHRONO <= TB + TFRAME]				
8	GOTO L1				
9	[CHRONO > TB + TFRAME]				
10	CANCEL TIMER_1			F	(2)
11	L?Info_0		I0		
12	GOTO L1				
13	L?Info_3		I3_SFL		
14	GOTO L1				
15	L?Info_3 CANCEL TIMER_1		I3_BASIC		
16	READTIMER TIMER_1(CHRONO)				
17	[CHRONO <= TB + TFRAME]				
18	[PC_STATE_F5]			F	
19	[NOT PC_STATE_F5]			P	
20	[CHRONO > TB + TFRAME]				
21	[PC_STATE_F5]			P	
22	[NOT PC_STATE_F5]			F	
Extended Comments: (1) Timer duration is 100.250ms. (2) Maximal duration is 5.250ms. References to Requirements: Subclause 9.4.2.4					

Test Case Dynamic Behaviour

Reference: ISDN1/TI/F4/TIF4info4
Identifier: TIF4info4
Purpose: To check the value of the TE activation times in the waiting for signal state.
Default: DEF_1

No	Behaviour Description	L	Cref	V	C
1	+PRE_F4				
2	START TIMER_1				(1)
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TIMER_1			F	
5	L?Info_1		I1		
6	READTIMER TIMER_1(CHRONO)				
7	[CHRONO <= TB + TFRAME]				
8	GOTO L1				
9	[CHRONO > TB + TFRAME]				
10	CANCEL TIMER_1			F	(2)
11	L?Info_0		I0		
12	GOTO L1				
13	L?Info_3		I3_SFL		
14	GOTO L1				
15	L?Info_3 CANCEL TIMER_1		I3_BASIC		
16	READTIMER TIMER_1(CHRONO)				
17	[CHRONO <= TB + TFRAME]				
18	[PC_STATE_F5]			F	
19	[NOT PC_STATE_F5]			P	
20	[CHRONO > TB + TFRAME]				
21	[PC_STATE_F5]			P	
22	[NOT PC_STATE_F5]			F	

Extended Comments:
(1) Timer duration is 100.250ms.
(2) Maximal duration is 5.250ms.
References to Requirements: Subclause 9.4.2.4

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F3/TItimerT3				
Identifier:	TItimerT3				
Purpose:	To check the value of timer T3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_0	L1	I0		
5	?TIMEOUT TWAIT			F	
6	L?Info_0		I0		
7	GOTO L1				
8	L?Info_1 START TIMER_3, CANCEL TWAIT		I1		(2) (3)
9	L!Info_0	L2	I0		
10	?TIMEOUT TIMER_3			F	
11	L?Info_1		I1		
12	GOTO L2				
13	L?Info_0		I0		
14	READTIMER TIMER_3(CHRONO)				(4)
15	CANCEL TIMER_3			P	
Extended Comments:					
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					
(2) State F4.					
(3) Timer duration is 30s, T3 shall not exceed this value.					
(4) Read T3 real value.					
References to Requirements: Subclause 9.4.2.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F6/TIF6physdeact				
Identifier:	TIF6physdeact				
Purpose:	To check the value of the TE deactivation times.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F6				
2	START TIMER_4				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT TIMER_4			F	(3)
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_3		I3_SFAL		
8	GOTO L1				
9	L?Info_0		I0		
10	READTIMER TIMER_4(CHRONO)				(2)
11	[CHRONO < TC]				
12	CANCEL TIMER_4			F	(3)
13	[CHRONO >= TC]				
14	CANCEL TIMER_4			P	(3)
Extended Comments:					
(1) Timer duration is 25.250ms.					
(2) INFO 3 ceases within 250µs to 25ms.					
(3) Elapsed time between reception of INFO 0 and cessation of Info3.					
References to Requirements: Subclause 9.4.2.5					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F7/TIF7physdeact				
Identifier:	TIF7physdeact				
Purpose:	To check the value of the TE deactivation times.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TIMER_4				(1)
3	L!Info_0	L1	I0		
4	?TIMEOUT TIMER_4			F	(3)
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_3		I3_SFAL		
8	GOTO L1				
9	L?Info_0		I0		
10	READTIMER TIMER_4(CHRONO)				(2)
11	[CHRONO < TC]				
12	CANCEL TIMER_4			F	(3)
13	[CHRONO >= TC]				
14	CANCEL TIMER_4			P	(3)
Extended Comments:					
(1) Timer duration is 25.250ms.					
(2) INFO 3 ceases within 250µs to 25ms.					
(3) Elapsed time between reception of INFO 0 and cessation of Info3.					
References to Requirements: Subclause 9.4.2.5					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F7/TIF7compdeact1				
Identifier:	TIF7compdeact1				
Purpose:	To check the value of the timer when leaving state F7 upon the reception of INFO 0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_COM				
2	START TCDmin, START TIMER_4				
3	L!Info_0	L1	I0		
4	?TIMEOUT TIMER_4				
5	CANCEL TCDmin			F	(2)
6	L?Info_3		I3_BASIC		
7	GOTO L1				
8	L?Info_3		I3_SFAL		
9	GOTO L1				
10	L?Info_0 CANCEL TIMER_4		I0		
11	L!Info_0	L2	I0		
12	?TIMEOUT TCDmin				
13	L!Info_n		I4_BASIC	(P)	
14	+CHK_F7_L2				(1)
15	L?Info_0		I0		
16	GOTO L2				
Extended Comments:					
(1) To check that the connection is still established.					
(2) IUT didn't send Info_0 within 25.250ms.					
References to Requirements: Subclause 9.4.2.5.					

Test Case Dynamic Behaviour					
Reference:	ISDN1/TI/F8/TIF8compdeact1				
Identifier:	TIF8compdeact1				
Purpose:	To check the value of the timer when leaving state F8 upon the reception of INFO 0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_COM				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	(3)
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0		(1)
8	START TCDmin				
9	L!Info_0	L2	I0		
10	?TIMEOUT TCDmin				
11	L!Info_n		I4_BASIC	(P)	
12	+CHK_F7_L2				(2)
13	L?Info_0		I0		
14	GOTO L2				
Extended Comments:					
(1) Loss of frame alignment: IUT shall be in state F8.					
(2) To check that the connection is still established.					
(3) Not loss of frame alignment within TAC.					
References to Requirements: Subclause 9.4.2.5.					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfA_1fr				
Identifier:	FAinfA_1fr				
Purpose:	To test that frame alignment is not lost upon receipt of one bad frame.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	L!Info_n		IX_96KHz		
3	L?Info_3		I3_BASIC	(P)	
4	+CHECK_F7				(1)
Extended Comments:					
(1) IUT should stay in state F7.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfB_1fr				
Identifier:	FAinfB_1fr				
Purpose:	To test that frame alignment is not lost upon receipt of one bad frame.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	L!Info_n		IX_I4noflag		
3	L?Info_3		I3_BASIC	(P)	
4	+CHECK_F7				(1)
Extended Comments:					
(1) IUT should stay in state F7.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfD_1fr				
Identifier:	FAinfD_1fr				
Purpose:	To test that frame alignment is not lost upon receipt of one bad frame.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	L!Info_n		IX_I4viol16		
3	L?Info_3		I3_BASIC	(P)	
4	+CHECK_F7				(1)
5	L?Info_3		I3_SFAL	(P)	
6	+CHECK_F7				(1)
Extended Comments:					
(1) IUT should stay in state F7.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfA_kfr				
Identifier:	FAinfA_kfr				
Purpose:	To test the loss of frame alignment.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	(k ::= 0)				
3	L!Info_n (k ::= k + 1)	L1	IX_96KHz		
4	[k < 2]				
5	L?Info_3		I3_BASIC		(1)
6	GOTO L1				
7	[k < 3]				
8	L?Info_3		I3_SFAL		(1)
9	GOTO L1				
10	L?Info_3		I3_BASIC		(1)
11	GOTO L1				
12	[k < 20]				
13	L?OTHERWISE				
14	GOTO L1				
15	[k = 20]				(2)
16	L?Info_0		I0	(P)	
17	+CHECK_F8S				(3)
18	L?Info_3		I3_BASIC	F	
Extended Comments:					
(1) IUT stays in state F7.					
(2) IUT loses frame alignment upon receipt of k bad frames within 5ms.					
(3) IUT should be in state F8.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfB_kfr				
Identifier:	FAinfB_kfr				
Purpose:	To test the loss of frame alignment.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	(k ::= 0)				
3	L!Info_n (k ::= k + 1)	L1	IX_I4noflag		
4	[k < 2]				
5	L?Info_3		I3_BASIC		(1)
6	GOTO L1				
7	[k < 3]				
8	L?Info_3		I3_SFAL		(1)
9	GOTO L1				
10	L?Info_3		I3_BASIC		(1)
11	GOTO L1				
12	[k < 20]				
13	L?OTHERWISE				
14	GOTO L1				
15	[k = 20]				(2)
16	L?Info_0		I0	(P)	
17	+CHECK_F8S				(3)
18	L?Info_3		I3_BASIC	F	
Extended Comments:					
(1) IUT stays in state F7.					
(2) IUT loses frame alignment upon receipt of k bad frames within 5ms.					
(3) IUT should be in state F8.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAinfD_kfr				
Identifier:	FAinfD_kfr				
Purpose:	To test the loss of frame alignment.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	(k ::= 0)				
3	L!Info_n (k ::= k + 1)	L1	IX_I4viol16		
4	[k <= 2]				
5	L?Info_3		I3_SFAL		(1)
6	GOTO L1				
7	L?Info_3		I3_BASIC		(1)
8	GOTO L1				
9	[k < 20]				
10	L?OTHERWISE				
11	GOTO L1				
12	[k = 20]				(2)
13	L?Info_0		I0	(P)	
14	+CHECK_F8S				(3)
15	L?Info_3		I3_BASIC	F	
Extended Comments:					
(1) IUT stays in state F7.					
(2) IUT loses frame alignment upon receipt of k bad frames within 5ms.					
(3) IUT should be in state F8.					
References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/FA/F7/FAregain				
Identifier:	FAregain				
Purpose:	To test regain of frame alignment.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F8				
2	(k ::= 0)				
3	L!Info_n (k ::= k + 1)	L1	I4_BASIC		
4	[k < 3]				
5	L?Info_0		I0		(1)
6	GOTO L1				
7	[k < 100]				
8	L?OTHERWISE				
9	GOTO L1				
10	[k = 100]				
11	L?Info_3		I3_BASIC	(P)	
12	+CHECK_F7				(2)
13	L?Info_0		I0	F	
Extended Comments: (1) IUT stays in state F8. (2) IUT should be in state F7. References to Requirements: Subclause 9.4.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/BC/F7/BCBinaryOne				
Identifier:	BCBinaryOne				
Purpose:	To check the B-channel contains the correct interframe time fill from the TE				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				Preamble
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			P	(1)
5	L?Info_3		I3_B_ONE		
6	GOTO L1				
Extended Comments: (1) Binary ONE in B-channel for at least 100 ms continuously. References to Requirements: Subclause 9.4.5					

Test Case Dynamic Behaviour					
Reference:	ISDN1/DC/F7/DCBinaryOneCL1				
Identifier:	DCBinaryOneCL1				
Purpose:	To check the D-channel contains the correct interframe time fill from the TE for priority class 1.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				Preamble
2	START TAC				
3	Ld!D	L1	D(1)		
4	?TIMEOUT TAC			P	(1)
5	Ld?D		D(1)		
6	GOTO L1				
7	Ld?D		D(0)	F	
Extended Comments: (1) Binary ONE in D-channel for at least 100 ms continuously. References to Requirements: Subclause 9.4.1.1					

Test Case Dynamic Behaviour					
Reference:	ISDN1/DC/F7/DCNormalPL1CL1				
Identifier:	DCNormalPL1CL1				
Purpose:	To test a mismatch at the normal priority level binary 1 for priority class 1.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				Preamble
2	START TLAYER2				
3	+SendSETUP_EMPTY				
4	?TIMEOUT TLAYER2			I	(3)
5	Ld?D	L1	D(1)		Waiting for
6	Ld!E		E(1)		layer 2 frame
7	GOTO L1				
8	Ld?D		D(0)		(1)
9	Ld!E		E(0)		Echo
10	Ld?D (k ::= 0)		D(1)		
11	Ld!E (k ::= k + 1)	L2	E(0)		(2) Mismatch
12	[k < 6]				
13	?TIMEOUT TLAYER2			I	(3)
14	Ld?D		D(1)		
15	GOTO L2				
16	[k = 6]				
17	?TIMEOUT TLAYER2			I	(3)
18	Ld?D		D(1)	P	(4)
19	Ld?D		D(0)	F	
Extended Comments: (1) First bit of the layer 2 flag. (2) IUT shall wait at least 8 bits set to 1 before trying to send a frame again instead going on sending the flag. (3) No layer 2 frame. It may be an upper layer error. (4) IUT didn't go on sending the layer 2 flag of the frame. References to Requirements: Subclause 9.4.1.3					

Test Case Dynamic Behaviour					
Reference:	ISDN1/DC/F7/DCNormalPL0CL1				
Identifier:	DCNormalPL0CL1				
Purpose:	To test a mismatch at the normal priority level binary 0 for priority class 1.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				Preamble
2	START TLAYER2				
3	+SendSETUP_EMPTY				
4	?TIMEOUT TLAYER2			I	(3)
5	Ld?D	L1	D(1)		Waiting for
6	Ld!E		E(1)		layer 2 frame
7	GOTO L1				
8	Ld?D (k ::= 0)		D(0)		(1)
9	Ld!E (k ::= k + 1)	L2	E(1)		(2) Mismatch
10	[k < 7]				
11	?TIMEOUT TLAYER2			I	(3)
12	Ld?D		D(1)		
13	GOTO L2				
14	[k = 7]				
15	?TIMEOUT TLAYER2			I	(3)
16	Ld?D		D(1)	P	(4)
17	Ld?D		D(0)	F	

Extended Comments:

(1) First bit of the layer 2 flag.

(2) IUT shall wait at least 8 bits set to 1 before trying to send a frame again instead going on sending the flag.

(3) No layer 2 frame. It may be an upper layer error.

(4) IUT didn't go on sending the layer 2 flag of the frame.

References to Requirements: Subclause 9.4.1.3

Test Case Dynamic Behaviour					
Reference:	ISDN1/DC/F7/DCPriorityClass1				
Identifier:	DCPriorityClass1				
Purpose:	To test the priority class.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[TEI_ON]				
2	+PRE_F7_CP				Preamble
3	START TBLKLAYER2				Waiting for layer 2 frame
4	+SendSABME				
5	?TIMEOUT TBLKLAYER2				
6	START TNOAC				
7	Ld?D (k ::= 0)		D(1)		
8	Ld!E (k ::= k + 1)	L2	E(1)		(2)
9	[k < 8]				
10	?TIMEOUT TNOAC			I	(4)
11	Ld?D		D(0)	F	
12	Ld?D		D(1)		
13	GOTO L2				
14	[k = 8]				
15	?TIMEOUT TNOAC			I	(4)
16	Ld?D		D(0)	P	(3)
17	Ld?D		D(1)		
18	GOTO L2				
19	[k > 8]				
20	?TIMEOUT TNOAC			I	(4)
21	Ld?D		D(0)	P	(3)
22	Ld?D		D(1)		
23	GOTO L2				
24	Ld?D	L1	D(1)		
25	Ld!E		E(0)		(1)
26	GOTO L1				

Extended Comments:

(1) The D-Channel access is blocked during TBLKLAYER2 to be sure that I.U.T prepare a layer 2 frame.
(2) The D-Channel access isn't blocked now.
(3) IUT shall wait as many bits set to 1 as according with its normal priority level before trying to send a frame.
(4) No layer 2 frame. It may be an upper layer error.
References to Requirements: Subclause 9.4.1.2

Test Case Dynamic Behaviour

Reference: ISDN1/DC/F7/DCNormtoLowPLCL1
Identifier: DCNormtoLowPLCL1
Purpose: To test the IUT changes to lower priority level after succesful transmission for priority class 1.
Default: DEF_2

No	Behaviour Description	L	Cref	V	C
1	[TEI_ON]				
2	+PRE_F7_CP				Preamble
3	+SendSABME				(1)
4	+ReceiveUA				(2)
5	Ld?D		D(1)		(3)
6	Ld!E START TBLKLAYER2		E(0)		(4)
7	+SendSABME				
8	?TIMEOUT TBLKLAYER2 START TNOAC				Waiting for layer 2 frame
9	Ld?D (k ::= 0)		D(1)		
10	Ld!E (k ::= k + 1)	L2	E(1)		(5)
11	[k < 9]				
12	?TIMEOUT TNOAC			I	(6)
13	Ld?D		D(0)	F	
14	Ld?D		D(1)		
15	GOTO L2				
16	[k = 9]				
17	?TIMEOUT TNOAC			I	(6)
18	Ld?D		D(0)		
19	(LOWER_CL1 ::= TRUE)			P	(7)
20	Ld?D		D(1)		
21	GOTO L2				
22	[k > 9]				
23	?TIMEOUT TNOAC			I	(6)
24	Ld?D		D(0)		
25	(LOWER_CL1 ::= TRUE)			P	(7)
26	Ld?D		D(1)		
27	GOTO L2				
28	Ld?D	L1	D(1)		
29	Ld!E		E(0)		(4)
30	GOTO L1				

Extended Comments:
(1) A layer 2 frame solicits a response: UA.
(2) IUT shall change to Lower Priority Level after succesful transmission of the entire frame.
(3) The last D-bit of the layer 2 flag of the frame from IUT was set to 0.
(4) The D-Channel access is blocked now.
(5) The D-Channel access isn't blocked now.
(6) No layer 2 frame. It may be an upper layer error.
(7) IUT shall wait as many bits set to 1 as according with its normal priority level before trying to send a frame.
References to Requirements: Subclause 9.4.1.2

Test Case Dynamic Behaviour	
Reference:	ISDN1/DC/F7/DCLowtoNormPLCL1
Identifier:	DCLowtoNormPLCL1
Purpose:	To test the IUT changes back from lower to normal priority level for priority class 1.
Default:	DEF_2

No	Behaviour Description	L	Cref	V	C
1	[LOWER_CL1 AND TEI_ON]				
2	+PRE_F7_CP				Preamble
3	+SendSABME				
4	+ReceiveUA				Normal to lower
5	Ld?D		D(0)		(1)
6	Ld!E		E(0)		(2) lower level
7	Ld?D (k ::= 0)		D(0)		(1)
8	Ld!E (k ::= k + 1)	L1	E(0)		
9	[k < 9]				
10	Ld?D		D(1)		
11	GOTO L1				
12	[k = 9]				
13	Ld!E START TBLKLAYER2		E(0)		
14	+SendSABME				Waiting for layer 2 frame
15	?TIMEOUT TBLKLAYER2 START TNOAC	L3			
16	Ld?D (k ::= 0)		D(1)		
17	Ld!E (k ::= k + 1)	L2	E(1)		(4)
18	[k < 8]				
19	?TIMEOUT TNOAC			I	(6)
20	Ld?D		D(0)	F	
21	Ld?D		D(1)		
22	GOTO L2				
23	[k = 8]				
24	?TIMEOUT TNOAC			I	(6)
25	Ld?D		D(0)	P	(5)
26	Ld?D		D(1)		
27	GOTO L2				
28	[k > 8]				
29	?TIMEOUT TNOAC			I	(6)
30	Ld?D		D(0)	P	(5)
31	Ld?D		D(1)		
32	GOTO L2				
33	Ld?D		D(1)		
34	Ld!E		E(0)		(2)
35	GOTO L3				

Extended Comments:
(1) The last D-Bit of the frame (flag) from IUT was set to 0.
(2) The D-Channel access is blocked now.
(3) The last D-Bit of the frame (flag) from tester was set to 0.
(4) The D-Channel access isn't blocked now.
(5) IUT is effectively at Normal Priority Level.
(6) No layer 2 frame. It may be an upper layer error.
References to Requirements: Subclause 9.4.1.2

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F1				
Identifier:	PRE_F1				
Purpose:	Bring IUT to state F1 or F1.1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	Lp!POWER_PS		PS_OFF		
2	[PC_PS] START TNOAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TNOAC			(P)	
5	L?Info_0		I0		
6	GOTO L1				
7	[NOT PC_PS]				
8	Lp!POWER_LP		LP_OFF		
9	[PC_DE]				
10	Lp!POWER_LP START TSELFTEST		LP_ON		
11	L!Info_0	L2	I0		
12	?TIMEOUT TSELFTEST			(P)	
13	L?Info_0		I0		
14	GOTO L2				
15	[NOT PC_DE]				
16	START TNOAC				
17	L!Info_0	L3	I0		
18	?TIMEOUT TNOAC			(P)	
19	L?Info_0		I0		
20	GOTO L3				
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F2				
Identifier:	PRE_F2				
Purpose:	Bring IUT to state F2.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F1				
2	+SendIX				
3	[NOT PC_PS AND NOT PC_DE]				
4	Lp!POWER_PS		PS_ON		
5	Lp!POWER_LP START TSELFTEST		LP_ON		
6	+SendIX	L1			
7	?TIMEOUT TSELFTEST				
8	START T3_S				
9	+SendIX	L2			
10	?TIMEOUT T3_S			(P)	
11	L?Info_0		I0		
12	GOTO L2				
13	L?Info_0		I0		
14	GOTO L1				
15	[NOT PC_PS AND PC_DE]				
16	Lp!POWER_PS START T3_S		PS_ON		
17	+SendIX	L3			
18	?TIMEOUT T3_S			(P)	
19	L?Info_0		I0		
20	GOTO L3				
21	[PC_PS]				
22	Lp!POWER_PS START TSELFTEST		PS_ON		
23	+SendIX	L4			
24	?TIMEOUT TSELFTEST				
25	START T3_S				
26	+SendIX	L5			
27	?TIMEOUT T3_S			(P)	
28	L?Info_0		I0		
29	GOTO L5				
30	L?Info_0		I0		
31	GOTO L4				

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F3				
Identifier:	PRE_F3				
Purpose:	Bring IUT to state F3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F2				
2	[NOT PC_AUTOMAT_TEI OR PC_AUTOMAT_TEI AND NOT PC_TEI_CONNECT]				
3	START TAC				
4	L!Info_0	L1	I0		
5	?TIMEOUT TAC			(P)	
6	L?Info_0		I0		
7	GOTO L1				
8	[PC_AUTOMAT_TEI AND PC_TEI_CONNECT]				
9	START TNOAC				
10	L!Info_0	L2	I0		
11	?TIMEOUT TNOAC			F	
12	L?Info_0		I0		
13	GOTO L2				
14	L?Info_1		I1		
15	START T3_S				
16	CANCEL TNOAC				
17	L!Info_0	L3	I0		
18	?TIMEOUT T3_S			F	
19	L?Info_1		I1		
20	GOTO L3				
21	L?Info_0		I0		
22	L!Info_0	L4	I0		
23	?TIMEOUT T3_S			(P)	
24	L?Info_0		I0		
25	GOTO L4				

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F3_CP				
Identifier:	PRE_F3_CP				
Purpose:	To bring IUT to state F3.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_3 CANCEL TAC		I3_BASIC		
8	[NOT PC_MP]			(P)	
9	+F7toF3				
10	[PC_MP]				
11	+CHK_TEI				Look if a TEI is
12	[TEI_ON AND TEI_ASS]			(P)	assigned
13	+F7toF3				
14	[PC_AUTOMAT_TEI]				
15	[NOT TEI_ON AND NOT TEI_ASS]			(P)	
16	+F7toF3				
17	[NOT TEI_ON AND TEI_ASS]			(P)	
18	+REMOVE_TEI				
19	+F7toF3				
20	[TEI_ON AND NOT TEI_ASS]			(P)	
21	+ASSIGN_TEI				
22	+F7toF3				
23	**F7toF3**				
24	START TAC				
25	L!Info_0	L2	I0		
26	?TIMEOUT TAC			F	
27	L?Info_3		I3_BASIC		
28	GOTO L2				
29	L?Info_0 CANCEL TAC		I0	(P)	

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F4				
Identifier:	PRE_F4				
Purpose:	Bring IUT to state F4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_0	L1	I0		
5	?TIMEOUT TWAIT			F	
6	L?Info_0		I0		
7	GOTO L1				
8	L?Info_1		I1	(P)	
9	CANCEL TWAIT				
10	START T3_S				
Extended Comments:					
(1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F4_CP				
Identifier:	PRE_F4_CP				
Purpose:	Bring IUT to state F4.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3_CP				
2	[USERCALL]				(1)
3	START TWAIT				
4	L!Info_0	L1	I0		
5	?TIMEOUT TWAIT			F	
6	L?Info_0		I0		
7	GOTO L1				
8	L?Info_1		I1		
9	CANCEL TWAIT				
10	START T3_S			(P)	
Extended Comments: (1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F5				
Identifier:	PRE_F5				
Purpose:	Bring IUT to state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_STATE_F5]				
2	+PRE_F4				
3	START TF5				
4	+SendIX	L1			
5	?TIMEOUT TF5			F	(1)
6	L?Info_0 CANCEL TF5		I0	(P)	
7	L?Info_1		I1		
8	GOTO L1				
Extended Comments: (1) TF5 value is 5.25ms.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F5_CP				
Identifier:	PRE_F5_CP				
Purpose:	Bring IUT to state F5.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PC_STATE_F5]				
2	+PRE_F4_CP				
3	START TF5				
4	+SendIX	L1			
5	?TIMEOUT TF5			F	(1)
6	L?Info_0 CANCEL TF5		I0	(P)	
7	L?Info_1		I1		
8	GOTO L1				
Extended Comments: (1) TF5 value is 5.25 ms.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F6				
Identifier:	PRE_F6				
Purpose:	Bring IUT to state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2			F	(1)
5	L?Info_3 CANCEL TRESP_I2		I3_BASIC	(P)	
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments:					
(1) IUT shall answer to INFO 2 within 100ms when in state F3					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F6_CP				
Identifier:	PRE_F6_CP				
Purpose:	Bring IUT to state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3_CP				
2	START TRESP_I2				
3	L!Info_n	L1	I2		
4	?TIMEOUT TRESP_I2			F	(1)
5	L?Info_3 CANCEL TRESP_I2		I3_BASIC	(P)	
6	L?Info_0		I0		
7	GOTO L1				
Extended Comments:					
(1) IUT shall answer to INFO 2 within 100ms when in state F3					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F7				
Identifier:	PRE_F7				
Purpose:	Bring IUT to state F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	CANCEL TAC			(P)	
7	L?Info_0		I0		
8	GOTO L1				

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F7_CP				
Identifier:	PRE_F7_CP				
Purpose:	Bring IUT to state F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F3_CP				
2	START TAC				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	CANCEL TAC			(P)	
7	L?Info_0		I0		
8	GOTO L1				

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F7_COM				
Identifier:	PRE_F7_COM				
Purpose:	To bring IUT to state F7 and to establish a connection.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START T_COM				
3	L!Info_n	L1	I4_COM		
4	?TIMEOUT T_COM			I	
5	L?Info_3		I3_COM		
6	[NOT COM]				
7	(COM ::= TEST_COM)				
8	GOTO L1				
9	[COM] CANCEL T_COM			(P)	(1)
Extended Comments:					
(1) Connection shall be established at layer 3 now.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F7_COM_CP				
Identifier:	PRE_F7_COM_CP				
Purpose:	To bring IUT to state F7 and to establish a connection.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_CP				
2	START T_COM				
3	L!Info_n	L1	I4_COM		
4	?TIMEOUT T_COM			I	
5	L?Info_3		I3_COM		
6	[NOT COM]				
7	(COM ::= TEST_COM)				
8	GOTO L1				
9	[COM] CANCEL T_COM			(P)	(1)
Extended Comments:					
(1) Connection shall be established at layer 3 now.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F8				
Identifier:	PRE_F8				
Purpose:	Bring IUT to state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	ISDN1/PREAMBLE/PRE_F8_CP				
Identifier:	PRE_F8_CP				
Purpose:	Bring IUT to state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PRE_F7_CP				
2	START TAC				
3	+SendIX	L1			
4	?TIMEOUT TAC			F	
5	L?Info_3		I3_BASIC		
6	GOTO L1				
7	L?Info_0 CANCEL TAC		I0	(P)	
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F1				
Identifier:	CHECK_F1				
Purpose:	To check that IUT is in state F1 or F1.1.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[NOT PC_PS AND PC_DE]				
2	START TNOAC				
3	L!Info_0	L1	I0		
4	?TIMEOUT TNOAC				
5	+F1_I4				
6	L?OTHERWISE				
7	GOTO L1				
8	[PC_PS OR NOT PC_DE]				
9	+F1_I4				
10	[PX_NOTE6_CASE1]				
11	START TAC				
12	L!Info_n	L2	I4_BASIC		
13	?TIMEOUT TAC			F	
14	L?Info_0		I0		
15	GOTO L2				
16	L?Info_3 CANCEL TAC		I3_BASIC		
17	START TNOAC				
18	L!Info_n	L3	I4_BASIC		
19	?TIMEOUT TNOAC			R	
20	L?Info_3		I3_BASIC		
21	GOTO L3				
22	**F1_I4**				
23	START TNOAC				
24	L!Info_n	L4	I4_BASIC		
25	?TIMEOUT TNOAC			R	
26	L?Info_0		I0		
27	GOTO L4				
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F2				
Identifier:	CHECK_F2				
Purpose:	To check that IUT is in state F2 (when it receives INFO X).				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[USERCALL]				(1)
2	START TWAIT				
3	+SendIX	L1			
4	?TIMEOUT TWAIT			R	
5	L?Info_0		I0		
6	GOTO L1				
Extended Comments: (1) A PH-AR primitive shall be sent from the layer 2 to the layer 1.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F3				
Identifier:	CHECK_F3				
Purpose:	To check that IUT is in state F3				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[USERCALL]				(1)
2	START TWAIT				
3	L!Info_0	L1	I0		
4	?TIMEOUT TWAIT			F	
5	L?Info_0		I0		
6	GOTO L1				
7	L?Info_1 CANCEL TWAIT		I1		
8	START T3_S				
9	L!Info_0	L2	I0		
10	?TIMEOUT T3_S			F	(2)
11	L?Info_1		I1		
12	GOTO L2				
13	L?Info_0		I0		
14	CANCEL T3_S			R	
Extended Comments: (1) A PH-AR primitive shall be sent from the layer 2 to the layer 1. (2) IUT must send INFO 0 at T3 expiry.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F6				
Identifier:	CHECK_F6				
Purpose:	To check that IUT is in state F6.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L!Info_n	L1	I2		
3	?TIMEOUT TNOAC			R	(1)
4	L?Info_3		I3_BASIC		
5	GOTO L1				
Extended Comments: (1) State F6 is checked during 500ms.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F7				
Identifier:	CHECK_F7				
Purpose:	To check that IUT is in state F7.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L!Info_n	L1	I4_BASIC		
3	?TIMEOUT TNOAC			R	(1)
4	L?Info_3		I3_BASIC		
5	GOTO L1				
6	L?Info_3		I3_LAP_D		
7	GOTO L1				
Extended Comments: (1) State F7 is checked during 500ms.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHK_F7_L2				
Identifier:	CHK_F7_L2				
Purpose:	To check that layer 2 status is still 7.0.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[PX_IUT_STA_S4]				
2	+SendDISC				
3	START T200				
4	+ReceiveUA				
5	CANCEL T200			R	
6	?TIMEOUT T200			F	
7	[NOT PX_IUT_STA_S4]				
8	+ReceiveSABME				
9	+SendUA				

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHK_F7_PHAIa				
Identifier:	CHK_F7_PHAIa				
Purpose:	To check if IUT is in state F7 and has sent a PH-AI primitive.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[USERCALL]				
2	START TWAIT				
3	L!Info_n	L1	I4_BASIC		
4	?TIMEOUT TWAIT			I	
5	L?Info_3 CANCEL TWAIT		I3_COM		(1)
6	L!Info_n	L2	I4_COM		
7	[NOT COM]				
8	L?Info_3		I3_COM		
9	(COM ::= TEST_COM)				
10	GOTO L2				
11	[COM]			R	(2)
12	L?Info_3		I3_BASIC		
13	GOTO L1				

Extended Comments:
(1) IUT is ready to answer at layer 2: it is effectively in state F7 and a PH-AI primitive has been sent to the layer 2
(2) A connexion initiated by IUT is established.

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHK_F7_PHAIb				
Identifier:	CHK_F7_PHAIb				
Purpose:	To check if IUT is in state F7 and has sent a PH-AI primitive.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TLAYER2				
2	L!Info_n	L1	I4_BASIC		
3	?TIMEOUT TLAYER2			I	(3)
4	L?Info_3 CANCEL TLAYER2		I3_COM		(1)
5	L!Info_n	L2	I4_COM		
6	[NOT COM]				
7	L?Info_3		I3_COM		
8	(COM ::= TEST_COM)				
9	GOTO L2				
10	[COM]			R	(2)
11	L?Info_3		I3_BASIC		
12	GOTO L1				
Extended Comments: (1) IUT is ready to answer at layer 2: it is effectively in state F7 and a PH-AI primitive has been sent to the layer 2 (2) A connexion initiated by the I.U.T is established. (3) IUT is not ready to answer at layer 2: it is effectively in state F7 but no PH-AI primitive has been sent.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F8				
Identifier:	CHECK_F8				
Purpose:	To check that IUT is in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[USERCALL]				
2	START TWAIT				
3	+SendIX	L1			
4	?TIMEOUT TWAIT			R	
5	L?Info_0		I0		(1)
6	GOTO L1				
Extended Comments: (1) IUT must send nothing if in state F8.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHECK_F8S				
Identifier:	CHECK_F8S				
Purpose:	To check that IUT is in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	+SendIX	L1			
3	?TIMEOUT TNOAC			R	
4	L?Info_0		I0		(1)
5	GOTO L1				
Extended Comments: (1) IUT must send nothing if in state F8.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/Still_F6				
Identifier:	Still_F6				
Purpose:	To keep the IUT in state F6 during TNOAC.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				(1)
2	L!Info_n	L1	I2		
3	?TIMEOUT TNOAC			(P)	IUT still in F6
4	L?Info_3		I3_BASIC		
5	GOTO L1				
Extended Comments:					
(1) IUT shall be in state F6 before sending INFO 3 and receiving INFO 2.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/Still_F8				
Identifier:	Still_F8				
Purpose:	To keep the IUT in state F8 during TNOAC.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				(1)
2	+SendIX	L1			
3	?TIMEOUT TNOAC			(P)	IUT still in F8
4	L?Info_0		I0		
5	GOTO L1				
Extended Comments:					
(1) IUT shall be in state F8 before sending INFO 0 and receiving INFO X.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/SendSETUP_EMPTY				
Identifier:	SendSETUP_EMPTY				
Purpose:	To send a layer 3 frame.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	Ld?D	L1	D_any		
3	Ld!E		E(0)		
4	Ld!D (k ::= k + 1)		D_SETUP_EMPTY		
5	[k < 88]				(1)
6	GOTO L1				
7	[k = 88]			(P)	(2)
Extended Comments:					
(1) A SETUP_EMPTY frame is 11 octets long.					
(2) The SETUP_EMPTY frame is entirely sent now.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/SendIX				
Identifier:	SendIX				
Purpose:	To send INFO X.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L!Info_n [i = 1]		IX_96KHz		1 kind of InfoX

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/SendSABME				
Identifier:	SendSABME				
Purpose:	To send a SABME frame SAPI 0.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	Ld?D	L1	D_any		
3	Ld!E		E(0)		
4	Ld!D (k ::= k + 1)		D_SABME		
5	[k < 56]				(1)
6	GOTO L1				
7	[k = 56]			(P)	(2)
Extended Comments: (1) A SABME frame SAPI 0 is 7 octets long. (2) The frame is entirely sent now.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/SendDISC				
Identifier:	SendDISC				
Purpose:	To send a layer 2 DISC frame SAPI 0.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	Ld?D	L1	D_any		
3	Ld!E		E(0)		
4	Ld!D (k ::= k + 1)		D_DI		
5	[k < 56]				(1)
6	GOTO L1				
7	[k = 56]			(P)	(2)
Extended Comments: (1) A DISC frame SAPI 0 is 7 octets long. (2) The frame is entirely sent now.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/SendUA				
Identifier:	SendUA				
Purpose:	To send a layer 2 UA frame SAPI 0.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	Ld?D	L1	D_any		
3	Ld!E		E(0)		
4	Ld!D (k ::= k + 1)		D_UA		
5	[k < 56]				(1)
6	GOTO L1				
7	[k = 56]			(P)	(2)
Extended Comments: (1) A UA frame SAPI 0 is 7 octets long. (2) The frame is entirely sent now.					

Test Step Dynamic Behaviour

Reference: ISDN1/MISCELL/SendI4_I0T3
Identifier: SendI4_I0T3
Purpose: To send INFO 4 in state F3 while T3 is set on and to ensure no respons from layer 2.
Default: DEF_1

No	Behaviour Description	L	Cref	V	C
1	START TNOAC				
2	L!Info_0	L1	I0		
3	?TIMEOUT TNOAC				
4	START TIMER_1				
5	L!Info_n	L2	I4_BASIC		
6	?TIMEOUT TIMER_1				
7	CANCEL T3_S			F	
8	?TIMEOUT T3_S				
9	CANCEL TIMER_1			F	
10	L?Info_0		I0		
11	GOTO L2				
12	L?Info_3		I3_LAP_D		
13	CANCEL TIMER_1, CANCEL T3_S			F	
14	L?Info_3		I3_BASIC		
15	CANCEL TIMER_1				
16	L!Info_n	L3	I4_BASIC		
17	?TIMEOUT T3_S			(P)	
18	+CHK_F7_PHAIa				
19	L?Info_3 CANCEL T3_S		I3_LAP_D	F	
20	L?Info_3		I3_BASIC		
21	GOTO L3				
22	L?Info_0		I0		
23	GOTO L1				

Extended Comments:

Test Step Dynamic Behaviour

Reference: ISDN1/MISCELL/ReceiveUA
Identifier: ReceiveUA
Purpose: To receive a UA SAPI 0 frame from the IUT.
Default: DEF_2

No	Behaviour Description	L	Cref	V	C
1	START TLAYER2				
2	Ld!E	L1	E(1)		
3	?TIMEOUT TLAYER2			(I)	(2)
4	Ld?D		D_UA		
5	Ld!E	L2	E_Echo		
6	Ld?D		D_UA		
7	GOTO L2				
8	Ld?D		D(1)	(P)	(1)
9	Ld?D		D(1)		
10	GOTO L1				

Extended Comments:
(1) The frame shall be entirely received now.
(2) To try again.

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/ReceiveSABME				
Identifier:	ReceiveSABME				
Purpose:	To receive a SABME SAPI 0 frame from the IUT.				
Default:	DEF_2				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TLAYER2				
2	Ld!E	L1	E(1)		
3	?TIMEOUT TLAYER2			(I)	(2)
4	Ld?D		D_SABME		
5	Ld!E	L2	E_Echo		
6	Ld?D		D_SABME		
7	GOTO L2				
8	Ld?D		D(1)	(P)	(1)
9	Ld?D		D(1)		
10	GOTO L1				
Extended Comments: (1) The frame shall be entirely received now. (2) To try again.					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/D_WATCH				
Identifier:	D_WATCH				
Purpose:	To check that D-channel isn't blocked.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L!Info_n	L1	I4_BASIC		(1)
3	?TIMEOUT TNOAC			(P)	
4	+CHK_F7_PHAIa				
5	L?Info_3		I3_LAP_D		(2)
6	L!Info_n	L2	I4_BASIC		
7	?TIMEOUT TNOAC			(F)	
8	+CHK_F7_PHAIa				Failed anyway
9	L?Info_3		I3_LAP_D		
10	GOTO L2				
11	L?Info_3		I3_BASIC		
12	GOTO L2				
13	L?Info_3		I3_BASIC		
14	GOTO L1				
Extended Comments: (1) A PH-AI primitive shall be sent to layer 2. (2) IUT can send at last layer 2 frames escorting the PH-AR primitive (i.e. a SABME frame to establish LAP D and three retransmissions, but IUT shall not of course have bufferize them).					

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/D_WATCH_F8				
Identifier:	D_WATCH_F8				
Purpose:	To check that D-channel isn't blocked in state F8.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				IUT in F8
2	L!Info_n	L1	I4_BASIC		(1)
3	?TIMEOUT TNOAC			(F)	
4	L?Info_0		I0		
5	GOTO L1				
6	L?Info_3		I3_LAP_D		(2)
7	+CHECKfailed				
8	L?Info_3		I3_BASIC		
9	L!Info_n	L3	I4_BASIC		
10	?TIMEOUT TNOAC			(P)	
11	+CHK_F7_PHAIa				
12	L?Info_3		I3_BASIC		
13	GOTO L3				
14	L?Info_3		I3_LAP_D	(F)	(2)
15	+CHECKfailed				
16	**CHECKfailed**				
17	L!Info_n	L2	I4_BASIC		
18	?TIMEOUT TNOAC			(F)	
19	+CHK_F7_PHAIa				Failed anyway
20	L?Info_3		I3_LAP_D		
21	GOTO L2				
22	L?Info_3		I3_BASIC		
23	GOTO L2				

Extended Comments:

(1) A PH-AI primitive shall be sent to layer 2.

(2) IUT can send at last layer 2 frames escorting the PH-AR primitive (i.e. a SABME frame to establish LAP D and three retransmissions, but IUT shall not of course have bufferize them).

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/CHK_TEI				
Identifier:	CHK_TEI				
Purpose:	To test if a TEI is assigned to the IUT.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	L!Info_n (k ::= k + 1)	L1	I4_TEI_CHK		
3	L?Info_3		I3_BASIC		
4	[k < 24]				
5	GOTO L1				
6	[k = 24]				(1)
7	L!Info_n		I4_BASIC		
8	(k ::= 0)				
9	L!Info_n (k ::= k + 1)	L2	I4_TEI_CHK		
10	L?Info_3		I3_BASIC		
11	[k < 24]				
12	GOTO L2				
13	[k = 24] START TLAYER2				(1)
14	L!Info_n	L3	I4_BASIC		
15	?TIMEOUT TLAYER2				(4)
16	(TEI_ASS ::= FALSE)			(P)	
17	L?Info_3 (k ::= 1)		I3_TEI_RESP		(2)
18	CANCEL TLAYER2				
19	L!Info_n	L4	I4_BASIC		
20	L?Info_3 (k ::= k + 1)		I3_TEI_RESP		
21	[k < 24]				
22	GOTO L4				
23	[k = 24]				(3)
24	(TEI_ASS ::= TRUE)			(P)	
25	L?Info_3		I3_BASIC		
26	GOTO L3				

Extended Comments:

(1) An identity check request layer 2 frame has entirely been sent (such a frame is 24 INFO 4 long).
(2) IUT is sending an identity check response layer 2 frame (24 layer 1 INFO 3 frames are necessary).
(3) A TEI is really assigned to the IUT.
(4) No answer from IUT, no TEI is assigned.

Test Step Dynamic Behaviour

Reference: ISDN1/MISCELL/CHK_DDE_TEI
Identifier: CHK_DDE_TEI
Purpose: To check if IUT asks for a TEI.
Default: DEF_1

No	Behaviour Description	L	Cref	V	C
1	[NOT PC_TEI_CONNECT]				
2	[USERCALL]				
3	START TWAIT				
4	(k ::= 0)				
5	L!Info_n	L1	I4_BASIC		
6	?TIMEOUT TWAIT			I	
7	L?Info_3		I3_BASIC		
8	GOTO L1				
9	L?Info_3 (k ::= k + 1) CANCEL TWAIT		I3_TEI_REQ		(1)
10	[k < 24]				
11	GOTO L1				
12	[k = 24]			(P)	
13	+TEI_ASSIGN				(2)
14	L?Info_3 CANCEL TWAIT		I3_COM		(4)
15	L!Info_n	L2	I4_COM		
16	L?Info_3		I3_COM		
17	[NOT COM]				
18	(COM ::= TEST_COM)				
19	GOTO L2				
20	[COM] (TEI_ASS ::= FALSE)			F	
21	[PC_TEI_CONNECT]				
22	START TLAYER2				
23	(k ::= 0)				
24	L!Info_n	L3	I4_BASIC		
25	?TIMEOUT TLAYER2				
26	(TEI_ASS ::= FALSE)			F	(4)
27	L?Info_3		I3_BASIC		
28	GOTO L3				
29	L?Info_3 (k ::= k + 1)		I3_TEI_REQ		(1)
30	[k < 24]				
31	GOTO L3				
32	[k = 24] CANCEL TLAYER2			(P)	
33	(k ::= 0)				
34	+TEI_ASSIGN				(2)
35	**TEI_ASSIGN**				
36	L!Info_n (k ::= k + 1)	L4	I4_TEI_ASS		(6)
37	L?Info_3		I3_BASIC		
38	[k < 24]				
39	GOTO L4				
40	[k = 24]				
41	(TEI_ASS ::= TRUE)			P	(3)

Extended Comments:
(1) IUT sends an identity request layer 2 frame for a TEI (24 layer 1 INFO 3 frames are necessary).
(2) A TEI is assigned to the IUT.
(3) An identity assigned has entirely been sent to the IUT (such a frame is 24 INFO 4 long).
(4) IUT does'nt ask for a TEI.

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/REMOVE_TEI				
Identifier:	REMOVE_TEI				
Purpose:	To remove a TEI eventually assigned to the IUT.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(k ::= 0)				
2	L!Info_n (k ::= k + 1)	L1	I4_TEI_RMV		
3	L?Info_3		I3_BASIC		
4	[k < 24]				
5	GOTO L1				
6	[k = 24]				
7	(k ::= 0)				
8	L!Info_n (k ::= k + 1)	L2	I4_TEI_RMV		
9	L?Info_3		I3_BASIC		
10	[k < 24]				
11	GOTO L2				
12	[k = 24] START TLAYER2				(1)
13	L!Info_n	L3	I4_BASIC		
14	?TIMEOUT TLAYER2				(3)
15	(TEI_ASS ::= FALSE)			(P)	
16	L?Info_3		I3_TEI_REQ		(2)
17	GOTO L3				
18	L?Info_3		I3_BASIC		
19	GOTO L3				

Extended Comments:
(1) Two identity remove layer 2 frames have entirely been sent. An eventually assigned TEI shall be removed.
(2) IUT is sending an identity request layer 2 frame, but the tester stays silencious.
(3) Timer duration is longer than N202 times T202. So an eventually TEI assignement procedure shall fail.

Test Step Dynamic Behaviour					
Reference:	ISDN1/MISCELL/ASSIGN_TEI				
Identifier:	ASSIGN_TEI				
Purpose:	To initiate the TEI assignment procedure and assign a TEI to the IUT.				
Default:	DEF_1				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START T_COM				
2	L!Info_n	L1	I4_COM		
3	?TIMEOUT T_COM			I	
4	L?Info_3		I3_COM		
5	[NOT COM]				
6	(COM ::= TEST_COM)				
7	GOTO L1				
8	[COM] CANCEL T_COM				(1)
9	START T_COM				
10	L!Info_n	L2	I4_DISC		
11	?TIMEOUT T_COM			I	
12	L?Info_3		I3_DISC		
13	[COM]				
14	(COM ::= TEST_COM)				
15	GOTO L2				
16	[NOT COM]				(2)
17	CANCEL T_COM				
18	+CHK_TEI				
19	[NOT TEI_ASS]			I	
20	[TEI_ASS]			(P)	
Extended Comments:					
(1) A connection is established, therefore a TEI shall be assigned to the IUT.					
(2) The connection is broken but the IUT shall keep its TEI.					

Default Dynamic Behaviour					
Reference:	DEF_1				
Identifier:	DEF_1				
Purpose:	Default subtree, the IUT may send nothing else.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L?OTHERWISE			F	
Extended Comments:					

Default Dynamic Behaviour					
Reference:	DEF_2				
Identifier:	DEF_2				
Purpose:	Default subtree, the IUT may send nothing else in the D-channel and shall go on sending INFO 3.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	Ld?OTHERWISE			F	(1)
Extended Comments:					
(1) Do not care about PCO L. IUT shall be in activated state.References to Requirements:					

B.5 Power feeding

Power feeding tests assume the following conditions:

a) an IUT may be in any state of activation;

b) an IUT may be making or receiving a call;

c) at no stage of an active call may the defined values be exceeded:

- the tests for maximum power consumption shall be conducted under conditions of maximum power consumption as declared by the supplier (see annex E, table E.2.4);

- all the values referring to power in Watts shall be measured using an instrument which integrates the measurements over a period of 50 ms;

- all the values referring to current in mA shall be measured using an instrument which measures instantaneous current

- when measuring power consumption, the power loss due to resistance in the line and the feeding transformers shall be subtracted. However, power loss due to resistance in the line transformers in the TE and in the TE cord shall not be subtracted;

- for the simulator, all rise times or fall times of voltage are defined between 90 % and 10 % of the voltage measured with resistive load without the IUT connected.

The requirements shall be met in all of the above conditions.

B.5.1 Normal power conditions

B.5.1.1 Normal power provision (Test A)

Reference: ETS 300 012, annex D, subclause D.5.1.1.1.

Purpose: To ensure an ACTIVATED TE does not draw excessive power from a normal mode, phantom PS1, whilst in an activated state.

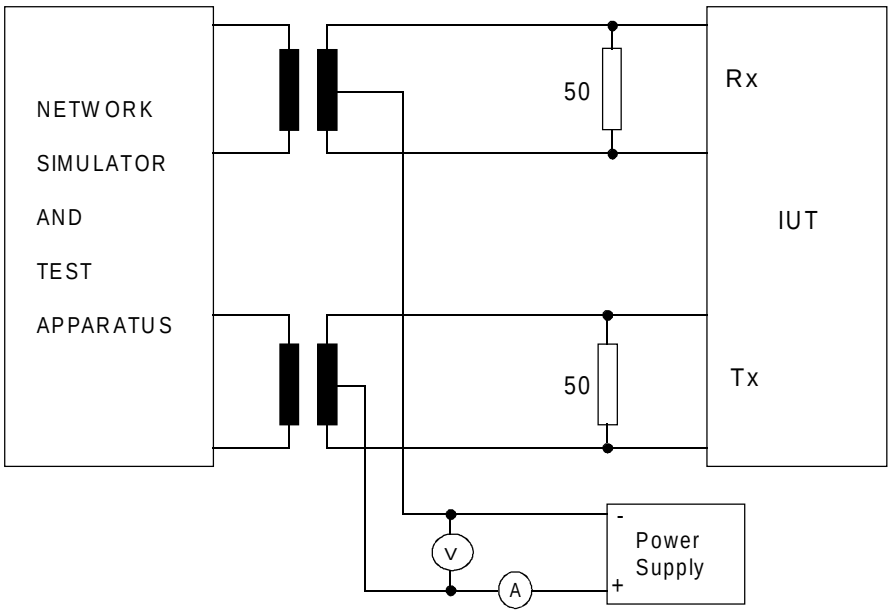


Figure B.23: Test configuration

System state: Activated (state F7).

Stimulus: Phantom, normal PS1 in the voltage range 40 V, + 5 %, - 40 % (42 V to 24 V).

Monitor: dc voltage and current.

Results: The power drawn (V*I) shall not exceed 1 W at both extremes of the power source voltage as stated in the stimulus section.

B.5.1.2 Normal power provision (Test B)

Reference: ETS 300 012, annex D, subclause D.5.1.1.2.

Purpose: To ensure the DEACTIVATED TE does not draw excessive power from a normal mode, phantom PS1.

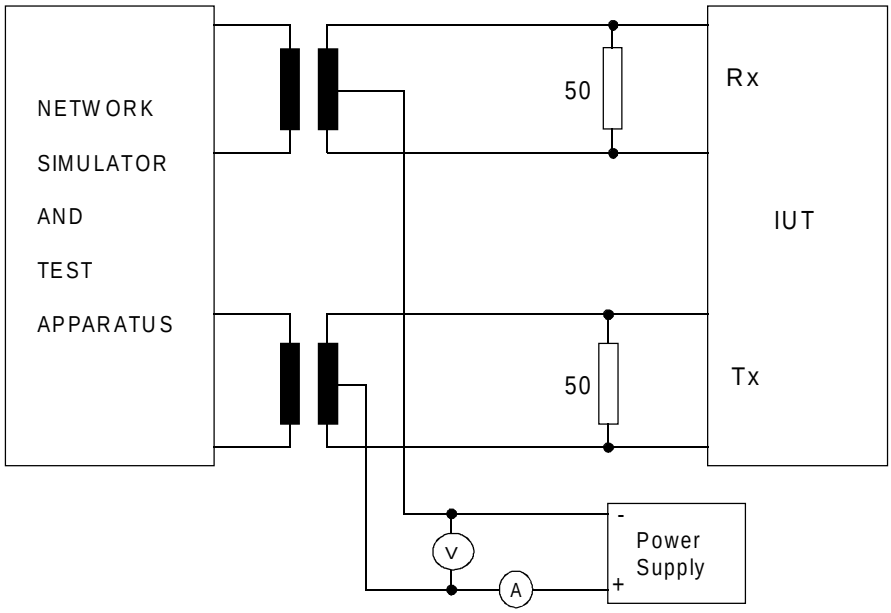


Figure B.24: Test configuration

System state: Deactivated (state F3).

Stimulus: Phantom, normal mode PS1 in the voltage range 40 V, + 5 %, - 40 % (42 V to 24 V).

Monitor: dc voltage and current.

Results: The power drawn (V*I) shall not exceed 100 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.1.3 Normal power provision (Test C)

Reference: ETS 300 012, annex D, subclause D.5.1.1.3.

Purpose: To ensure a DEACTIVATED TE does not draw excessive power from a normal mode, phantom PS1, whilst in local action.

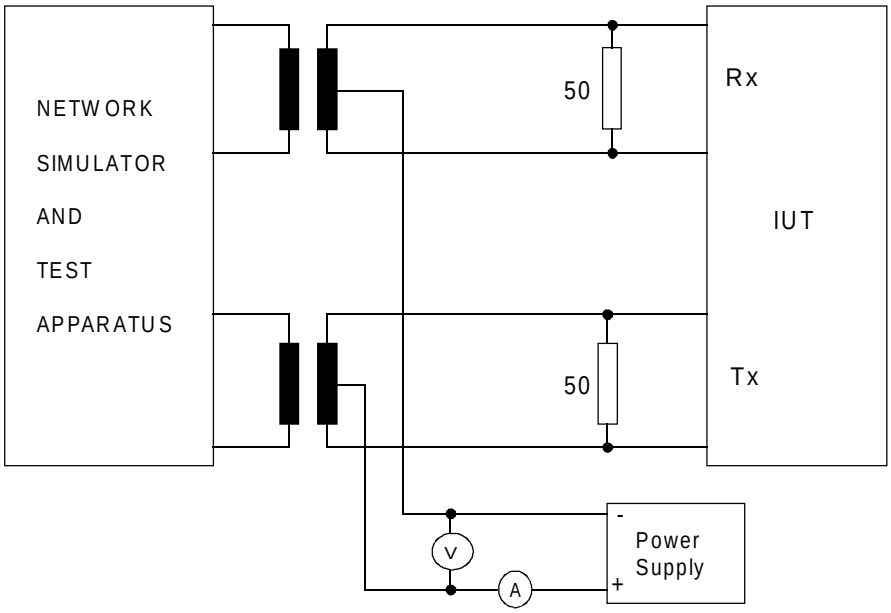


Figure B.25: Test configuration

System state: Deactivated (state F3).

Stimulus: Local action. Phantom, normal mode PS1 in the voltage range 40 V, + 5 %, - 40 % (42 V to 24 V).

Monitor: dc voltage and current.

Results: The power drawn (V*I) shall not exceed 1 W at both extremes of the power source voltage as stated in the stimulus section.

B.5.1.4 Normal power provision (Test D)

Reference: ETS 300 012, annex D, subclause D.5.1.1.4.

Purpose: To ensure a LOCALLY POWERED TE does not consume excessive power in any state from PS1.

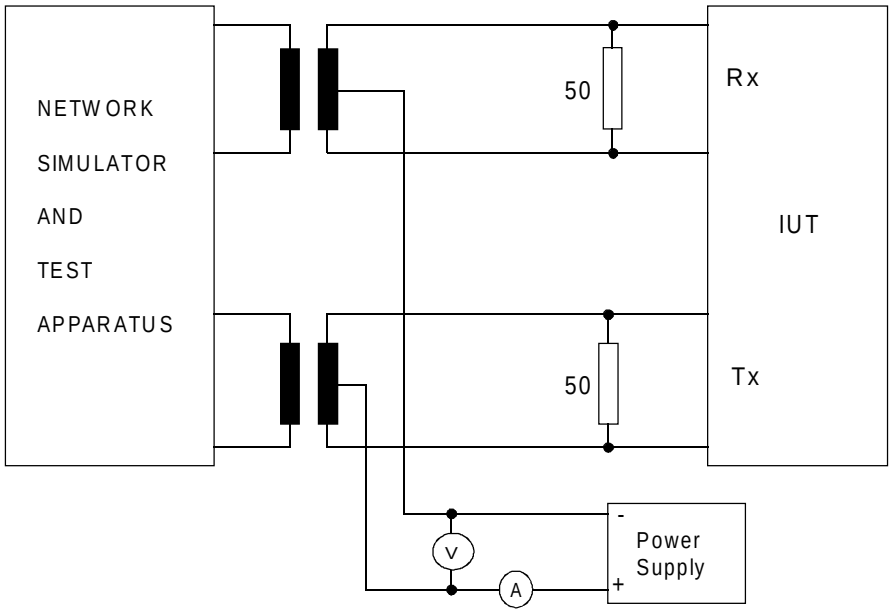


Figure B.26: Test configuration

System state: Any state.

Stimulus: Phantom, normal mode PS1 in the voltage range 40 V, + 5 %, - 40 % (42 V to 24 V).

Monitor: dc voltage and current.

Results: The power consumed by the TE shall not exceed 3 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.2 Restricted power conditions

B.5.2.1 Restricted power provision (Test A)

Reference: ETS 300 012, annex D, subclause D.5.1.2.1.

Purpose: To ensure an ACTIVATED designated TE does not consume excessive power from PS1 (restricted).

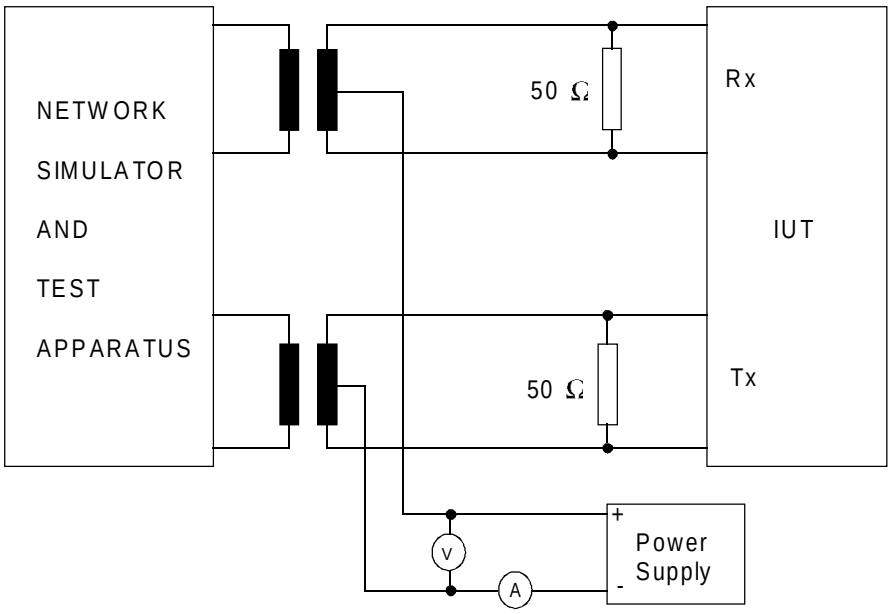


Figure B.27: Test configuration

System state: Activated (state F7).

Stimulus: Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), (voltage reversal).

Monitor: dc voltage and current.

Results: The power consumed by the designated TE shall not exceed 380 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.2.2 Restricted power provision (Test B)

Reference: ETS 300 012, annex D, subclause D.5.1.2.2.

Purpose: To ensure a DEACTIVATED designated TE does not consume excessive power from PS1 (restricted).

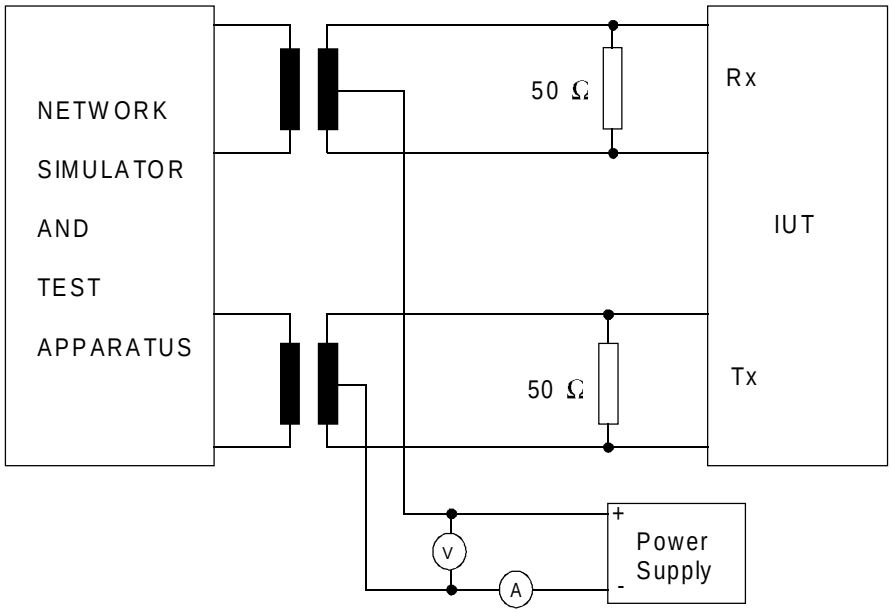


Figure B.28: Test configuration

System state: Deactivated (state F3).

Stimulus: Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), (voltage reversal).

Monitor: dc voltage and current.

Results: The power consumed by the designated TE whilst deactivated shall not exceed 25 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.2.3 Restricted power provision (Test C)

Reference: ETS 300 012, annex D, subclause D.5.1.2.3.

Purpose: To ensure a DEACTIVATED designated TE does not consume excessive power from PS1 (restricted) during a local action.

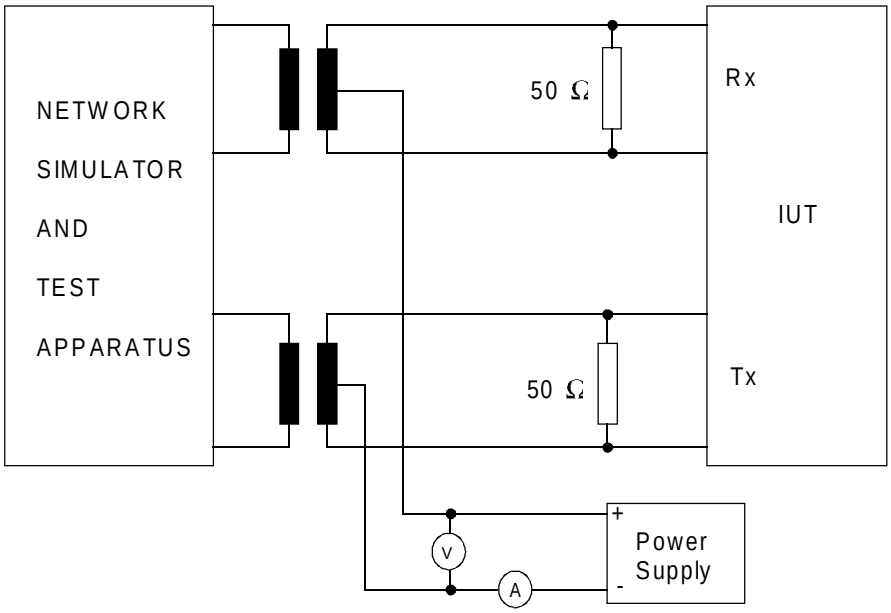


Figure B.29: Test configuration

System state: Deactivated (state F3).

Stimulus: Local action. Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), (voltage reversal).

Monitor: dc voltage and current.

Results: The power consumed by the designated TE shall not exceed 380 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.2.4 Restricted power provision (Test D)

Reference: ETS 300 012, annex D, subclause D.5.1.2.4.

Purpose: To ensure that a locally powered TE, in any state, does not consume excessive power from PS1 (restricted).

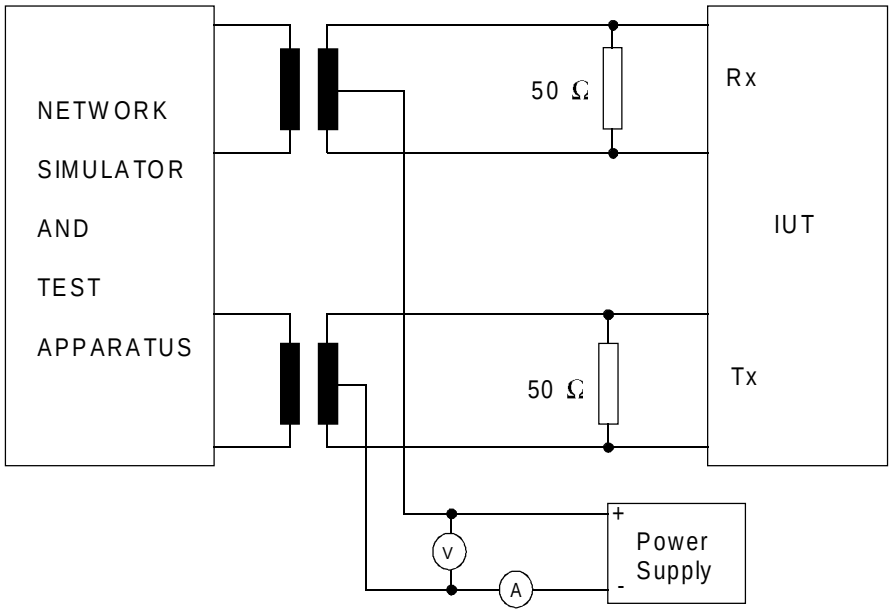


Figure B.30: Test configuration

System state: Any state.

Stimulus: Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), (voltage reversal).

Monitor: dc voltage and current.

Results: The power consumed by the TE shall not exceed 3 mW at both extremes of the power source voltage as stated in the stimulus section.

B.5.2.5 Restricted power provision (Test F)

Reference: ETS 300 012, annex D, subclause D.5.1.2.6.

Purpose: To ensure a non designated TE does not consume excessive power from PS1 (restricted) in any state.

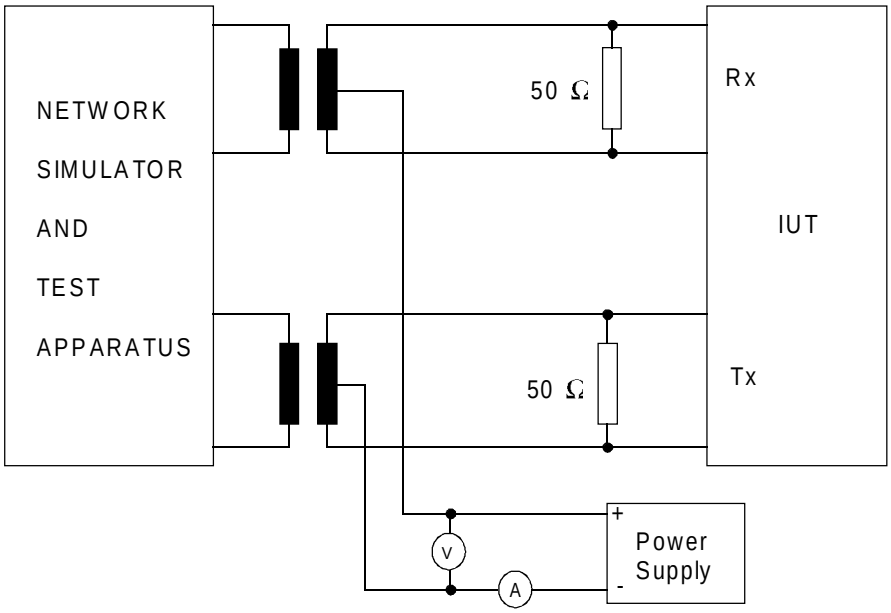


Figure B.31: Test configuration

System state: Inactive (state F1).

Stimulus: Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), (voltage reversal).

Monitor: dc voltage and current.

Results: The power consumed by the TE shall be less than 3 mW at both extremes of the power voltage as stated in the stimulus section.

B.5.3 Current transient

Reference: ETS 300 012, annex D, subclause D.5.1.3.

Purpose: To test the rate of change of the current drawn by a TE when the TE is varying its power consumption. This may be caused by changing the state, by some local actions or by some TE typical services.

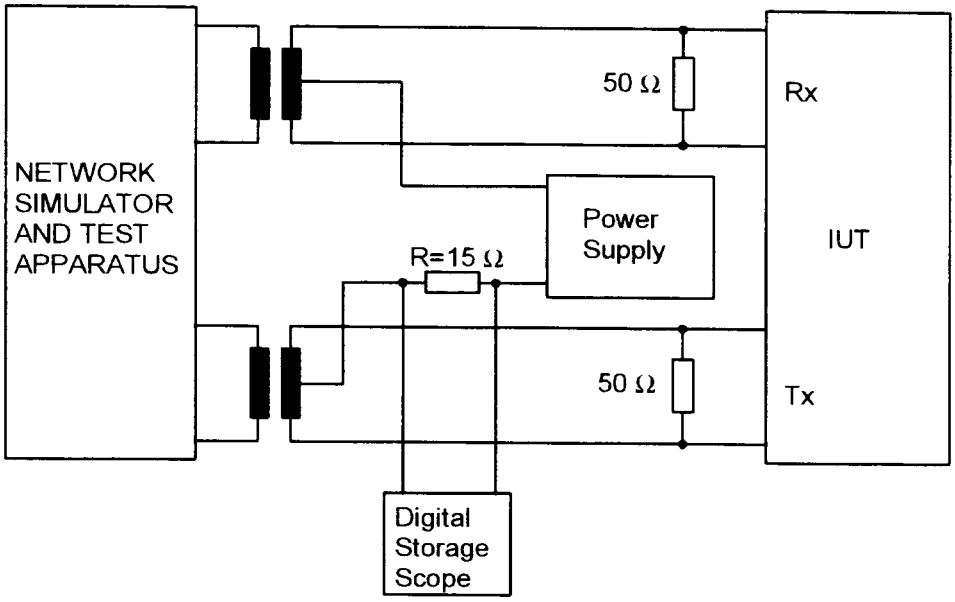


Figure B.32: Test configuration

System state: Deactivated (state F3) normal and restricted mode as applicable.

Stimulus: Network initiated activation, bringing the TE to state F7 (activated), followed by receipt of an incoming call bringing the TE to Layer 3 states Call received (U7) and then Active (U10). The call is then cleared by the network side and the INFO 0 sent, returning the TE to state F3.

Monitor: Current drawn by the TE.

Results: The current transient shall not exceed 5 mA/µs in the specified voltage range. The slope is measured from 10 % to 90 % of the current change.

NOTE: To ensure that the measured current transient is not due to a superimposed noise, only a change of current greater than 1,5 mA should be taken into consideration.

B.5.4 Limitation on power sink during transient conditions

B.5.4.1 Current/time limitation for TE

Reference: ETS 300 012, annex D, subclause D.5.1.4.1.

Purpose: To test the behaviour of current over time when connecting to PS1 in normal and restricted mode.

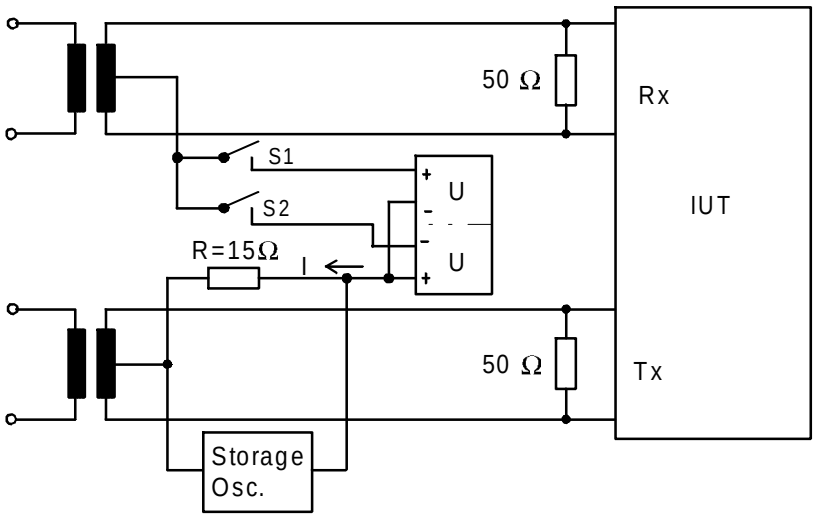


Figure B.33: Test configuration

NOTE 1: Ideal switch on condition (risetime -> 0).

System state: Inactive (state F1) (S1 and S2 are open).

NOTE 2: The internal capacitor of the IUT is discharged.

Stimulus: Phantom supply voltage,

normal mode, S2 is closed, S1 is open
restricted mode, S2 is open, S1 is closed.

U = 40 V R = 15 Ω

Monitor: Current I over time.

NOTE 3: The time ZERO is defined when the current detected exceeds 4 mA for the first time.

Results: Current variation with time shall comply with the appropriate limit defined in subclauses 9.5.5.1.1 and 9.5.5.1.2.

B.5.4.2 Current/time limitation for TE when connecting

Reference: ETS 300 012, annex D, subclause D.5.1.4.2.

Purpose: To test the sink current of a non-designated or locally powered TE from the phantom in restricted mode when connecting to the S-Bus.

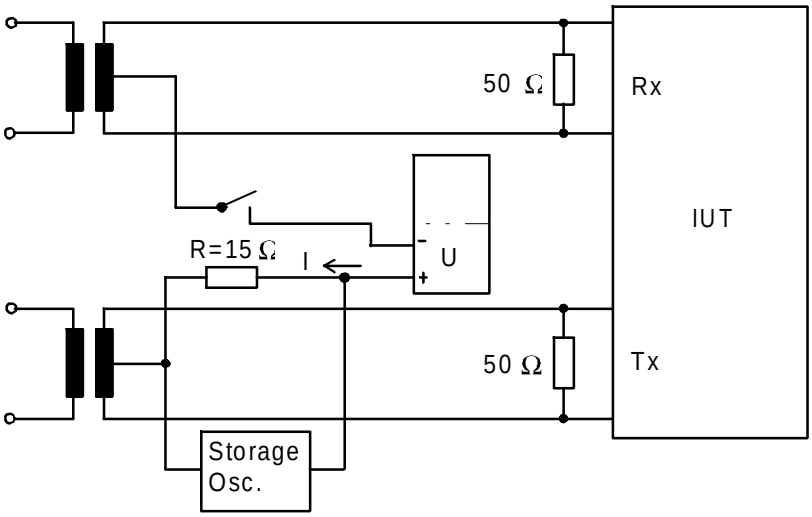


Figure B.34: Test configuration

NOTE. Ideal switch on condition (risetime -> 0).

System state: Inactive (state F1 and F1.1).

Stimulus: Phantom supply voltage. Restricted mode

U = - 40 V R = 15 Ω

Monitor: Current I over time.

Results: Current variation with time shall comply with the appropriate limit as defined in subclause 9.5.5.1.3.

B.5.4.3 Behaviour of a TE using a connection detector

Reference: ETS 300 012, annex D, subclause D.5.1.4.3.

Purpose: To test the connection detector when disconnecting.

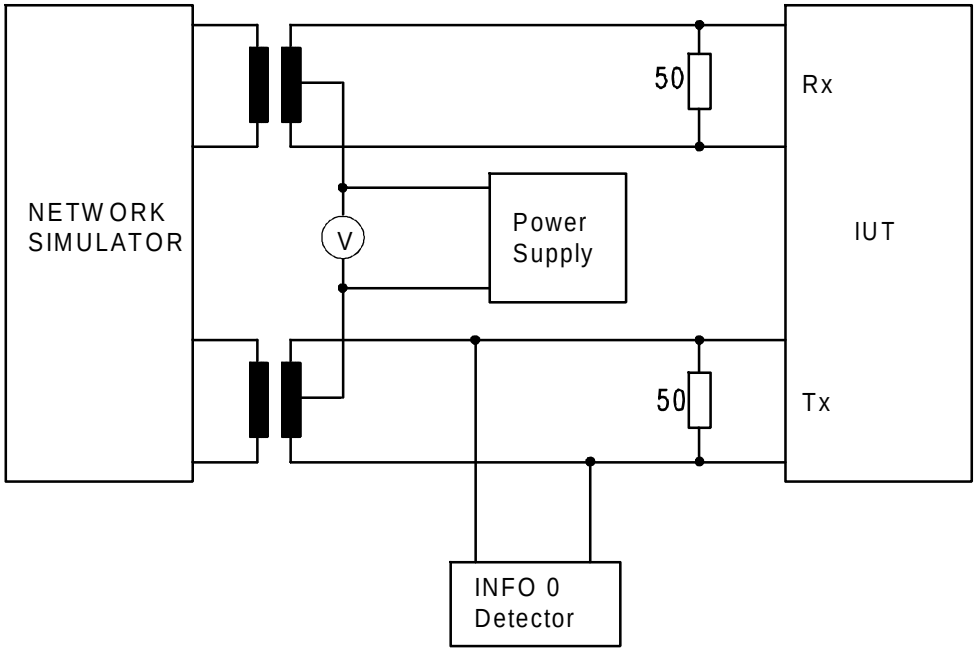


Figure B.35: Test configuration

System state: State F4, F6 and F7 in normal and restricted modes.

Stimulus: The PS1 (normal) voltage shall be reduced from 24 V to 0 V and then, after 500 ms at 0 V, shall rise again to 24 V. The rise and fall time shall each be less than 1 ms.

The PS1 (restricted) voltage shall be reduced from 32 V to 0 V and then, after 500 ms at 0 V, shall rise again to 32 V. The rise and fall time shall each be less than 1 ms.

Monitor: TE transmission line.

Results: INFO 0 shall not occur within 1 s after disappearance of the interruption.

B.5.4.4 Power start-up test

B.5.4.4.1 Power start-up test after removal of short-circuit

Reference: ETS 300 012, annex D, subclause D.5.1.4.4.1.

Purpose: To test the behaviour of TE input voltage over time after removal of short-circuit.

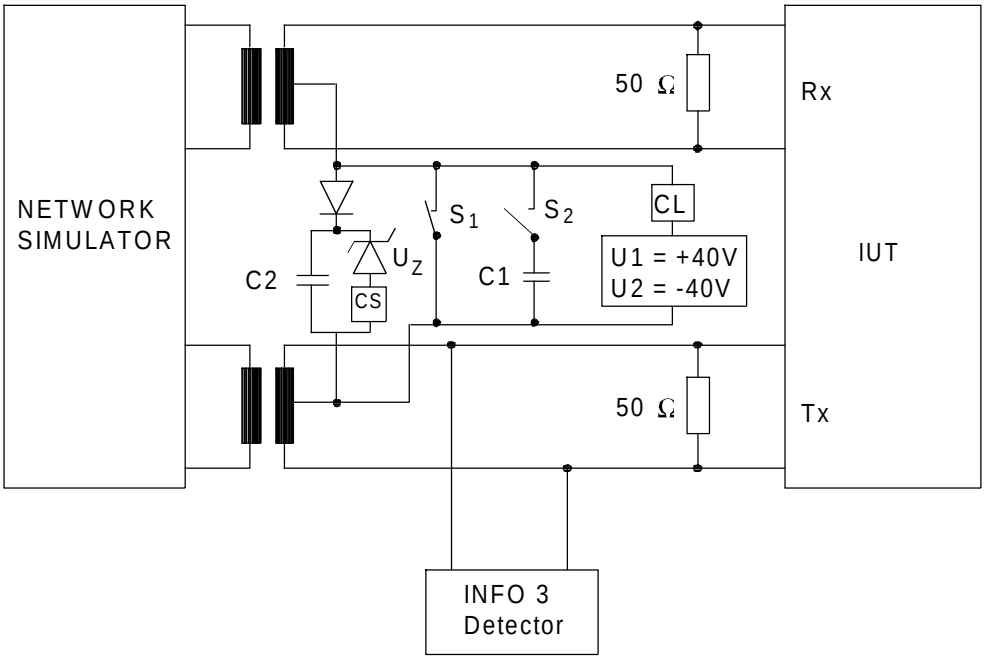


Figure B.36: Test configuration

System state: Inactive (state F1).

Stimulus: Removal of short-circuit (open S1) and network simulator sending INFO 2.

Test 1: Restricted mode.
Test parameters (see subclause 9.5.5.2.1).

Test 2: Normal mode.
Test parameters (see subclause 9.5.5.2.1).

Monitor: Transmission of INFO 3 (TE -> Network Simulator).

Results: TE shall transmit INFO 3 after removal of short-circuit.

B.5.4.4.2 Power start-up test at low input voltage

Reference: ETS 300 012, annex D, subclause D.5.1.4.4.2.

Purpose: To test the power start-up of a TE when connected to PS1 normal at low voltage.

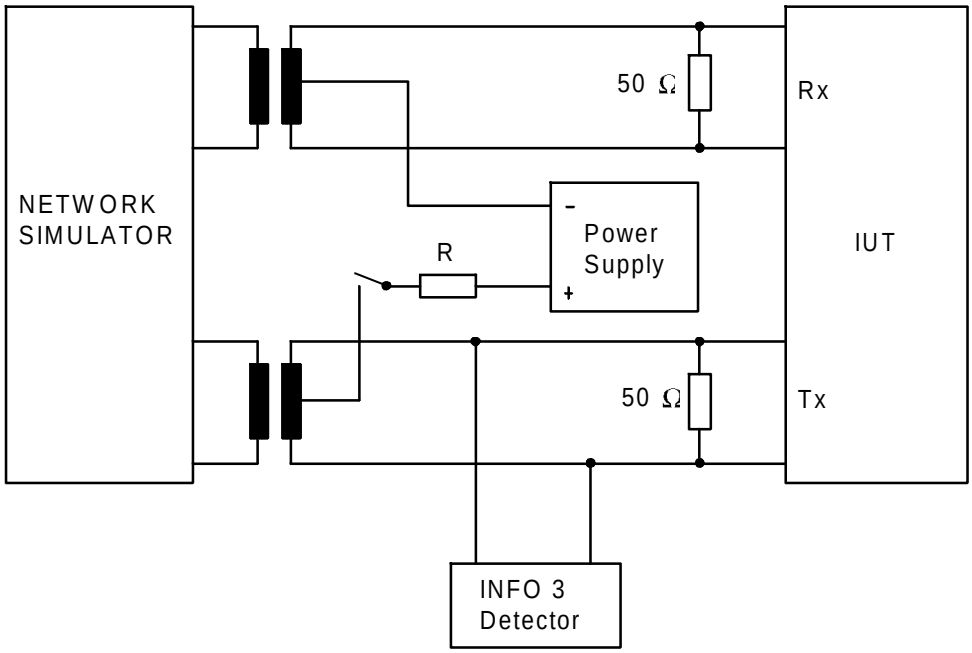


Figure B.37: Test configuration

System state: Inactive (state F1).

Stimulus: Phantom supply voltage (normal mode) and INFO 2.

U = 28 V.

R = 70 Ω.

Monitor: Transmitted line signal.

Result: TE shall transmit INFO 3 after the switch-on of the power source.

B.5.4.5 Protection against short-term interruptions

B.5.4.5.1 Normal power

Reference: ETS 300 012, annex D, subclause D.5.1.4.5.1.

Purpose: To ensure that an IUT does not lose an ongoing communication when the provision of power in normal power mode is interrupted.

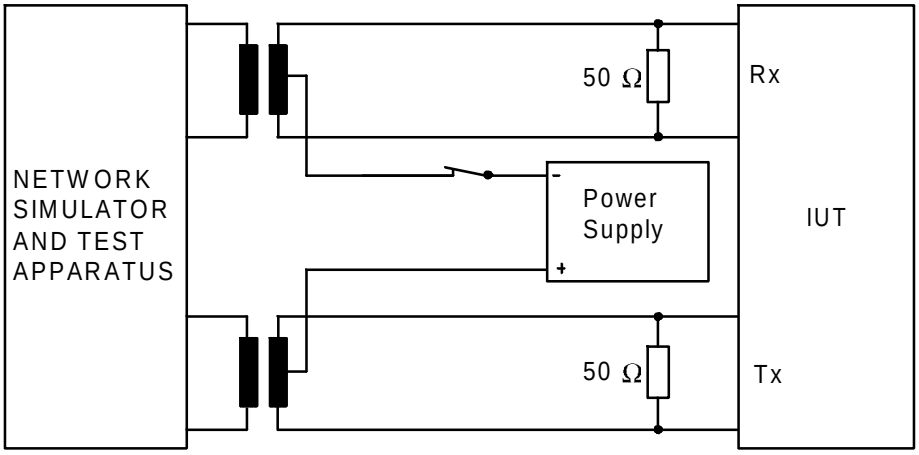


Figure B.38: Test configuration

System state: Activated (state F7) with maximum power consumption and communication established.

Stimulus: Normal mode U = 24 V.

PS1 interrupted for 5 ms

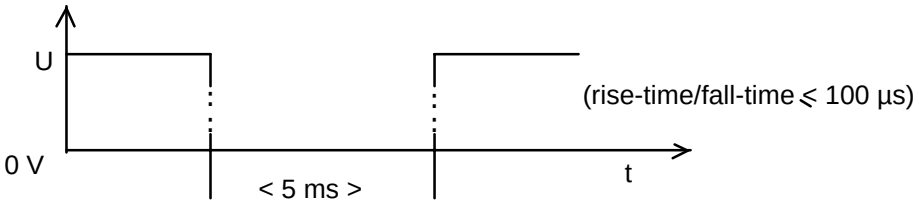


Figure B.39: Characteristics of PS1 voltage

Monitor: Ongoing communication.

Results: No loss of ongoing communication.

B.5.4.5.2 Restricted power

Reference: ETS 300 012, annex D, subclause D.5.1.4.5.2.

Purpose: To ensure that a IUT does not lose an ongoing communication when the provision of power in restricted power mode is interrupted.

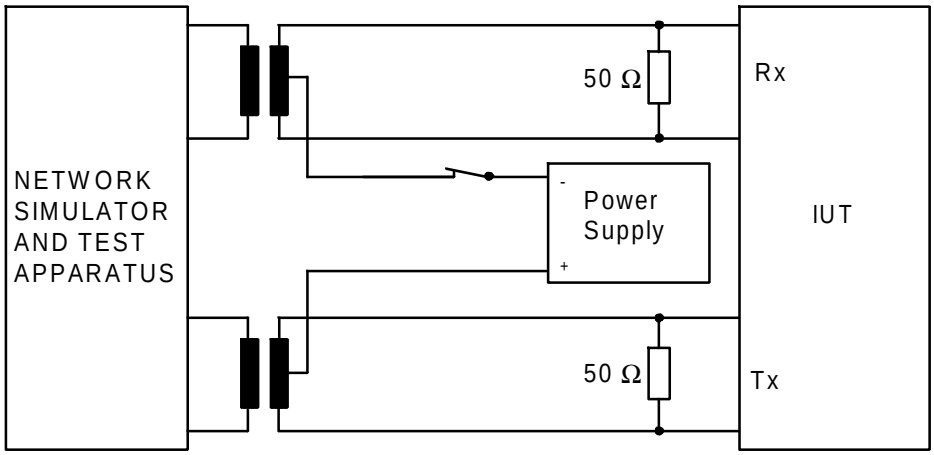


Figure B.40: Test configuration

System state: Activated (state F7) with maximum power consumption and communication established.

Stimulus: Restricted mode U = 32 V, PS1.

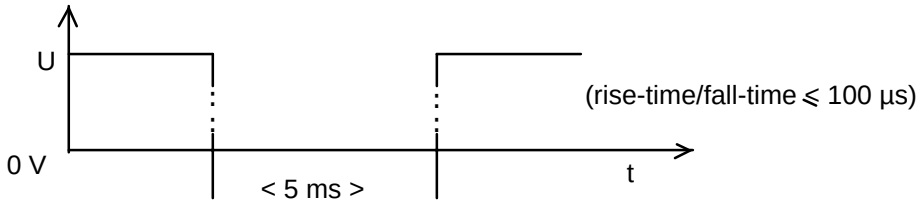


Figure B.41: Characteristics of PS1 voltage

Monitor: Ongoing communication.

Results: No loss of ongoing communication.

B.5.4.6 Behaviour at the switch-over

B.5.4.6.1 Normal power

Reference: ETS 300 012, annex D, subclause D.5.1.4.6.1.

Purpose: To check the reaction of an IUT under normal power condition, when the mode changes from normal to restricted mode.

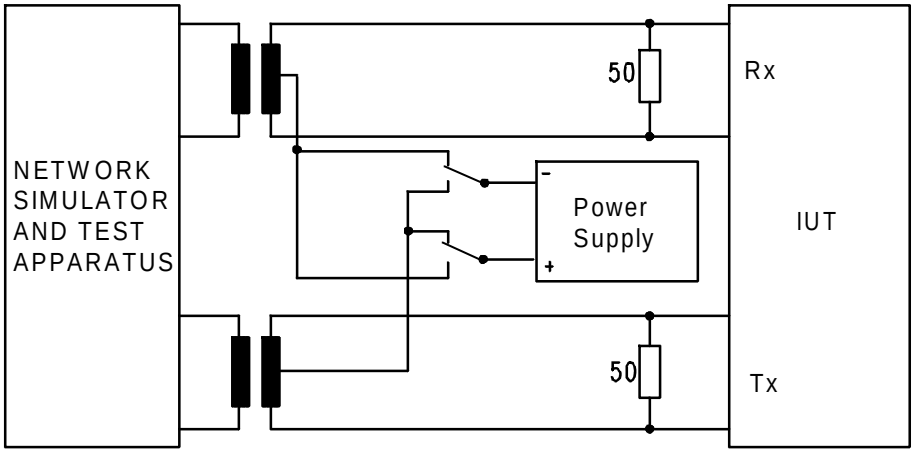


Figure B.42: Test configuration

System state: Activated (state F7) with maximum power consumption.

Stimulus: Change from + 32 V without current limitation to - 40 V with 11 mA current limitation. Changeover period shall not exceed 5 ms.

PS1 interrupted for 5 ms.

Monitor: Ongoing communication.

Results: No loss of the ongoing communication.

B.5.4.6.2 Restricted power

Reference: ETS 300 012, annex D, subclause D.5.1.4.6.2.

Purpose: To check the reaction of power consumption of an IUT after change from restricted to normal mode.

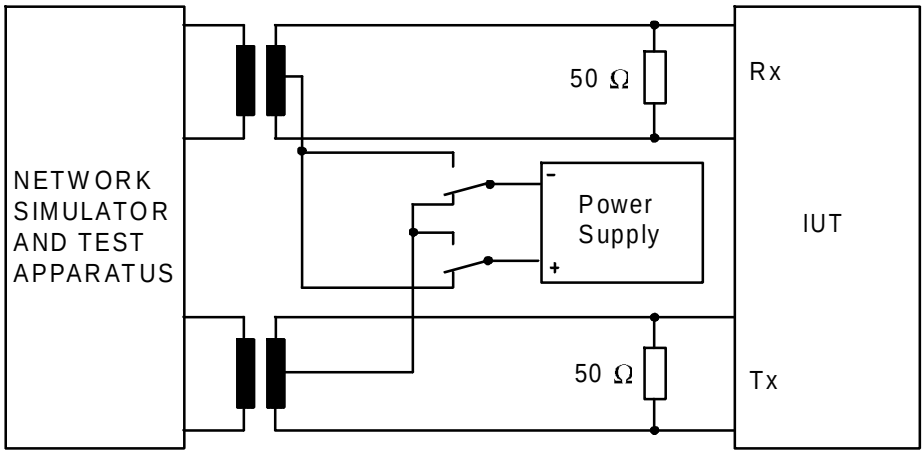


Figure B.43: Test configuration

System state: Activated (state F7) with maximum power consumption.

Stimulus: Change from restricted mode (U = - 32 V) to normal mode (U = + 32 V).

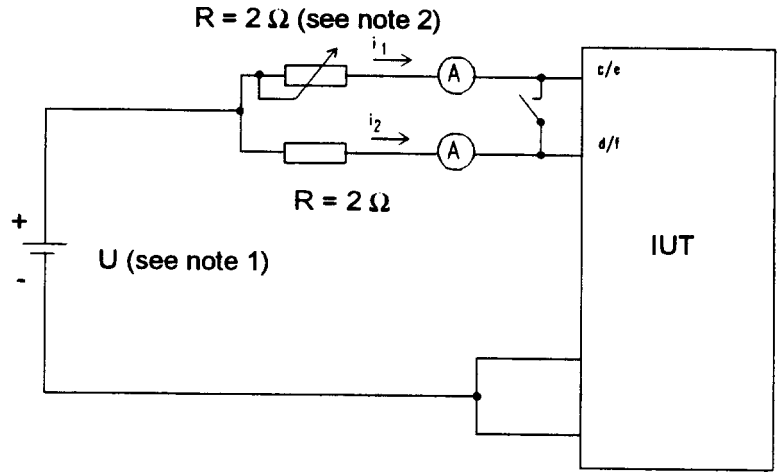
Monitor: dc-voltage and dc-current.

Results: The IUT shall not draw more than 380 mW from $0 < t < 500$ ms.

B.5.4.7 DC unbalance of TEs using power sink 1

Reference: ETS 300 012, annex D, subclause D.5.1.4.7.

Purpose: To test the dc unbalance of the receiver and transmitter circuit.



NOTE 1: The polarity of U (and i) is represented for testing the transmitter side (c and d wires). For testing the receiver (e and f wires) the polarity shall be reversed.

NOTE 2: Before connecting IUT, calibration to get the same current in both wires shall be done.

Figure B.44: Test configuration

System state: Deactivated (state F3).

Monitor: The currents i_1 and i_2 at the receiver and transmitter sides.

Results: The direct current unbalance (X) shall be less than 5 %.

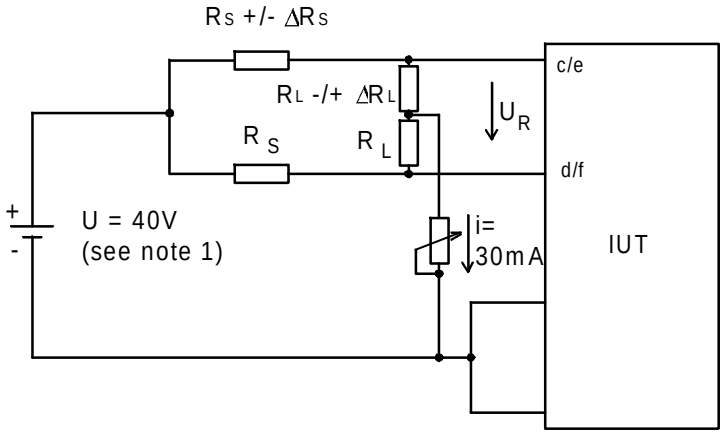
$$X(\%) = \frac{|i1 - i2|}{i1 + i2} * 100$$

NOTE 3: Due to the size of the tolerances for this measurement, the PASS criteria for this test deviates from the requirement.

B.5.4.8 Effect of current unbalance

Reference: ETS 300 012, annex D, subclause D.5.1.4.8.

Purpose: To test the impedance of the receiver and transmitter when a direct current unbalance is applied.



NOTE 1: The polarity of U is represented for testing the transmitter side (c and d wires). For testing the receiver (e and f wires) the polarity shall be reversed.

NOTE 2: Refer to figure 9.15, subclause 9.5.5.3.2 for values of ΔR_S, R_S, R_L and ΔR_L.

Figure B.45: Test configuration 1

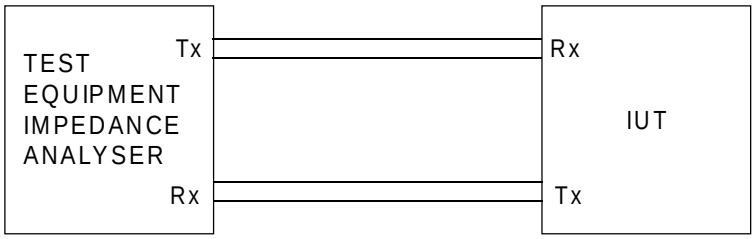


Figure B.46: Test configuration 2

System state: Deactivated (state F3).

Stimulus:

Test configuration 1: PS1 normal with test circuit applied with both polarities at the receiver and transmitter side.

Test configuration 2: Sinusoidal voltage of 100 mV rms, in the frequency range of 2 kHz to 20 kHz, superimposed with the dc voltage U_R as measured in test configuration 1.

Monitor: dc voltage at c to d and e to f at both polarities. For both transmitter and receiver, the greater value is taken for the next step as specified in test configuration 2.

Results: The impedance shall exceed the impedance template as given in figure 9.4, subclause 9.2.3 in the range from 2 kHz to 20 kHz.

B.5.5 Galvanic isolation

Purpose: To ensure the TE does not draw excessive earth current from a phantom PS1.

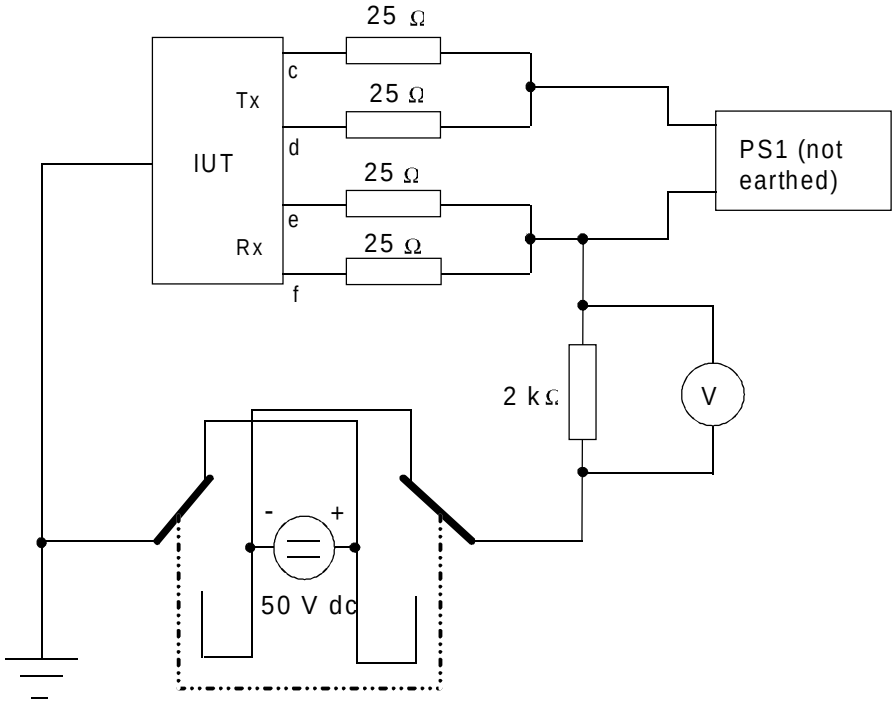


Figure B.47: Test configuration

System state: Inactive (F3).

Stimulus: Phantom, normal mode PS1 in the voltage range 40 V, + 5 % - 40 % (42 V to 24 V), with an additional longitudinal voltage of + 50 V and - 50 V applied.

Phantom restricted mode PS1 in the voltage range 40 V, + 5 %, - 20 % (42 V to 32 V), with an additional longitudinal voltage of + 50 V and - 50 V applied.

Monitor: Current flowing between PS1 and the IUT's connection to earth.

Results: The earth current drawn shall not exceed 100 µA at both extremes of the power source voltage as stated in the stimulus section.

Annex C (normative): Layer 2 tests

C.1 Test case selection

Table C.1 contains the test case selection criteria for the layer 2 tests.

Table C.1: Test case selections for layer 2

Test Case Id	Selection criteria (Test Suite Parameter)
TC11013	PC_AUTOMAT_TEI AND PC_PTMP
TC13008	PC_AUTOMAT_TEI
TC13010	PC_AUTOMAT_TEI
TC13014	PC_AUTOMAT_TEI
TC14001	PC_MP AND PX_IUT_STA_S4
TC14002	PC_MP AND PX_IUT_STA_S4
TC14019	PC_AUTOMAT_TEI AND PC_VER_TEI_C AND PX_IUT_STA_S4
TC14021	PC_AUTOMAT_TEI AND PC_VER_TEI_C AND PX_IUT_STA_S4
TC14022	PC_AUTOMAT_TEI AND (NOT PC_VER_TEI_C) AND PX_IUT_STA_S4
TC24004	PX_IUT_STA_S4
TC24007	PC_AUTOMAT_TEI AND PX_IUT_STA_S4
TC24020	PX_IUT_STA_S4
TC25002	
TC25005	
TC25007	
TC25013	
TC27003	
TC27004	
TC27011	
TC27012	
TC27015	
TC27019	
TC27022	
TC27027	
TC27028	
TC27031	PC_AUTOMAT_TEI
TC27040	
TC27043	
TC27046	
TC27058	
TC27404	
TC27405	
TC27407	
TC27411	
TC27412	
TC27413	
TC27414	
TC27416	
TC27417	
TC28005	
TC28012	
TC28019	PC_AUTOMAT_TEI
TC28406	
TC28407	
TC28408	
TC28424	

C.2 Layer 2 test suite

Suite overview

Test Suite Overview	
Suite Name:	TBR3_L2
Standards ref:	TBR3
PICS Proforma ref:	TBR3, annex A
PIXIT Proforma ref:	TBR3, annex E
PICS/PIXIT use:	
Test Method(s):	Remote Single Layer Test Method
Comments:	

The Layer 2 test cases in this TBR are based on the test cases from I-ETS 300 313 which is a conformance test suite for Layer 2. However, changes have been introduced in order not to use non-essential requirements in the TBR test cases. This means that an IUT passing a test case in the TBR test suite may not pass the corresponding test case in I-ETS 300 313. The ability to pass a test with the same test case identifier in I-ETS 300 313 provides an alternative means of verifying the requirement of the TBR. However, failure to pass the equivalent test in I-ETS 300 313 shall not be taken as an indication that the test in the TBR is also failed.

Testing shall be carried out at a temperature and humidity within the operational range of the TE.

Structure of the test suite.
The following naming scheme has been used in order to identify test cases, test steps and default subtrees to indicate their position within the test suite hierarchy.

<test case reference> ::= TBR3_L2/<tg1>/<tg2>/<tg3>/<tg4>/<tg5>/<tcid>
<tg1> ::= LM, DC, PR, PO, DF, MS
<tg2> ::= S10, S30, S40, S50, S70, S71, S74, S80, S84, SAL
<tg3> ::= V, I, S
<tg4> ::= <PDU type>
<tg5> ::= N, O, I
<tcid> ::= <test case/step/default identifier>

<tg1> "Area" Test Case Group
LM = Layer Management
DC = Data Control
PR = Preamble
PO = Postamble
DF = Default Behaviour
MS = Miscellaneous

<tg2> "Starting State" Test Case Group Identifies the state in which the test case starts. However for test steps for which a start state cannot be defined SAL (State All) is used.

<tg3> "Type" Test Case Group
V = Valid
I = Inopportune
S = Syntactically Invalid

<tg4> "PDU" Test Case Group
UI = UI-frame, IN = INFO frame, IA = ID.ASSIGNED, ID = ID.DENIED,
CR = CHECK REQUEST, SA = SABME, DI = DISC, UA = UA, DM = DM,
RR = RR,
RN = RNR, RJ = REJECT, T0 = T200, T3 = T303, N0 = N200, N2 = N202,
LE = DL_EST_REQ, IT = I reTransmission, RT = RR reTransmission,
RM = Recovery Mechanism, FC = Frame Check sequence

<tg5> "Reference" Test Case Group
N = NETs are the source of the base of the test case
O = Other source is the base of the test case
A = All is used for test steps and default steps

<tcid>::=<letter><letter><digit><digit><digit><digit><digit>
The two letters indicate whether it is a test case, test step or default step (TC for test case, PR for preamble, CS for check state, PO for postamble and DF for default tree).
The first digit indicates the Area (1 for LM, 2 for DC, 3 for PR, 4 for PO, 5 for CS and 6 for DF).
The two following digits indicates the starting state.
The two last digits indicate a sequence number.

EXAMPLE: TBR3_L2/LM/S40/V/CR/N/TC14001
The test suite is TBR3_L2.
The Layer Management is tested.
The test starts with the IUT in state 4.
A valid PDU is sent to the IUT.
A Check Request PDU is sent to the IUT.
The source of the base of the test case is the NETs.
The test case identifier is TC14001.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC11013	TBR3_L2/LM/S10/I/UI/N/TC11013	392	Ensure that the IUT when in state 1 discards an incoming UI-frame with TEI value different from 127.
TC13008	TBR3_L2/LM/S30/V/ID/N/TC13008	392	Ensure that the IUT when in state 3 and receiving an Identity Denied frame remains in state 3.
TC13010	TBR3_L2/LM/S30/V/N2/N/TC13010	393	Ensure that the IUT when initiating TEI assignment procedure and receiving no response from the network, transmits ID-request at least N202 times.
TC13014	TBR3_L2/LM/S30/I/IA/O/TC13014	393	Ensure that the IUT when in state 3 ignores an ID assign message containing a RI different from the one transmitted in the ID request message.
TC14001	TBR3_L2/LM/S40/V/CR/N/TC14001	394	Ensure that the IUT when in state 4 and after receiving an Identity Check Request with Action Indicator set to 127, responds with an Identity Check Response in which the value of the action indicator is equal to the TEI value assigned to the IUT and remains in state 4.
TC14002	TBR3_L2/LM/S40/V/CR/N/TC14002	394	Ensure that the IUT when in state 4 and after receiving an Identity Check Request with Action Indicator set to the value equal to the TEI value assigned to the terminal, responds with an Identity Check Response in which the value of the action indicator is equal to the TEI value assigned to the IUT and remains in state 4.
TC14019	TBR3_L2/LM/S40/I/UA/O/TC14019	395	Ensure that the IUT when in state 4 and when ID verify procedure is implemented and after having sent an ID verify message on receipt of a UA frame on first expiry of T202 retransmits the ID-verify message and on second expiry of T202 enters state 1.
TC14021	TBR3_L2/LM/S40/I/UA/O/TC14021	396	Ensure that the IUT when in state 4 and when ID verify procedure is implemented and after receiving a UA frame and initiating TEI ID verify, completes the TEI ID verify procedure and remains in state 4.
TC14022	TBR3_L2/LM/S40/I/UA/O/TC14022	396	Ensure that the IUT when in state 4 and when ID verify procedure is not implemented and after receiving a UA frame enters state 1.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC24004	TBR3_L2/DC/S40/V/LE/N/TC24004	397	Ensure the normal procedure of establishment of the Multiple Frame Operation initiated by the IUT.
TC24007	TBR3_L2/DC/S40/I/UA/O/TC24007	398	Ensure that the IUT when in state 4 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.
TC24020	TBR3_L2/DC/S40/S/SA/N/TC24020	398	Ensure that the IUT when in state 4 takes no action on receipt of a SABME frame containing a TEI different from the TEI assigned to the IUT.
TC25002	TBR3_L2/DC/S50/V/DM/N/TC25002	399	Ensure that the IUT when in state 5 and receiving a DM F=1 enters state 4.
TC25005	TBR3_L2/DC/S50/V/N0/N/TC25005	399	Ensure that the IUT when in state 5 and receiving no response from the network, retransmits SABME at least N200 times.
TC25007	TBR3_L2/DC/S50/I/SA/O/TC25007	400	Ensure that the IUT when in state 5 on receipt of a SABME frame (Call collision) transmits a UA frame and remains in state 5.
TC25013	TBR3_L2/DC/S50/I/RR/O/TC25013	400	Ensure that the IUT when in state 5 ignores an RR command frame.
TC27003	TBR3_L2/DC/S70/V/IN/N/TC27003	401	Ensure the operation of the sequence numbering of N(R) and N(S).
TC27004	TBR3_L2/DC/S70/V/IN/N/TC27004	402	Ensure that the IUT accepts acknowledgement by an I-frame.
TC27011	TBR3_L2/DC/S70/V/RJ/N/TC27011	402	Ensure that the IUT when in state 7.0 and an I-frame is outstanding, and the IUT receieves a REJ F=0 indicating request of retransmission of last transmitted I-frame, retransmits the requested I-frame.
TC27012	TBR3_L2/DC/S70/V/DI/N/TC27012	403	Ensure the release procedure for Multiple Frame Established Operation initiated by the network side.
TC27015	TBR3_L2/DC/S70/V/IT/N/TC27015	404	Ensure that the IUT retransmits the last transmitted I-frame at least twice or transmits an RR command at least twice if no acknowledgement for the last transmitted I-frame is received. If the IUT transmits an RR command frame, it is tested whether the IUT retransmits the I-frame after receiving an RR response frame not acknowledging the outstanding I-frame.
TC27019	TBR3_L2/DC/S70/V/RM/N/TC27019	405	Ensure that the IUT when in state 7.0 and an I-frame is outstanding and the IUT receives no acknowledge for the outstanding I-frame will either retransmit the I-frame or transmit an RR P=1 at expiry of timer T200.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC27022	TBR3_L2/DC/S70/I/SA/N/TC27022	405	Ensure the re-establishment procedure of Multiple Frame Operation initiated by the network.
TC27027	TBR3_L2/DC/S70/I/IN/N/TC27027	406	Ensure that the IUT when in state 7.0 and receiving an I-frame with P=1 and N(S) error transmits a REJect frame with F=1.
TC27028	TBR3_L2/DC/S70/I/IN/N/TC27028	406	Ensure that the IUT when in state 7.0 and receiving an I-frame with P=0 and N(S) error transmits a REJect frame with F=0.
TC27031	TBR3_L2/DC/S70/I/UA/O/C27031	407	Ensure that the IUT when in state 7.0 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.
TC27040	TBR3_L2/DC/S70/I/RR/N/TC27040	407	Ensure that the IUT when in state 7.0 and receiving a RR command frame with P bit 1 and a N(R) error initiates re-establishment of the data link.
TC27043	TBR3_L2/DC/S70/I/RR/N/TC27043	408	Ensure that the IUT when in state 7.0 and receiving a RR response frame with F bit 1 and a N(R) error initiates re-establishment of the data link.
TC27046	TBR3_L2/DC/S70/I/RR/N/TC27046	408	Ensure that the IUT when in state 7.0 and receiving a RR response frame with F bit 0 and a N(R) error initiates re-establishment of the data link.
TC27058	TBR3_L2/DC/S70/S/FC/N/TC27058	409	Ensure that the IUT when receiving a frame which contains a frame check sequence error discards the frame.
TC27404	TBR3_L2/DC/S74/V/IN/N/TC27404	410	Ensure that the IUT when in state 7.4 does not transmit any I-frames and that outstanding I-frames are transmitted after entering state 7.0.
TC27405	TBR3_L2/DC/S74/V/RJ/O/TC27405	411	Ensure that the IUT when in state 7.4 and receiving a REJ P=1 frame responds with an RR F=1 frame and retransmits the I-frame rejected.
TC27407	TBR3_L2/DC/S74/V/RJ/O/TC27407	411	Ensure that the IUT when in state 7.4 and receiving a REJ F=0 frame retransmits the I-frame rejected.
TC27411	TBR3_L2/DC/S74/V/RT/N/TC27411	412	Ensure that the IUT when in state 7.4 and receiving no response from the network retransmits an RR command frame N200 times.
TC27412	TBR3_L2/DC/S74/V/RR/O/TC27412	412	Ensure that the IUT when in state 7.4 and receiving an RR P=1 frame transmits an RR F=1 and enters state 7.0.
TC27413	TBR3_L2/DC/S74/V/RR/O/TC27413	413	Ensure that the IUT when in state 7.4 and receiving an RR F=0 frame enters state 7.0.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC27414	TBR3_L2/DC/S74/V/RN/O/TC27414	413	Ensure that the IUT when in state 7.4 and receiving a RNR P=1 frame transmits an RR F=1 and remains in state 7.4.
TC27416	TBR3_L2/DC/S74/V/RN/O/TC27416	413	Ensure that the IUT when in state 7.4 and receiving a RNR F=0 frame remains in state 7.4.
TC27417	TBR3_L2/DC/S74/V/T0/N/TC27417	414	Ensure that the IUT when in state 7.4 and receiving no frames from the network retransmits an RR command frame within the allowed tolerance of timer T200
TC28005	TBR3_L2/DC/S80/V/RJ/N/TC28005	415	Ensure that the IUT when in state 8.0 and receiving a REJ F=1 indicating a request for retransmission of the last I-frame, enters state 7.0 and retransmits the last transmitted I-frame.
TC28012	TBR3_L2/DC/S80/I/IN/N/TC28012	416	Ensure that the IUT when in state 8.0 is able to receive I-frames.
TC28019	TBR3_L2/DC/S80/I/UA/O/TC28019	417	Ensure that the IUT when in state 8.0 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.
TC28406	TBR3_L2/DC/S84/V/RN/N/TC28406	417	Ensure that the IUT when in state 8.4 is able to receive I-frames.
TC28407	TBR3_L2/DC/S84/V/RJ/O/TC28407	418	Ensure that the IUT when in state 8.4 and receiving a REJ F=1 indicating no request for retransmission of I-frames, enters state 7.0.
TC28408	TBR3_L2/DC/S84/I/SA/O/TC28408	418	Ensure that the IUT when in state 8.4 and receiving a SABME frame, transmits a UA frame, resets all state variables and enters state 7.0.
TC28424	TBR3_L2/DC/S84/I/RJ/O/TC28424	419	Ensure that the IUT when in state 8.4 and receiving a REJ P=1 frame not acknowledging the last transmitted I-frame, transmits an RR F=1 and enters state 8.0.

Test Step Identifier	Test Step Reference	Page	Description
PR31001	TBR3_L2/PR/S10/V/PR/A/ PR31001	420	To bring the IUT in state 1.
PR31002	TBR3_L2/PR/S10/V/PR/A/ PR31002	420	To bring the IUT in state 1. This preamble is used for basic access point-to-multipoint configured IUTs.
PR31003	TBR3_L2/PR/S10/V/PR/A/ PR31003	420	To bring the IUT in state 1. This preamble is used for IUTs of the automatic TEI assignment category configured for point-to-point.
PR31401	TBR3_L2/PR/S14/V/PR/A/ PR31401	421	To bring the IUT in state 1 or state 4. Non automatic IUTs will end in state 4, and automatic IUTs will end in state 1.
PR33001	TBR3_L2/PR/S30/V/PR/A/ PR33001	422	To bring the IUT in state 3.
PR33002	TBR3_L2/PR/S30/V/PR/A/ PR33002	422	To bring the IUT in state 3.. This preamble is used for basic access point-to-multipoint configured IUTs.
PR33003	TBR3_L2/PR/S30/V/PR/A/ PR33003	422	To bring the IUT in state 3. This preamble is used for IUTs of the automatic TEI assignment category configured for point-to-point.
PR34001	TBR3_L2/PR/S40/V/PR/A/ PR34001	423	To bring the IUT in state 4.
PR34002	TBR3_L2/PR/S40/V/PR/A/ PR34002	423	To bring the IUT in state 4. This preamble is used for IUTs configured for point-to-multipoint.
PR34003	TBR3_L2/PR/S40/V/PR/A/ PR34003	424	To bring the IUT in state 4. This preamble is used for IUTs configured for point-to-point.
PR35001	TBR3_L2/PR/S50/V/PR/A/ PR35001	426	To bring the IUT in state 5.
PR37001	TBR3_L2/PR/S70/V/PR/A/ PR37001	426	To bring the IUT in state 7.0.
PR37002	TBR3_L2/PR/S70/V/PR/A/ PR37002	427	To bring the IUT in state 7.0 and provide INFO generation from IUT.
PR37003	TBR3_L2/PR/S70/V/PR/A/ PR37003	427	To bring the IUT in state 7.0 and provide INFO generation from the IUT. This preamble is used for IUTs configured for point-to-point.
PR37004	TBR3_L2/PR/S70/V/PR/A/ PR37004	428	To bring the IUT in state 7.0 and provide INFO generation from the IUT. This preamble is used for IUTs configured for point-to-multipoint..
PR37401	TBR3_L2/PR/S74/V/PR/A/ PR37401	428	To bring the IUT in state 7.4.
PR38001	TBR3_L2/PR/S80/V/PR/A/ PR38001	429	To bring the IUT in state 8.0.
PR38401	TBR3_L2/PR/S84/V/PR/A/ PR38401	429	To bring the IUT in state 8.4.
PO44004	TBR3_L2/PO/S40/V/PO/A/ PO44004	430	To ensure that the IUT is in a stable state at the end of a test case. That is one of the states 1, 4 or 7.

Test Step Identifier	Test Step Reference	Page	Description
CS51001	TBR3_L2/MS/S10/V/MS/A/CS51001	431	To check that the IUT is in state 1.
CS53001	TBR3_L2/MS/S30/V/MS/A/CS53001	432	To check that the IUT is in state 3.
CS54001	TBR3_L2/MS/S40/V/MS/A/CS54001	433	To check that the IUT is in state 4.
CS57001	TBR3_L2/MS/S70/V/MS/A/CS57001	433	To check that the IUT is in state 7.0.
CS57101	TBR3_L2/MS/S71/V/MS/A/CS57101	434	To check that the IUT is in state 7.1.
CS57401	TBR3_L2/MS/S74/V/MS/A/CS57401	434	To check that the IUT is in state 7.4.

Default Identifier	Default Reference	Page	Description
DF69901	TBR3_L2/DF/SAL/V/DF/A/DF69901	434	Default subtree for all states except 7 and 8.
DF69902	TBR3_L2/DF/SAL/V/DF/A/DF69902	435	Default subtree for MF (state 7) and Timer Recovery (state 8) States.

Declarations Part

User Type Definitions			
Name	**Base Type**	**Definition**	**Comments**
SAPI_RANGE	INTEGER	(0 TO 63)	Other values not considered in this TS BITSTRING[6]
TEI_RANGE	INTEGER	(0 TO 127)	BITSTRING[7]
RI_RANGE	INTEGER	(0 TO 65535)	Reference number; BITSTRING[16]
N_RANGE	INTEGER	(0 TO 127)	N(S) and N(R) range; BITSTRING[7]

User Operation Definition	
Operation Name:	CR_VALUE
Result Type:	BITSTRING
Description: The return value represents the Command/Response bit. See table 10.1, subclause 10.2.3.2: CR_VALUE = 1 for command frames from tester to IUT CR_VALUE = 0 for command frames from IUT to tester CR_VALUE = 0 for response frames from tester to IUT CR_VALUE = 1 for response frames from IUT to tester	

User Operation Definition	
Operation Name:	FCS_VALUE
Result Type:	OCTETSTRING
Description: The return value represents the 2 octet FCS field contained in any Layer 2 frames.	

User Operation Definition	
Operation Name:	RANDOM(low:INTEGER; high:INTEGER)
Result Type:	INTEGER
Description: The return value represents a random value between "low" and "high" values. This operation is useful to provide the RI value during TEI management.	

User Operation Definition	
Operation Name:	TIME(tmax:INTEGER; tmin:INTEGER; t:INTEGER)
Result Type:	BOOLEAN
Description: Returns TRUE if "t" satisfies the condition: tmin<= t <= tmax. Otherwise FALSE is returned This function is used to test IUT timer values. Example: TIME(22,18,20) is TRUE TIME(22,18,23) is FALSE	

Test Suite Parameters			
Name	**Type**	**PICS/PIXIT ref**	**Comments**
PC_PTMP	BOOLEAN	A8.1	FALSE if the IUT is configured according to subclause 10.3.
PC_AUTOMAT_TEI	BOOLEAN	A10.1	TRUE if the IUT supports automatic TEI assignment.
PC_REM_TEI_C	BOOLEAN	A10.8	TRUE if the IUT removes its TEI on error code C.
PC_VER_TEI_C	BOOLEAN	A10.9	TRUE if the IUT supports the Identity verify procedure on error code C.
PX_TEI_VALUE	INTEGER	E.5.1	TEI value for non automatic assignment IUT. In case of automatic assignment IUT the initial value is 64.
PX_IUT_STA_S4	BOOLEAN	E.5.2	TRUE if the IUT is stable in state 4 for at least 6 seconds.
PX_COMPAT_SETUP	OCTETSTRING	E.6.1	A compatible SETUP PDU without Channel identification information element.

Test Suite Constants			
Name	**Type**	**Value**	**Comments**
T200VMAX	INTEGER	3000	T200 upper limit 3 sec.
T200VMIN	INTEGER	950	T200 lower limit 0,95 sec.
T202VMAX	INTEGER	5000	T202 upper limit 5 sec.
TAC_PTP	INTEGER	500	Layer 2 response time (500 ms) for PTP.
TAC_PTMP	INTEGER	200	Layer 2 response time (200 ms) for PTMP.
TWL3_MAX	INTEGER	32	Layer 3 response time 32 sec.
N200	INTEGER	3	Maximum number of retransmissions
N202	INTEGER	3	Maximum number of transmission of TEI identity request messages.
P0	BITSTRING	'0'B	0 Poll bit
F0	BITSTRING	'0'B	0 Final bit
P1	BITSTRING	'1'B	1 Poll bit
F1	BITSTRING	'1'B	1 Final bit
K	INTEGER	1	Window size. Maximum number of outstanding I-frames
RCMax	INTEGER	9	Maximum number of id. request messages that shall be ignores when entering state 1
RELEASE	HEXSTRING	'0801014D'H	Layer 3 RELEASE message, protocol discriminator, call reference 1, flag 0, message type
REL_COMPLETE	HEXSTRING	'0801815A'H	Layer 3 RELEASE COMPLETE message, protocol discriminator, call reference 1, flag 1, message type
SETUP	HEXSTRING	'08010105'H	Layer 3 SETUP message without an information field
L3_NULL	HEXSTRING	'00'H	Layer 3 NULL message
BASIC_ACCESS	BOOLEAN	TRUE	Used to select the appropriate preambles

Test Suite Variables			
Name	**Type**	**Value**	**Comments**
CURRENT_TEI	TEI_RANGE	64	TEI value established during link start up and used during multiple frame operations
TAC_VAL	INTEGER	200	Layer 2 response time. The value depends on the configuration of the IUT (TAC_PTP or TAC_PTMP).

Test Case Variables			
Name	**Type**	**Value**	**Comments**
NR	N_RANGE	0	N(R) from tester side
NS	N_RANGE	0	N(S) from tester side
RC	INTEGER	0	retransmission counter
VRI	INTEGER	0	reference number
T	INTEGER	0	Used to store current time of a running timer
TMP	INTEGER	0	dummy variable
TMP1	INTEGER	0	dummy variable

PCO Type Declarations			
Name	**Type**	**Role**	**Comments**
L	PSAP	LT	Physical service access point at the lower tester

Timer Declarations			
Timer Name	**Duration**	**Units**	**Comments**
TW200	T200VMAX	ms	Timer at the end of which transmission of frame may be initiated
TW202	T202VMAX	ms	Time for Identity verify retransmission
TWL3	TWL3_MAX	sec	Maximum time for a response generated by Layer 3
TWAIT	30	sec	Used by the tester for test synchronization with external procedure (maximum time for an IMPLICIT SEND execution)
TNOAC	3	sec	Ensures no response from the IUT, PASS on timeout
TAC	TAC_VAL	ms	Timer used to test Layer 2 response time.
TREAD	30	sec	Used in timer tests.

Abbreviation Declarations		
Abbreviation	**Expansion**	**Comments**
Icr_s	PH_DATA_RQ<MU^Icr>	Send a I-frame
Icr_r	PH_DATA_IN<MU~Icr>	Receive a I-frame
Is	PH_DATA_RQ<MU^I>	Send a I-frame
Ir	PH_DATA_IN<MU~I>	Receive a I-frame
RR_C	PH_DATA_RQ<MU^RR_C>	Send a RR_C frame
RR_Cr	PH_DATA_IN<MU~RR_C>	Receive a RR_C frame
RR_R	PH_DATA_RQ<MU^RR_R>	Send a RR_R frame
RR_Rr	PH_DATA_IN<MU~RR_R>	Receive a RR_R frame
RNR_C	PH_DATA_RQ<MU^RNR_R>	Send a RNR_C frame
RNR_Cr	PH_DATA_IN<MU~RNR_R>	Receive a RNR_C frame
RNR_R	PH_DATA_RQ<MU^RNR_C>	Send a RNR_R frame
RNR_Rr	PH_DATA_IN<MU~RNR_C>	Receive a RNR_R frame
REJ_C	PH_DATA_RQ<MU^REJ_R>	Send a REJ_C frame
REJ_Cr	PH_DATA_IN<MU~REJ_R>	Receive a REJ_C frame
REJ_R	PH_DATA_RQ<MU^REJ_C>	Send a REJ_R frame
REJ_Rr	PH_DATA_IN<MU~REJ_C>	Receive a REJ_R frame
SABME	PH_DATA_RQ<MU^SABME>	Send a SABME frame
SABMEr	PH_DATA_IN<MU~SABME>	Receive a SABME frame
DISC	PH_DATA_RQ<MU^DISC>	Send a DISC frame
DISCr	PH_DATA_IN<MU~DISC>	Receive a DISC frame
UA	PH_DATA_RQ<MU^UA>	Send a UA frame
UAr	PH_DATA_IN<MU~UA>	Receive a UA frame
DM	PH_DATA_RQ<MU^DM>	Send a DM frame
DMr	PH_DATA_IN<MU~DM>	Receive a DM frame
INV_U_FR	PH_DATA_RQ<MU^INV_U_FR>	Send a INV_U_FR frame
INV_I_FR	PH_DATA_RQ<MU^INV_I_FR>	Send a INV_I_FR frame
XID_Cr	PH_DATA_IN<MU^XID_C>	Receive a XID frame

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
PH_DATA_RQ(PH_DATA_Request)	PSAP	see table 5.1, subclause 5.3.2
Service Parameter Information		
Field Name	**Type**	**Comments**
PI(Priority Indicator)	BITSTRING	Unused
MU(Message Unit)	OCTETSTRING	Data Link Layer peer-to-peer message

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
PH_DATA_IN(PH_DATA_Indication)	PSAP	see table 5.1, subclause 5.3.2
Service Parameter Information		
Field Name	**Type**	**Comments**
PI(Priority Indicator)	BITSTRING	Unused
MU(Message Unit)	OCTETSTRING	Data Link Layer peer-to-peer message

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
PH_ACT_RQ(PH_Activate_Request)	PSAP	see table 5.1, subclause 5.3.2

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
PH_ACT_IN(PH_Activate_Indication)	PSAP	see table 5.1, subclause 5.3.2

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
PH_DEACT_IN(PH_Deactivate_Indication)	PSAP	see table 5.1, subclause 5.3.2

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
I(Information)	PSAP	I-frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	BITSTRING	I Control Field
N_S	N_RANGE	Send Sequence Number
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
INFORMATION	HEXSTRING	Layer 3 data
RESTINFO	OCTETSTRING	Rest of Info field
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
Icr(Call Reference)	PSAP	see table 10.5 and figure 10.5 I-frames; Command for coding sequence of call reference see format convention, subclause 10.1.8
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	BITSTRING	I Control Field
N_S	N_RANGE	Send Sequence Number
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
PROT_DISCR	BITSTRING	Protocol Discriminator
CALLREFOCT1	BITSTRING	ZERO+LENGTH (=2)
FLAG	BITSTRING	1 or 0
CR	BITSTRING	Call reference value
MESSAGETYPE	BITSTRING	Message Type
RESTINFO	OCTETSTRING	Rest of Info field
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RR_C(Receive Ready Command)	PSAP	S frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	RR Control Field
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RR_R(Receive Ready Response)	PSAP	S frames; Response
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
R	BITSTRING	Response Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	RR Control Field
F	BITSTRING	Final Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RNR_C(Receive Not Ready Command)	PSAP	S frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	RNR Control Field
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RNR_R(Receive Not Ready Response)	PSAP	S frames; Response
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
R	BITSTRING	Response Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	RNR Control Field
F	BITSTRING	Final Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
REJ_C(Reject Command)	PSAP	S frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	REJ Control Field
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
REJ_R(Reject Response)	PSAP	S frames; Response
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
R	BITSTRING	Response Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	HEXSTRING	REJ Control Field
F	BITSTRING	Final Bit
N_R	N_RANGE	Receive Sequence Number
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SABME(Set Asynchr. Balanced Mode Extended)	PSAP	U frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	SABME Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	SABME Control Field(Cont.)
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
DISC(Disconnect)	PSAP	U frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	DISC Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	DISC Control Field(Cont.)
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
DM(Disconnect Mode)	PSAP	U frames; Response
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
R	BITSTRING	Response Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	DM Control Field
F	BITSTRING	Final Bit
CONTROL2	BITSTRING	DM Control Field(Cont.)
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
UA(Unnumbered Acknowledge)	PSAP	U frames; Response
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
R	BITSTRING	Response Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	UA Control Field
F	BITSTRING	Final Bit
CONTROL2	BITSTRING	UA Control Field(Cont.)
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
UI(Unnumbered Information)	PSAP	U frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	UI Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	UI Control Field(Cont.)
INFORMATION	HEXSTRING	User Data
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
UI_M(Unnumbered In formation for TEI management)	PSAP	U frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	UI Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	UI Control Field (Control)
MANAG_ENTITY	HEXSTRING	Layer Management Entity Identifier
RI	RI_RANGE	Reference Identifier
TYPE	OCTETSTRING	Message Type
EA	BITSTRING	Extension Bit
AI	TEI_RANGE	Action Indicator
FCS_FIELD	OCTETSTRING	FCS field (2 octets)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
INV_U_FR(Invalid U frame)	PSAP	U frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	Control Field (cont.)
INFORMATION	HEXSTRING	Additional (bad) field
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
INV_I_FR(Invalid I-frame)	PSAP	I-frames; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL	BITSTRING	I Control Field
N_S	N_RANGE	Send Sequence Number
P	BITSTRING	Poll Bit
N_R	N_RANGE	Receive Sequence Number
INFORMATION	HEXSTRING	Layer 3 data
FCS_FIELD	OCTETSTRING	FCS field (2 OCTETs)

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
XID_C(Exchange Identification)	PSAP	U Frame; Command
PDU Field Information		
Field Name	**Type**	**Comments**
EA_OCTET2	BITSTRING	Address field extention bit
C	BITSTRING	Command Bit
SAPI	SAPI_RANGE	Service Access Point Identifier
EA_OCTET3	BITSTRING	Address field extention bit
TEI	TEI_RANGE	Terminal End Point Identifier
CONTROL1	BITSTRING	Control Field
P	BITSTRING	Poll Bit
CONTROL2	BITSTRING	Control Field (Cont.)
INFORMATION	OCTETSTRING	Information Field
FCS_FIELD	OCTETSTRING	FCS field

Constraints Part

PDU Constraint Declaration	
PDU Name: I	**Constraint Name:** IN1(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
INFORMATION	?
RESTINFO	*
FCS_FIELD	FCS_VALUE
Comments: INFO frame with any message	

PDU Constraint Declaration	
PDU Name: I	**Constraint Name:** IN2(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
INFORMATION	RELEASE
RESTINFO	-
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE message	

PDU Constraint Declaration	
PDU Name: I	**Constraint Name:** IN3(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
INFORMATION	REL_COMPLETE
RESTINFO	*
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE COMPLETE message	

PDU Constraint Declaration	
PDU Name: Icr	**Constraint Name:** IN4(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE; CR_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
PROT_DISCR	'00001000'B
CALLREFOCT1	'00000001'B
FLAG	'0'B
CR	CR_
MESSAGETYPE	'01001101'B
RESTINFO	-
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE message	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Icr	IN5(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
PROT_DISCR	'00001000'B
CALLREFOCT1	'00000001'B
FLAG	'0'B
CR	?
MESSAGETYPE	'00000101'B
RESTINFO	?
FCS_FIELD	FCS_VALUE
Comments: INFO frame with SETUP message	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
Icr	IN6(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE; CR_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
PROT_DISCR	'00001000'B
CALLREFOCT1	'00000001'B
FLAG	'1'B
CR	CR_
MESSAGETYPE	'01011010'B
RESTINFO	-
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE COMPLETE message	

PDU Constraint Declaration	
PDU Name: Icr	**Constraint Name:** IN7(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
PROT_DISCR	'00001000'B
CALLREFOCT1	'00000001'B
FLAG	'1'B
CR	?
MESSAGETYPE	'01011010'B
RESTINFO	?
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE COMPLETE message	

PDU Constraint Declaration	
PDU Name: I	**Constraint Name:** IN8(PBIT_:BITSTRING; NR_:N_RANGE; NS_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	PBIT_
N_R	NR_
INFORMATION	REL_COMPLETE
RESTINFO	-
FCS_FIELD	FCS_VALUE
Comments: INFO frame with RELEASE COMPLETE message	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
I	IN9
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	?
P	?
N_R	?
INFORMATION	?
RESTINFO	*
FCS_FIELD	FCS_VALUE
Comments: I-frame with any P-bit value, any N(R) value, any N(S) value and any Layer 3 message.	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RR_C	RRC(PBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'01'H
P	PBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RR_R	RRR(FBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'01'H
F	FBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RNR_C	RNC(PBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'05'H
P	PBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RNR_C	RNC_ANY
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'05'H
P	?
N_R	?
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RNR_R	RNR(FBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'05'H
F	FBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RNR_R	RNR_ANY
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'05'H
F	?
N_R	?
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
REJ_C	RJC(PBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'09'H
P	PBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
REJ_R	RJR(FBIT_:BITSTRING; NR_:N_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'09'H
F	FBIT_
N_R	NR_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SABME	SA(PBIT_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'1111'B
P	PBIT_
CONTROL2	'011'B
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
DISC	DI(PBIT_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'0011'B
P	PBIT_
CONTROL2	'010'B
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
DM	DM(FBIT_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'1111'B
F	FBIT_
CONTROL2	'000'B
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UA	UA(FBIT_:BITSTRING)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
R	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'0011'B
F	FBIT_
CONTROL2	'011'B
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI	UI1
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
INFORMATION	PX_COMPAT_SETUP
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI	UI2
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
INFORMATION	L3_NULL
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI	UI3
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
INFORMATION	SETUP
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T1
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	?
TYPE	'01'H
EA	'1'B
AI	127
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T2(RI_:RI_RANGE; AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	RI_
TYPE	'02'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T3(RI_:RI_RANGE; AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	RI_
TYPE	'03'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T4(RI_:RI_RANGE; AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	RI_
TYPE	'04'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T5(AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	?
TYPE	'05'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T5_ANY_AI
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	?
TYPE	'05'H
EA	'1'B
AI	?
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T6(RI_:RI_RANGE; AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	RI_
TYPE	'06'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
UI_M	UM_T7(RI_:RI_RANGE; AI_:TEI_RANGE)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	63
EA_OCTET3	'1'B
TEI	127
CONTROL1	'0011'B
P	'0'B
CONTROL2	'000'B
MANAG_ENTITY	'0F'H
RI	RI_
TYPE	'07'H
EA	'1'B
AI	AI_
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
INV_U_FR	IUF_SA_BAD_TEI(PAR:INTEGER)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	PAR
CONTROL1	'1111'B
P	'1'B
CONTROL2	'011'B
FCS_FIELD	FCS_VALUE

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
INV_I_FR	IIF_FCS(NR_:N_RANGE; NS_:N_RANGE; PAR:INTEGER)
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	0
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL	'0'B
N_S	NS_
P	'0'B
N_R	NR_
INFORMATION	RELEASE
FCS_FIELD	PAR

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
XID_C	XID
Field Value Information	
Field Name	**Value**
EA_OCTET2	'0'B
C	CR_VALUE
SAPI	?
EA_OCTET3	'1'B
TEI	CURRENT_TEI
CONTROL1	'1111'B
P	'0'B
CONTROL2	'101'B
INFORMATION	?
FCS_FIELD	FCS_VALUE

Dynamic Part

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S10/I/UI/N/TC11013				
Identifier:	TC11013				
Purpose:	Ensure that the IUT when in state 1 discards an incoming UI-frame with TEI value different from 127.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				Preamble to S1 (1)
2	(CURRENT_TEI ::= RANDOM (0, 126))				
3	L!UI		UI2		(2)
4	+CS51001				State=1 ?
Extended Comments: (1) This test is applicable only to IUTs stable in state S1. (2) The TEI value used in this frame is not supported. References to requirements: subclause 10.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S30/V/ID/N/TC13008				
Identifier:	TC13008				
Purpose:	Ensure that the IUT when in state 3 and receiving an Identity Denied frame remains in state 3.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR33001				Preamble to S3
2	L!UI_M		UM_T3(VRI, 127)		(2)
3	+CS53001				State=3 ?
Extended Comments: (2) UI_M Identity denied response with RI equal to that used in the request frame in +PR33001 (memorized in the test case variable VRI) and AI=127 (no TEI available). References to requirements: subclause 10.5.2.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S30/V/N2/N/TC13010				
Identifier:	TC13010				
Purpose:	Ensure that the IUT when initiating TEI assignment procedure and receiving no response from the network, transmits ID-request at least N202 times.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR33001				Preamble to S3
2	(RC ::= 1)				(1)
3	START TW202	L1			
4	L?UI_Mr		UM_T1		ID-request
5	CANCEL TW202				
6	[RC < N202]				(2)
7	(RC ::= RC + 1)				
8	GOTO L1				
9	[RC = N202]			(P)	(3)
10	+PO44004				
11	?TIMEOUT TW202			(F)	(4)
12	+PO44004				

Extended Comments:

(1) One Id-request already received in the preamble.
(2) Less than N202 ID-requests are received.
(3) N202 ID-requests received.
(4) Less than N202 ID-requests received and timer TW202 has expired.

References to requirements: 10.5.2.1

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S30/I/IA/O/TC13014				
Identifier:	TC13014				
Purpose:	Ensure that the IUT when in state 3 ignores an ID assign message containing a RI different from the one transmitted in the ID request message.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR33001				Preamble to S3
2	(TMP ::= (VRI + 1) MOD 65536)				
3	L!UI_M		UM_T2(TMP, CURRENT_TEI)		
4	+CS53001				State=3 ?

Extended Comments:

References to requirements: subclause 10.5.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S40/V/CR/N/TC14001				
Identifier:	TC14001				
Purpose:	Ensure that the IUT when in state 4 and after receiving an Identity Check Request with Action Indicator set to 127, responds with an Identity Check Response in which the value of the action indicator is equal to the TEI value assigned to the IUT and remains in state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	L!UI_M START TW200		UM_T4(0, 127)		(2)
3	L?UI_Mr CANCEL TW200	L1	UM_T5(CURRENT_TEI)	(P)	(3)
4	+CS54001				State=4 ?
5	L?UI_Mr START TW200		UM_T5_ANY_AI		
6	GOTO L1				
7	?TIMEOUT TW200			(F)	no response
8	+PO44004				Postamble
Extended Comments: (2) Identity Check Request with RI=0 (not used) and AI=127 (all TEI values to be checked). (3) Identity check response References to requirements: subclauses 10.4.1, 10.5.3.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S40/V/CR/N/TC14002				
Identifier:	TC14002				
Purpose:	Ensure that the IUT when in state 4 and after receiving an Identity Check Request with Action Indicator set to the value equal to the TEI value assigned to the terminal, responds with an Identity Check Response in which the value of the action indicator is equal to the TEI value assigned to the IUT and remains in state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	L!UI_M START TAC		UM_T4(0, CURRENT_TEI)		(1)
3	L?UI_Mr CANCEL TAC		UM_T5(CURRENT_TEI)	(P)	(2)
4	+CS54001				State=4 ?
5	?TIMEOUT TAC			(F)	
6	+PO44004				Postamble
Extended Comments: (1) UI_M identity check request with Ri=0 (not used) and Ai=Own TEI (2) Identity check response with Ri do not care and Ai=CURRENT_TEI. References to requirements: subclause 10.5.3.2					

Test Case Dynamic Behaviour	
Reference:	TBR3_L2/LM/S40/I/UA/O/TC14019
Identifier:	TC14019
Purpose:	Ensure that the IUT when in state 4 and when ID verify procedure is implemented and after having sent an ID verify message on receipt of a UA frame on first expiry of T202 retransmits the ID-verify message and on second expiry of T202 enters state 1.
Default:	DF69901

No	Behaviour Description	L	Cref	V	C
1	+PR34001				Preamble to S4
2	L!UA START TAC		UA(F1)		
3	L?UI_Mr CANCEL TAC, START TW202		UM_T7(0, CURRENT_TEI)		ID-verify
4	L?UI_Mr CANCEL TW202		UM_T7(0, CURRENT_TEI)	(P)	ID-verify
5	+CS51001				
6	?TIMEOUT TW202			(F)	
7	+PO44004				Postamble
8	L?UI_Mr [PC_REM_TEI_C] CANCEL TAC		UM_T1	(I)	(1)
9	+PO44004				Postamble
10	?TIMEOUT TAC [PC_REM_TEI_C]			(I)	(1)
11	+CS51001				Postamble
12	?TIMEOUT TAC			(F)	
13	+PO44004				Postamble

Extended Comments:
(1) IUT removed TEI rather than initiate verify

References to requirements: subclauses 10.5.5.2, 10.5.5.3

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S40/I/UA/O/TC14021				
Identifier:	TC14021				
Purpose:	Ensure that the IUT when in state 4 and when ID verify procedure is implemented and after receiving a UA frame and initiating TEI ID verify, completes the TEI ID verify procedure and remains in state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	L!UA START TAC		UA(F1)		
3	L?UI_Mr CANCEL TAC		UM_T7(0, CURRENT_TEI)		(1)
4	L!UI_M START TAC		UM_T4(0, CURRENT_TEI)		
5	L?UI_Mr CANCEL TAC		UM_T5(CURRENT_TEI)	(P)	
6	+CS54001				State=4 ?
7	?TIMEOUT TAC			(F)	
8	+PO44004				Postamble
9	L?UI_Mr [PC_REM_TEI_C] CANCEL TAC		UM_T1	(I)	(2)
10	+PO44004				Postamble
11	?TIMEOUT TAC [PC_REM_TEI_C]			(I)	(2)
12	+CS51001				Postamble
13	?TIMEOUT TAC			(F)	
14	+PO44004				Postamble
Extended Comments: (1) Identity verify frame with Ai=CURRENT_TEI. (2) IUT removed TEI rather than initiate verify References to requirements: subclause 10.5.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/LM/S40/I/UA/O/TC14022				
Identifier:	TC14022				
Purpose:	Ensure that the IUT when in state 4 and when ID verify procedure is not implemented and after receiving a UA frame enters state 1.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	L!UA		UA(F1)	(P)	
3	+CS51001				
Extended Comments: References to requirements: subclause 10.5.4.2					

Test Case Dynamic Behaviour

Reference: TBR3_L2/DC/S40/V/LE/N/TC24004
Identifier: TC24004
Purpose: Ensure the normal procedure of establishment of the Multiple Frame Operation initiated by the IUT.
Default: DF69901

No	Behaviour Description	L	Cref	V	C
1	+PR34001				Preamble to S4
2	[BASIC_ACCESS]				
3	[PC_PTMP]				(1)
4	+PTMP_SUBTREE				
5	[NOT PC_PTMP]				(2)
6	+PTP_SUBTREE				
7	[NOT BASIC_ACCESS]				(2)
8	+PTP_SUBTREE				
9	**PTMP_SUBTREE**				
10	L!UI START TWL3	L1	UI1		(3)
11	L?SABMEr		SA(P1)	(P)	Link establishment
12	L!UA		UA(F1)		
13	L?Ir (NR ::= (NR + 1) MOD 128) CANCEL TWL3	L3	IN1(P0, NS, NR)	(P)	(4)
14	L!RR_R		RRR(F0, NR)		(5)
15	+CS57001				State=7.0 ?
16	L?RR_Cr		RRC(P1, NS)		(6)
17	L!RR_R		RRR(F1, NR)		
18	GOTO L3				
19	?TIMEOUT TWL3				no response
20	+CS57001				Postamble
21	?TIMEOUT TWL3			(I)	no response to UI
22	+PO44004				Postamble
23	**PTP_SUBTREE**				
24	< IUT ! SABME >	L2	SA(P1)		
25	START TWAIT				
26	L?SABMEr		SA(P1)	(P)	Link establishment
27	(NS ::= 0, NR ::= 0)				
28	L!UA		UA(F1)		
29	L?Icr_r (NR ::= (NR + 1) MOD 128) CANCEL TWAIT	L4	IN5(P0, NS, NR)	(P)	SETUP
30	L!RR_R		RRR(F0, NR)		
31	+CS57001				State=7.0 ?
32	L?RR_Cr		RRC(P1, NS)		(6)
33	L!RR_R		RRR(F1, NR)		
34	GOTO L4				
35	?TIMEOUT TWAIT				no response
36	+CS57001				Postamble
37	?TIMEOUT TWAIT			(I)	
38	+PO44004				Postamble

Extended Comments:
(1) The IUT is configured for point-to-multipoint.
(2) The IUT is configured for point-to-point.
(3) UI with compatible SETUP.
(4) SETUP PDU (PTP)or response to compatible SETUP (inessential to check Layer 3 contents).
(5) Updates NR and send acknowledge.
(6) IUT is polling (i.e. T203 has expired).

References to requirements: subclause 10.6.1.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S40/I/UA/O/TC24007				
Identifier:	TC24007				
Purpose:	Ensure that the IUT when in state 4 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	L!UA		UA(F1)		Unsolicited UA
3	START TAC				
4	L?UI_Mr [PC_VER_TEI_C] CANCEL TAC		UM . T7(0, CURRENT_TEI)	(P)	ID-verify (1)
5	+PO44004				
6	L?UI_Mr [PC_REM_TEI_C] CANCEL TAC		UM_T1	(P)	ID-request (2)
7	+PO44004				
8	?TIMEOUT TAC [PC_REM_TEI_C]				
9	+CS51001				
10	?TIMEOUT TAC			(F)	
11	+PO44004				

Extended Comments:
(1) TEI id verify request form IUT is expected.
(2) TEI removal expected

References to requirements: subclause 10.9.4

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S40/S/SA/N/TC24020				
Identifier:	TC24020				
Purpose:	Ensure that the IUT when in state 4 takes no action on receipt of a SABME frame containing a TEI different from the TEI assigned to the IUT.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	(TMP ::= (CURRENT_TEI + 1) MOD 127)				
3	L!INV_U_FR START TNOAC		IUF_SA_BAD_TEI(TMP)		(1)
4	L?SABMEr		SA(P1)	(P)	(2)
5	+PO44004				Postamble
6	?TIMEOUT TNOAC			(P)	No response
7	+CS54001				State=4 ?

Extended Comments:
(1) SABME with a TEI not assigned to the IUT.
(2) IUT initiates establishment for its own reasons.

References to requirements: subclause 10.9.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S50/V/DM/N/TC25002				
Identifier:	TC25002				
Purpose:	Ensure that the IUT when in state 5 and receiving a DM F=1 enters state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR35001				Preamble to S5
2	L!DM		DM(F1)		(2)
3	+CS54001				State=4 ? (1)

Extended Comments:
(1) The test step CS54001 is used for checking the IUT state.
(2) DM with F bit set to 1.

References to requirements: subclause 10.6.1.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S50/V/N0/N/TC25005				
Identifier:	TC25005				
Purpose:	Ensure that the IUT when in state 5 and receiving no response from the network, retransmits SABME at least N200 times.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR35001				Preamble to S5
2	(RC ::= 1) START TW200				
3	L?SABMEr [RC < N200] CANCEL TW200	L1	SA(P1)	(P)	
4	(RC ::= RC + 1) START TW200				
5	GOTO L1				
6	L?SABMEr [RC = N200] CANCEL TW200		SA(P1)	(P)	(1)
7	+PO44004				
8	?TIMEOUT TW200			(F)	(2)
9	+PO44004				Postamble

Extended Comments:
(1) IUT has retransmitted SABME N200 times.
(2) Timer TW200 has expired and the IUT has retransmitted SABME less than N200 times.

References to requirements: subclause 10.6.1.3

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S50/I/SA/O/TC25007				
Identifier:	TC25007				
Purpose:	Ensure that the IUT when in state 5 on receipt of a SABME frame (Call collision) transmits a UA frame and remains in state 5.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR35001				Preamble to S5
2	L!SABME START TAC		SA(P1)		(2)
3	L?UAr CANCEL TAC		UA(F1)	(P)	(3)
4	L!UA		UA(F1)		(4)
5	+CS54001				State=4 ?
6	?TIMEOUT TAC			(F)	(5)
7	+PO44004				Postamble
Extended Comments: (2) SABME collides with SABME sent entering S5. (3) Correct response to inopportune SABME. (4) Close establishment procedure. (5) Response to SABME not received. References to requirements: subclause 10.6.3.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S50/I/RR/O/TC25013				
Identifier:	TC25013				
Purpose:	Ensure that the IUT when in state 5 ignores an RR command frame.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR35001				Preamble to S5
2	L!RR_C START TW200		RRC(P1, NR)		Inopportune frame
3	L?SABMEr CANCEL TW200		SA(P1)	(P)	SABME retransmission
4	L!DM		DM(F1)		IUT to state 4
5	+CS54001				State=4 ?
6	?TIMEOUT TW200			(F)	No response
7	+PO44004				Postamble
Extended Comments: References to requirements: subclause 10.6.1.1					

Test Case Dynamic Behaviour

Reference: TBR3_L2/DC/S70/V/IN/N/TC27003
Identifier: TC27003
Purpose: Ensure the operation of the sequence numbering of N(R) and N(S).
Default: DF69902

No	Behaviour Description	L	Cref	V	C
1	+PR37001				Preamble to S7.0
2	L!Is START TAC, START TWL3	L1	IN2(P0, NR, NS)		I-frame
3	(NS ::= (NS + 1) MOD 128)				
4	L?RR_Rr CANCEL TAC		RRR(F0, NS)	(P)	(3)
5	L?Ir CANCEL TWL3	L2	IN3(P0, NS, NR)	(P)	I-frame response
6	(NR ::= (NR + 1) MOD 128)	L3			(5)
7	L!RR_R		RRR(F0, NR)		
8	[NR > 0]				
9	GOTO L1				
10	[NR = 0]			(P)	All num checked
11	+CS57001				State=7.0 ?
12	L?RR_Cr		RRC(P1, NS)		Timeout T203
13	L!RR_R		RRR(F1, NR)		
14	GOTO L2				
15	?TIMEOUT TWL3			(I)	I not received
16	+PO44004				Postamble
17	L?Ir CANCEL TAC, CANCEL TWL3		IN3(P0, NS, NR)		(6)
18	GOTO L3				
19	?TIMEOUT TAC			(F)	No response
20	+PO44004				Postamble

Extended Comments:
(3) Acknowledgement by RR_R.
(6) Acknowledgement by I (4).
(5) Increment NR and acknowledge.

References to requirements: subclauses 10.7.1, 10.7.2, 10.7.2.2, 10.7.3

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/V/IN/N/TC27004				
Identifier:	TC27004				
Purpose:	Ensure that the IUT accepts acknowledgement by an I-frame.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				Preamble to S7.0
2	L!Is START TWL3, START TAC		IN2(P0, NR, NS)		(2)
3	(NS ::= (NS + 1) MOD 128)				
4	L?RR_Rr CANCEL TAC		RRR(F0, NS)	(P)	Response received
5	L?Ir CANCEL TWL3		IN3(P0, NS, NR)		
6	(NR ::= (NR + 1) MOD 128)				
7	L!Is START TAC		IN8(P0, NR, NS)		
8	(NS ::= (NS + 1) MOD 128)				
9	L?RR_Rr CANCEL TAC		RRR(F0, NS)	(P)	
10	+CS57001				State=7.0 ?
11	?TIMEOUT TAC			(F)	
12	+PO44004				Postamble
13	?TIMEOUT TWL3			(I)	
14	+PO44004				Postamble
15	?TIMEOUT TAC			(F)	No response
16	+PO44004				Postamble
Extended Comments: (2) I-frame which acknowledges the previous I. References to requirements: subclause 10.7.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/V/RJ/N/TC27011				
Identifier:	TC27011				
Purpose:	Ensure that the IUT when in state 7.0 and an I-frame is outstanding, and the IUT receieves a REJ F=0 indicating request of retransmission of last transmitted I-frame, retransmits the requested I-frame.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				Preamble to S7.0 (1)
2	(NR ::= (NR - 1) MOD 128)				
3	L!REJ_R START TAC		RJR(F0, NR)		Reject I received
4	L?Ir CANCEL TAC		IN3(P0, NS, NR)	(P)	I retransmission
5	(NR ::= (NR + 1) MOD 128)				
6	L!RR_R		RRR(F0, NR)		Updates N(R) and ack.
7	+CS57001				State=7.0 ?
8	?TIMEOUT TAC			(F)	No response
9	+PO44004				Postamble
Extended Comments: (1) Preamble to S7.0 with INFO generation. References to requirements: subclause 10.7.4					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/V/DI/N/TC27012				
Identifier:	TC27012				
Purpose:	Ensure the release procedure for Multiple Frame Established Operation initiated by the network side.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	L!DISC START TAC		DI(P1)		
3	L?UAr CANCEL TAC		UA(F1)	(P)	
4	+CS54001				State=4 ? (1)
5	?TIMEOUT TAC			(F)	UA not received
6	+PO44004				Postamble

Extended Comments:
(1) The test step CS54001 is used for checking the IUT state.

References to requirements: subclause 10.6.2

Test Case Dynamic Behaviour

Reference: TBR3_L2/DC/S70/V/IT/N/TC27015

Identifier: TC27015

Purpose: Ensure that the IUT retransmits the last transmitted I-frame at least twice or transmits an RR command at least twice if no acknowledgement for the last transmitted I-frame is received. If the IUT transmits an RR command frame, it is tested whether the IUT retransmits the I-frame after receiving an RR response frame not acknowledging the outstanding I-frame.

Default: DF69902

No	Behaviour Description	L	Cref	V	C
1	+PR37002				Preamble to S7.0 (1)
2	START TW200				
3	(NR ::= (NR - 1) MOD 128)				
4	L?RR_Cr START TW200		RRC(P1, NS)	(P)	polling by RR_C
5	L?RR_Cr CANCEL TW200		RRC(P1, NS)	(P)	polling by RR_C
6	L!RR_R START TAC		RRR(F1, NR)		(2)
7	L?Ir CANCEL TAC		IN3(P0, NS, NR)	(P)	RELEASE COMPLETE
8	(NR ::= (NR + 1) MOD 128)				
9	L!RR_R		RRR(F0, NR)		Confirms I delivery
10	+CS57001				
11	?TIMEOUT TAC			(F)	no I recovery
12	+PO44004				Postamble
13	?TIMEOUT TW200			(F)	
14	+PO44004				Postamble
15	L?Ir START TW200		IN3(P1, NS, NR)	(P)	Polling with I-frame
16	L?Ir CANCEL TW200		IN3(P1, NS, NR)	(P)	Polling with I-frame
17	(NR ::= (NR + 1) MOD 128)				
18	L!RR_R		RRR(F1, NR)		
19	L!Is START TAC, START TWL3		IN2(P0, NR, NS)		RELEASE
20	(NS ::= (NS + 1) MOD 128)				
21	L?RR_Rr CANCEL TAC		RRR(F0, NS)	(P)	
22	L?Ir CANCEL TWL3		IN3(P0, NS, NR)	(P)	RELEASE COMPLETE
23	(NR ::= (NR + 1) MOD 128)				
24	L!RR_R		RRR(F0, NR)		Confirms I delivery
25	+CS57001				
26	?TIMEOUT TWL3			(F)	
27	+PO44004				Postamble
28	?TIMEOUT TAC			(F)	
29	+PO44004				Postamble
30	?TIMEOUT TW200			(F)	
31	+PO44004				Postamble
32	?TIMEOUT TW200			(F)	
33	+PO44004				Postamble

Extended Comments:

(1) Preamble to S7.0 with INFO generation.

(2) RR_R confirms loss of previous I-frame.

References to requirements: subclause 10.7.6

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/V/RM/N/TC27019				
Identifier:	TC27019				
Purpose:	Ensure that the IUT when in state 7.0 and an I-frame is outstanding and the IUT receives no acknowledge for the outstanding I-frame will either retransmit the I-frame or transmit an RR P=1 at expiry of timer T200.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				Preamble to S7.0
2	(TMP ::= (NR - 1) MOD 128) START TW200				
3	L?RR_Cr CANCEL TW200		RRC(P1, NS)	(P)	Polling with RR frame
4	L!RR_R		RRR(F1, NR)		Response to polling
5	+CS57001				State=7.0 ?
6	L?Ir CANCEL TW200		IN3(P1, NS, TMP)	(P)	Polling with I-frame
7	L!REJ_R		RJR(F1, NR)		Response to polling
8	+CS57001				
9	?TIMEOUT TW200			(F)	no polling
10	+PO44004				Postamble
Extended Comments:					
References to requirements: subclause 10.7.6					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/SA/N/TC27022				
Identifier:	TC27022				
Purpose:	Ensure the re-establishment procedure of Multiple Frame Operation initiated by the network.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	L!SABME START TAC		SA(P1)		Request to reset
3	L?UAr CANCEL TAC		UA(F1)	(P)	Correct reset
4	+CS57001				State=7.0 ? (1)
5	?TIMEOUT TAC			(F)	No response (4)
6	+PO44004				Postamble
Extended Comments:					
(1) The test step CS57001 is used for checking the IUT state.					
References to requirements: subclauses 10.6.1.2, 10.8					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/IN/N/TC27027				
Identifier:	TC27027				
Purpose:	Ensure that the IUT when in state 7.0 and receiving an I-frame with P=1 and N(S) error transmits a REJect frame with F=1.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	L!Is START TAC		IN8(P0, NR, NS)		
3	(TMP ::= (NS + 1) MOD 128)				
4	L?RR_Rr CANCEL TAC		RRR(F0, TMP)	(P)	
5	L!Is START TAC		IN8(P1, NR, NS)		N(S) out of sequence
6	(NS ::= (NS + 1) MOD 128)				
7	L?REJ_Rr CANCEL TAC		RJR(F1, TMP)	(P)	Rejecting I-frame
8	+CS57101				State=7.1 ?
9	?TIMEOUT TAC			(F)	REJ_R not received
10	+PO44004				Postamble
11	?TIMEOUT TAC			(F)	REJ_R not received
12	+PO44004				Postamble
Extended Comments:					
References to requirements: subclause 10.9.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/IN/N/TC27028				
Identifier:	TC27028				
Purpose:	Ensure that the IUT when in state 7.0 and receiving an I-frame with P=0 and N(S) error transmits a REJect frame with F=0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	(TMP ::= (NS + K) MOD 128)				
3	L!Is START TAC		IN2(P0, NR, TMP)		N(S) out of sequence
4	L?REJ_Rr CANCEL TAC		RJR(F0, NS)	(P)	Rejecting I-frame
5	+CS57101				State=7.1 ?
6	?TIMEOUT TAC			(F)	REJ_R not received
7	+PO44004				Postamble
Extended Comments:					
References to requirements: subclause 10.9.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/UA/O/C27031				
Identifier:	TC27031				
Purpose:	Ensure that the IUT when in state 7.0 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	L!UA		UA(F1)		Unsolicited UA
3	[PC_VER_TEI_C] START TWAIT				(1)
4	L?UI_Mr CANCEL TWAIT		UM_T7(0, CURRENT_TEI)	(P)	ID-verify
5	+PO44004				
6	?TIMEOUT TWAIT			(F)	No ID-verify
7	+PO44004				
8	[NOT PC_VER_TEI_C]			(P)	(2)
9	+CS51001				
Extended Comments: (1) ID verify request is expected. (2) TEI removal is expected. References to requirements: subclause 10.9.4					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/RR/N/TC27040				
Identifier:	TC27040				
Purpose:	Ensure that the IUT when in state 7.0 and receiving a RR command frame with P bit 1 and a N(R) error initiates re-establishment of the data link.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	(TMP ::= (NR + K) MOD 128)				
3	L!RR_C START TAC		RRC(P0, TMP)		N(R) out of window
4	L?SABMEr CANCEL TAC		SA(P1)	(P)	Re-establishment
5	L!UA		UA(F1)		
6	+CS57001				
7	?TIMEOUT TAC			(F)	SABME not received
8	+PO44004				Postamble
Extended Comments: References to requirements: subclause 10.9.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/RR/N/TC27043				
Identifier:	TC27043				
Purpose:	Ensure that the IUT when in state 7.0 and receiving a RR response frame with F bit 1 and a N(R) error initiates re-establishment of the data link.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	(TMP ::= (NR + K) MOD 128)				
3	L!RR_R START TAC		RRR(F1, TMP)		N(R) out of window
4	L?SABMEr CANCEL TAC		SA(P1)	(P)	Link reset
5	L!DM		DM(F1)		Brings IUT to state 4
6	+CS54001				State=4 ?
7	?TIMEOUT TAC			(F)	SABME not received
8	+PO44004				Postamble
Extended Comments: References to requirements: subclause 10.9.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/I/RR/N/TC27046				
Identifier:	TC27046				
Purpose:	Ensure that the IUT when in state 7.0 and receiving a RR response frame with F bit 0 and a N(R) error initiates re-establishment of the data link.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	(TMP ::= (NR + K) MOD 128)				
3	L!RR_R START TAC		RRR(F0, TMP)		N(R) out of window
4	L?SABMEr CANCEL TAC		SA(P1)		Link reset
5	L!DM		DM(F1)		Brings IUT to state 4
6	+CS54001			(P)	State=4 ?
7	?TIMEOUT TAC			(F)	SABME not received
8	+PO44004				Postamble
Extended Comments: References to requirements: subclause 10.9.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S70/S/FC/N/TC27058				
Identifier:	TC27058				
Purpose:	Ensure that the IUT when receiving a frame which contains a frame check sequence error discards the frame.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				(1)
2	L!INV_I_FR (TMP ::= (FCS_VALUE + 1) MOD 256) START TNOAC		IIF_FCS(NR, NS, TMP)		(2)
3	?DISCr CANCEL TNOAC		DI(P1)	(I)	(3)
4	L!UA		UA(F1)		IUT in state 4
5	+PO44004				Postamble
6	?TIMEOUT TNOAC			(P)	No response (4)
7	+CS57001				State=7.0 ?

Extended Comments:

(1) Preamble to S7.0

(2) I-frame with FCS error

(3) It is not posible to determine whether the IUT is not be stable in state 7.0, and initiates disconnection of the datalink or whether the DISC is sent as a result of the I-frame with a FCS error.

(4) No action from the IUT as a result of the I-frame with a FCS error.

References to requirements: subclause 10.9.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/IN/N/TC27404				
Identifier:	TC27404				
Purpose:	Ensure that the IUT when in state 7.4 does not transmit any I-frames and that outstanding I-frames are transmitted after entering state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	L!Is START TAC, START TWAIT		IN2(P0, NR, NS)		(2)
3	(NS ::= (NS + 1) MOD 128)				
4	L?RR_Rr CANCEL TAC, START TW200		RRR(F0, NS)		acknowledge I
5	L?RR_Cr CANCEL TW200		RRC(P1, NS)		(3)
6	L!RR_R		RRR(F1, NR)		(4)
7	L?Ir CANCEL TWAIT	L1	IN3(P0, NS, NR)		(5)
8	(NR ::= (NR + 1) MOD 128)				
9	L!RR_R		RRR(F0, NR)		
10	+CS57001			(P)	State=7.0 ?
11	L?RR_Cr		RRC(P1, NS)		Timeout T203
12	L!RR_R		RRR(F1, NR)		
13	GOTO L1				
14	?TIMEOUT TWAIT			(I)	no I received
15	+PO44004				Postamble
16	?TIMEOUT TW200			(F)	(6)
17	+PO44004				Postamble
18	?TIMEOUT TAC			(F)	no response
19	+PO44004				Postamble

Extended Comments:
(2) I-frame soliciting an I-frame from the IUT.
(3) Polling in peer receiver busy.
(4) Busy condition stops.
(5) I-frame solicited finally can be sent.
(6) No polling in peer busy.

References to requirements: subclause 10.7.5

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RJ/O/TC27405				
Identifier:	TC27405				
Purpose:	Ensure that the IUT when in state 7.4 and receiving a REJ P=1 frame responds with an RR F=1 frame and retransmits the I-frame rejected.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				(1)
2	(NR ::= (NR - 1) MOD 128)				Decrements N(R)
3	L!RNR_R		RNR(F0, NR)		Brings IUT to 74
4	L!REJ_C START TAC		RJC(P1, NR)		Rejects I received
5	L?RR_Rr		RRR(F1, NS)		
6	CANCEL TAC				
7	START TAC				
8	L?Ir		IN1(P0, NS, NR)	(P)	I retransmission
9	CANCEL TAC				
10	(NR ::= (NR + 1) MOD 128)				Updates N(R)
11	L!RR_R		RRR(F0, NR)		
12	+CS57001				State=7.0 ?
13	?TIMEOUT TAC			(F)	I not received
14	+PO44004				Postamble
15	?TIMEOUT TAC			(F)	RR_R not received
16	+PO44004				Postamble
Extended Comments: (1) Preamble to S7.0 with INFO generation. References to requirements: subclause 10.7.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RJ/O/TC27407				
Identifier:	TC27407				
Purpose:	Ensure that the IUT when in state 7.4 and receiving a REJ F=0 frame retransmits the I-frame rejected.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				(1)
2	(NR ::= (NR - 1) MOD 128)				Decrements N(R)
3	L!RNR_R		RNR(F0, NR)		IUT in state 7.4
4	L!REJ_R START TAC		RJR(F0, NR)		Rejects I send
5	L?Ir CANCEL TAC		IN1(P0, NS, NR)	(P)	(2)
6	(NR ::= (NR + 1) MOD 128)				Updates N(R)
7	L!RR_R		RRR(F0, NR)		
8	+CS57001				State=7.0 ?
9	?TIMEOUT TAC			(F)	No frame received
10	+PO44004				Postamble
Extended Comments: (1) Preamble to S7.0 with INFO generation. (2) INFO retransmission. References to requirements: subclause 10.7.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RT/N/TC27411				
Identifier:	TC27411				
Purpose:	Ensure that the IUT when in state 7.4 and receiving no response from the network retransmits an RR command frame N200 times.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	(RC ::= 1) START TW200				
3	L?RR_Cr [RC < N200] (RC ::= RC + 1) START TW200	L1	RRC(P1, NS)		(1)
4	GOTO L1				
5	L?RR_Cr [RC = N200] START TW200		RRC(P1, NS)	(P)	
6	L?SABMEr CANCEL TW200		SA(P1)	(P)	
7	L!DM		DM(F1)		(2)
8	+CS54001				State=4 ?
9	?TIMEOUT TW200			(F)	no link reset
10	+PO44004				Postamble
11	?TIMEOUT TW200			(F)	(3)
12	+PO44004				Postamble

Extended Comments:
(1) RC is a test case variable (set to 0 by default) used as retransmission counter.
(2) Brings IUT to state 4.
(3) Incorrect number of RR_C retransmissions.

References to requirements: subclauses 10.7.5, 10.7.6

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RR/O/TC27412				
Identifier:	TC27412				
Purpose:	Ensure that the IUT when in state 7.4 and receiving an RR P=1 frame transmits an RR F=1 and enters state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	L!RR_C START TAC		RRC(P1, NR)		
3	L?RR_Rr CANCEL TAC		RRR(F1, NS)	(P)	
4	+CS57001				State=7.0 ?
5	?TIMEOUT TAC			(F)	RR not received
6	+PO44004				Postamble

Extended Comments:

References to requirements: subclause 10.7.5

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RR/O/TC27413				
Identifier:	TC27413				
Purpose:	Ensure that the IUT when in state 7.4 and receiving an RR F=0 frame enters state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	L!RR_R		RRR(F0, NR)		
3	+CS57001				State=7.0 ?
Extended Comments: References to requirements: subclause 10.7.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RN/O/TC27414				
Identifier:	TC27414				
Purpose:	Ensure that the IUT when in state 7.4 and receiving a RNR P=1 frame transmits an RR F=1 and remains in state 7.4.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	L!RNR_C START TAC		RNC(P1, NR)		
3	L?RR_Rr CANCEL TAC		RRR(F1, NS)	(P)	
4	+CS57401				State=7.4 ?
5	?TIMEOUT TAC			(F)	RR not received
6	+PO44004				Postamble
Extended Comments: References to requirements: subclause 10.7.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/RN/O/TC27416				
Identifier:	TC27416				
Purpose:	Ensure that the IUT when in state 7.4 and receiving a RNR F=0 frame remains in state 7.4.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	L!RNR_R		RNR(F0, NR)		
3	+CS57401				State=7.4 ?
Extended Comments: References to requirements: subclause 10.7.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S74/V/T0/N/TC27417				
Identifier:	TC27417				
Purpose:	Ensure that the IUT when in state 7.4 and receiving no frames from the network retransmits an RR command frame within the allowed tolerance of timer T200				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	START TW200				
3	L?RR_Cr CANCEL TW200, START TREAD		RRC(P1, NS)		(2)
4	L?RR_Cr READTIMER TREAD(T), CANCEL TREAD		RRC(P1, NS)		(3)
5	[TIME(T200VMAX, T200VMIN, T)]			(P)	(4)
6	+PO44004				Postamble
7	[NOT TIME(T200VMAX, T200VMIN, T)]			(F)	(5)
8	+PO44004				Postamble
9	?TIMEOUT TREAD			(F)	RR_C not received
10	+PO44004				Postamble
11	?TIMEOUT TW200			(F)	RR_C not received
12	+PO44004				Postamble

Extended Comments:
(2) Wait for a RR_C and START TREAD (long timer).
(3) On receipt of RR_C read the value of TREAD and memorize it into test case variable T.
(4) T200 is within tolerance (TIME() has returned TRUE).
(5) T200 is out of tolerance (TIME() has returned FALSE).

References to requirements: subclauses 10.7.5, 10.7.6

Test Case Dynamic Behaviour

Reference: TBR3_L2/DC/S80/V/RJ/N/TC28005
Identifier: TC28005
Purpose: Ensure that the IUT when in state 8.0 and receiving a REJ F=1 indicating a request for retransmission of the last I-frame, enters state 7.0 and retransmits the last transmitted I-frame.
Default: DF69902

No	Behaviour Description	L	Cref	V	C
1	+PR37002				Preamble to S7.0 (1)
2	(TMP ::= (NR - 1) MOD 128) START TW200				
3	L?RR_Cr CANCEL TW200		RRC(P1, NS)		Polling with RR frame
4	L!REJ_R START TAC		RJR(F1, TMP)		(3)
5	(TMP1 ::= (NR - 1) MOD 128)				
6	L?Ir CANCEL TAC		IN3(P0, NS, TMP1)	(P)	
7	L!RR_R		RRR(F0, NR)		(4)
8	+CS57001				State=7.0 ?
9	?TIMEOUT TAC			(F)	no polling
10	+PO44004				Postamble
11	L?Ir CANCEL TW200		IN3(P1, NS, TMP)		Polling with I-frame
12	L!REJ_R START TAC		RJR(F1, TMP)		(3)
13	(TMP1 ::= (NR - 1) MOD 128)				
14	L?Ir CANCEL TAC		IN3(P0, NS, TMP1)	(P)	
15	L!RR_R		RRR(F0, NR)		(4)
16	+CS57001				State=7.0 ?
17	?TIMEOUT TAC			(F)	no polling
18	+PO44004				Postamble
19	?TIMEOUT TW200			(F)	no polling
20	+PO44004				Postamble

Extended Comments:
(1) Preamble to S7.0 with INFO generation.
(3) Response to polling. REJ should not confirm I-frame delivery.
(4) Confirms I-frame delivery.

References to requirements: subclauses 10.7.4, 10.7.6

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S80/I/IN/N/TC28012				
Identifier:	TC28012				
Purpose:	Ensure that the IUT when in state 8.0 is able to receive I-frames.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR38001				Preamble to S8.0
2	(NR ::= (NR - 1) MOD 128)				
3	L!Icr_s (TMP ::= (NS + 1) MOD 128) START TAC		IN4(P0, NR, NS, 2)		RELEASE 2. cref
4	L?RR_Rr CANCEL TAC, START TW200		RRR(F0, TMP)	(P)	
5	L?RR_Cr CANCEL TW200		RRC(P1, TMP)	(P)	Polling with RR frame
6	(NR ::= (NR + 1) MOD 128)				
7	L!RR_R START TAC		RRR(F1, NR)		
8	(NS ::= (NS + 1) MOD 128)				
9	L?Icr_r [Icr.CR = 2] CANCEL TAC		IN7(P0, NS, NR)	(P)	RELEASE COMPLETE with 2. cref
10	(NR ::= (NR + 1) MOD 128)				with 2. cref
11	L!RR_R		RRR(F0, NR)		
12	+CS57001				State=7.0 ?
13	?TIMEOUT TAC			(F)	
14	+PO44004				Postamble
15	L?Ir CANCEL TW200		IN3(P1, TMP, NR)	(P)	Polling with I-frame
16	(NR ::= (NR + 1) MOD 128)				
17	L!RR_R START TAC		RRR(F1, NR)		
18	(NS ::= (NS + 1) MOD 128)				
19	L?Icr_r [Icr.CR = 2] CANCEL TAC		IN7(P0, NS, NR)	(P)	RELEASE COMPLETE with 2. cref
20	(NR ::= (NR + 1) MOD 128)				
21	L!RR_R		RRR(F0, NR)		
22	+CS57001				State=7.0 ?
23	?TIMEOUT TAC			(F)	
24	+PO44004				Postamble
25	?TIMEOUT TW200			(F)	
26	+PO44004				Postamble
27	?TIMEOUT TAC			(F)	No acknowledge
28	+PO44004				Postamble
Extended Comments:					
References to requirements: subclause 10.7.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S80/I/UA/O/TC28019				
Identifier:	TC28019				
Purpose:	Ensure that the IUT when in state 8.0 and receiving an UA F=1 frame either initiates TEI removal or TEI verify procedure.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR38001				Preamble to S8.0
2	L!UA		UA(F1)		Unsolicted UA frame
3	[PC_VER_TEI_C] START TWAIT				(1)
4	L?UI_Mr CANCEL TWAIT		UM_T7(0, CURRENT_TEI)	(P)	ID-verify
5	+PO44004				
6	?TIMEOUT TWAIT			(F)	
7	+PO44004				
8	[NOT PC_VER_TEI_C]			(P)	(2)
9	+CS51001				
Extended Comments: (1) ID verify request is expected (2 TEI removal is expected remove TEI. References to requirements: subclause 10.9.4					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S84/V/RN/N/TC28406				
Identifier:	TC28406				
Purpose:	Ensure that the IUT when in state 8.4 is able to receive I-frames.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR38401				Preamble to S8.4
2	L!RNR_R		RNR(F1, NR)		
3	L!Is START TAC		IN2(P0, NR, NS)		RELEASE
4	(NS ::= (NS + 1) MOD 128)				
5	L?RR_Rr CANCEL TAC, START TW200		RRR(F0, NS)	(P)	
6	L?RR_Cr CANCEL TW200		RRC(P1, NS)	(P)	
7	L!RR_R START TAC		RRR(F1, NR)		
8	L?Ir CANCEL TAC		IN3(P0, NS, NR)	(P)	RELEASE COMPLETE
9	(NR ::= (NR + 1) MOD 128)				
10	L!RR_R		RRR(F0, NR)		
11	+CS57001				State=7.0 ?
12	?TIMEOUT TAC			(F)	
13	+PO44004				Postamble
14	?TIMEOUT TW200			(F)	
15	+PO44004				Postamble
16	?TIMEOUT TAC			(F)	
17	+PO44004				Postamble
Extended Comments: References to requirements: subclauses 10.7.1, 10.7.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S84/V/RJ/O/TC28407				
Identifier:	TC28407				
Purpose:	Ensure that the IUT when in state 8.4 and receiving a REJ F=1 indicating no request for retransmission of I-frames, enters state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR38401				Preamble to S8.4
2	L!REJ_R		RJR(F1, NR)		
3	+CS57001				State=7.0 ?
Extended Comments: References to requirements: subclause 10.7.4					

Test Case Dynamic Behaviour					
Reference:	TBR3_L2/DC/S84/I/SA/O/TC28408				
Identifier:	TC28408				
Purpose:	Ensure that the IUT when in state 8.4 and receiving a SABME frame, transmits a UA frame, resets all state variables and enters state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR38401				Preamble to S8.4
2	L!SABME START TAC		SA(P1)		(2)
3	L?UAr CANCEL TAC		UA(F1)	(P)	
4	(NR ::= 0, NS ::= 0)				reset variables
5	+CS57001				State=7.0 ?
6	?TIMEOUT TAC			(F)	(4)
7	+PO44004				Postamble
Extended Comments: (2) SABME with poll bit = 1. (4) UA not received. References to requirements: subclause 10.8.1					

Test Case Dynamic Behaviour

Reference: TBR3_L2/DC/S84/I/RJ/O/TC28424
Identifier: TC28424
Purpose: Ensure that the IUT when in state 8.4 and receiving a REJ P=1 frame not acknowledging the last transmitted I-frame, transmits an RR F=1 and enters state 8.0.
Default: DF69902

No	Behaviour Description	L	Cref	V	C
1	+PR37002				Preamble to S7.0 (1)
2	(NR ::= (NR - 1) MOD 128)				
3	L!RNR_R START TW200		RNR(F0, NR)		(2)
4	L?RR_Cr START TW200		RRC(P1, NS)		(3)
5	L!REJ_C START TAC		RJC(P1, NR)		(4)
6	L?RR_Rr CANCEL TAC		RRR(F1, NS)		(9)
7	L?RR_Cr CANCEL TW200		RRC(P1, NS)		(10)
8	L!RR_R START TAC		RRR(F1, NR)		(5)
9	L?Ir (NR ::= (NR + 1) MOD 128) CANCEL TAC		IN3(P0, NS, NR)	(P)	(11)
10	L!RR_R		RRR(F0, NR)		(12)
11	+CS57001				State=7.0 ?
12	?TIMEOUT TAC			(F)	
13	+PO44004				Postamble
14	L?Ir CANCEL TW200		IN3(P1, NS, NR)	(P)	(10)
15	(NR ::= (NR + 1) MOD 128)				
16	L!RR_R		RRR(F1, NR)		(5)
17	+CS57001				State=7.0 ?
18	?TIMEOUT TW200			(F)	RR not received
19	+PO44004				Postamble
20	?TIMEOUT TAC			(F)	RR not received
21	+PO44004				Postamble
22	?TIMEOUT TW200			(F)	RR not received
23	+PO44004				Postamble

Extended Comments:
(1) Preamble to S7.0 with INFO generation.
(2) RNR to put the IUT into state 7.4.
(3) T200 timeout. RR_C with poll bit = 1. IUT enters state 8.4.
(4) REJ_C with poll bit set to 1, IUT enters state 8.0.
(5) RR_R to put the IUT into state 7.0.
(9) The received REJ P=1 frame shall be acknowledged by a RR F=1 frame.
(10) On timeout T200 either an I P=1 or a RR P=1 shall be transmitted.
(11) The lost I P=0 shall be retransmitted.
(12) The retransmitted I P=0 shall be acknowledged.

References to requirements: subclause 10.7.4

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S10/V/PR/A/PR31001				
Identifier:	PR31001				
Purpose:	To bring the IUT in state 1.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[BASIC_ACCESS]				
2	[PC_PTMP]			(P)	
3	+PR31002				(1)
4	[NOT PC_PTMP]			(P)	
5	+PR31003				(2)
6	[NOT BASIC_ACCESS]			(P)	
7	+PR31003				(3)
Extended Comments:					
(1) S1 preamble to be used for basic access Point-to-multipoint IUTs.					
(2) S1 preamble to be used for basic access Point-to-point IUTs.					
(3) S1 preamble to be used for primary rate access IUTs.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S10/V/PR/A/PR31002				
Identifier:	PR31002				
Purpose:	To bring the IUT in state 1. This preamble is used for basic access point-to-multipoint configured IUTs.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31401			(P)	(1)
Extended Comments:					
(1) Preamble to bring the IUT to state S1 or S4. This preamble will end in state S1 for all IUTs except non automatic IUTs with unstable S1.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S10/V/PR/A/PR31003				
Identifier:	PR31003				
Purpose:	To bring the IUT in state 1. This preamble is used for IUTs of the automatic TEI assignment category configured for point-to-point.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L!UI_M (RC ::= 0) START TNOAC		UM_T6(0, 127)		(1)
2	L?UI_Mr (RC ::= RC + 1) CANCEL TNOAC	L1	UM_T1		(2)
3	[RC <= RCMax] START TNOAC				
4	GOTO L1				
5	[RC > RCMax]			(I)	(3)
6	+PO44004				Postamble
7	L?OTHERWISE				(4)
8	GOTO L1				
9	?TIMEOUT TNOAC			(P)	
Extended Comments:					
(1) Send an Id Remove					
(2) Automatic IUT will request a new TEI value.					
(3) Since more that one data link may have removed its TEI value, it is possible that more than one Id Request procedure is activated. RCMax allows three data links to request a new TEI value.					
(4) Ignore other message, i.e. active data links may have sent some messages before they removed there TEI value.					

Test Step Dynamic Behaviour

Reference: TBR3_L2/PR/S14/V/PR/A/PR31401
Identifier: PR31401
Purpose: To bring the IUT in state 1 or state 4. Non automatic IUTs will end in state 4, and automatic IUTs will end in state 1.
Default: DF69901

No	Behaviour Description	L	Cref	V	C
1	[PC_PTMP]				
2	(TAC_VAL ::= TAC_PTMP)				(1)
3	+SUBTREE_1				
4	[NOT PC_PTMP]				
5	(TAC_VAL ::= TAC_PTP)				(2)
6	+SUBTREE_1				
7	**SUBTREE_1**				
8	[PC_AUTOMAT_TEI]				
9	L!UI_M (RC ::= 0) START TNOAC		UM_T6(0, 127)		(3)
10	+SUBTREE_2(RC)				
11	[NOT PC_AUTOMAT_TEI]				
12	(CURRENT_TEI ::= PX_TEI_VALUE)				
13	L!DISC START TAC		DI(P1)		
14	L?DMr START TAC	L1	DM(F1)		
15	GOTO L1				
16	L?UAr START TAC		UA(F1)		
17	GOTO L1				
18	L?SABMEr CANCEL TAC		SA(P1)	(P)	(4)
19	L!DM		DM(F1)		
20	?TIMEOUT TAC				
21	L!DM START TNOAC		DM(F1)		
22	L?SABMEr CANCEL TNOAC		SA(P1)	(P)	(4)
23	L!DM		DM(F1)		
24	?TIMEOUT TNOAC			(P)	
25	**SUBTREE_2(RC:INTEGER)**				
26	L?UI_Mr (RC ::= RC + 1) CANCEL TNOAC	L2	UM_T1		(5)
27	[RC <= RCMax] START TNOAC				(6)
28	GOTO L2				
29	[RC > RCMax]			(F)	
30	+PO44004				Postamble
31	?TIMEOUT TNOAC			(P)	

Extended Comments:

(1) IUT is configured for point-to-multipoint. The required response time is set accordingly. All Basic Access test cases are starting with this preamble. Therefore the value for timer TAC is initialised in this test step.

(2) IUT is configured for point-to-point. The required response time is set accordingly.

(3) Identity remove with Ri=0 (not used) and Ai=127. Non automatic IUTs with unstable state 1 will enter state 4.

(4) IUT is unstable in state 4. Preamble is exited.

(5) Identity request with Ri do not care.

(6) RCMax=9 because it shall be possible to handle the id assignment procedure for three DLE's.

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S30/V/PR/A/PR33001				
Identifier:	PR33001				
Purpose:	To bring the IUT in state 3.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[BASIC_ACCESS]				
2	[PC_PTMP]			(P)	
3	+PR33002				(1)
4	[NOT PC_PTMP]			(P)	
5	+PR33003				(2)
6	[NOT BASIC_ACCESS]			(P)	
7	+PR33003				(3)
Extended Comments:					
(1) S3 preamble to be used for basic access Point-to-multipoint IUTs.					
(2) S3 preamble to be used for basic access Point-to-point IUTs.					
(3) S3 preamble to be used for primary rate access IUTs.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S30/V/PR/A/PR33002				
Identifier:	PR33002				
Purpose:	To bring the IUT in state 3.. This preamble is for used basic access point-to-multipoint configured IUTs.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				Preamble to S1
2	L!UI START TWL3		UI3		(1)
3	L?UI_Mr (VRI ::= UI_M.RI) CANCEL TWL3		UM_T1	(P)	(2)
4	?TIMEOUT TWL3			(I)	(3)
5	+PO44004				Postamble
Extended Comments:					
(1) SETUP with no information element.					
(2) Identity request with Ri do not care.					
(3) TEI request not provided by the IUT.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S30/V/PR/A/PR33003				
Identifier:	PR33003				
Purpose:	To bring the IUT in state 3. This preamble is used for IUTs of the automatic TEI assignment category configured for point-to-point.				
Default:	F69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				Preamble to S1
2	< IUT ! UI_Mr >		UM_T1		
3	START TWAIT				
4	L?UI_Mr (VRI ::= UI_M.RI) CANCEL TWAIT		UM_T1	(P)	ID-request
5	?TIMEOUT TWAIT			(I)	
6	+PO44004				Postamble
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S40/V/PR/A/PR34001				
Identifier:	PR34001				
Purpose:	To bring the IUT in state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[BASIC_ACCESS]				
2	[PC_PTMP]				(1)
3	[NOT PC_AUTOMAT_TEI]			(P)	(2)
4	(CURRENT_TEI ::= PX_TEI_VALUE)				
5	+PR34002				
6	[PC_AUTOMAT_TEI]			(P)	
7	+PR34002				
8	[NOT PC_PTMP]				(3)
9	[NOT PC_AUTOMAT_TEI]			(P)	(2)
10	(CURRENT_TEI ::= PX_TEI_VALUE)				
11	+PR34003				
12	[PC_AUTOMAT_TEI]			(P)	
13	+PR34003				
14	[NOT BASIC_ACCESS]				(4)
15	(TAC_VAL ::= TAC_PTP)				(5)
16	[NOT PC_AUTOMAT_TEI]			(P)	(2)
17	(CURRENT_TEI ::= PX_TEI_VALUE)				
18	+PR34003				
19	[PC_AUTOMAT_TEI]			(P)	
20	+PR34003				

Extended Comments:
(1) The IUT is a Basic Access terminal with a point-to-multipoint configuration.
(2) The IUT is a non-automatic terminal, and a fixed TEI value supported by the IUT is assigned to the Variable CURRENT_TEI
(3) The IUT is a Basic Access terminal with a point-to-point configuration.
(4) The IUT is a Primary Rate Access terminal.
(5) Layer 2 response time is initialised for PA IUTs in this preamble, as all PA test cases starts with this preamble.

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S40/V/PR/A/PR34002				
Identifier:	PR34002				
Purpose:	To bring the IUT in state 4. This preamble is used for IUTs configured for point-to-multipoint.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				Preamble to S7.0 (1)
2	L!DISC START TAC		DI(P1)		(2)
3	(NS ::= 0, NR ::= 0)				(3)
4	L?UAr CANCEL TAC		UA(F1)	(P)	
5	?TIMEOUT TAC			(F)	(4)
6	+PO44004				Postamble

Extended Comments:
(1) Preamble to state 7.0 with one I-frame unacknowledged.
(2) DISC command.
(3) CANCEL NS and NR.
(4) UA not received.

Test Step Dynamic Behaviour	
Reference:	TBR3_L2/PR/S40/V/PR/A/PR34003
Identifier:	PR34003
Purpose:	To bring the IUT in state 4. This preamble is used for IUTs configured for point-to-point.
Default:	DF69901

No	Behaviour Description	L	Cref	V	C
1	L!DISC START TAC		DI(P1)		(1)
2	L?DMr START TAC	L1	DM(F1)	(P)	
3	GOTO L1				
4	L?UAr START TAC		UA(F1)	(P)	
5	GOTO L1				
6	L?SABMEr START TAC		SA(P1)	(P)	
7	L!DM		DM(F1)		(2)
8	GOTO L1				
9	?TIMEOUT TAC				
10	L!DM		DM(F1)		(2)
11	(RC ::= 0) START TNOAC				(3)
12	L?SABMEr	L2	SA(P1)	(P)	
13	L!DM		DM(F1)		IUT is in state 4
14	L?OTHERWISE (RC ::= RC + 1) CANCEL TNOAC				(3)
15	[RC <= RCMax] START TNOAC				(3)
16	GOTO L2				(3)
17	[RC > RCMax]			(I)	
18	+PO44004				Postamble
19	?TIMEOUT TNOAC				(4)
20	L!DISC START TAC	L3	DI(P1)		
21	L?DMr CANCEL TAC		DM(F1)	(P)	(5)
22	L!UI_M START TW200		UM_T4(0, 127)		(7)
23	L?UI_Mr	L4	UM_T5(CURRENT_TEI)	(P)	(8)
24	GOTO L4				(9)
25	L?UI_Mr CANCEL TW200		UM_T5_ANY_AI		(10)
26	+PR31001				(11)
27	+S1toS4			(P)	(12)
28	L?SABMEr		SA(P1)	(P)	
29	L!DM		DM(F1)		
30	GOTO L4				
31	?TIMEOUT TW200			(P)	
32	L?SABMEr CANCEL TAC		SA(P1)	(P)	
33	L!DM		DM(F1)		
34	GOTO L3				
35	?TIMEOUT TAC				(6)
36	+PR31001				(11)
37	+S1toS4				(12)
38	**S1toS4**				
39	< IUT ! SABME >		SA(P1)		
40	START TWAIT				(13)
41	L?SABMEr CANCEL TWAIT	L5	SA(P1)	(P)	(14)
42	(NS ::= 0, NR ::= 0)				
43	L!UA START TWL3		UA(F1)		
44	L?Icr_r (TMP ::= Icr.CR, NR ::= (NR + 1) MOD 128) CANCEL TWL3		IN5(P0, NS, NR)	(P)	(15)

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No	Behaviour Description	L	Cref	V	C
45	L!Icr_s START TAC		IN6(P0, NR, NS, TMP)		(16)
46	(NS ::= (NS + 1) MOD 128)				
47	L?RR_Rr CANCEL TAC		RRR(F0, NS)	(P)	
48	L!DISC START TAC		DI(P1)		(17)
49	(NR ::= 0, NS ::= 0)				
50	L?UAr CANCEL TAC		UA(F1)	(P)	(17)
51	L?DISCr START TAC		DI(P1)	(P)	
52	L!UA		UA(F1)		
53	L?UAr CANCEL TAC		UA(F1)	(P)	
54	?TIMEOUT TAC			(F)	
55	+PO44004				Postamble
56	?TIMEOUT TAC			(F)	
57	+PO44004				Postamble
58	?TIMEOUT TAC			(F)	
59	+PO44004				Postamble
60	?TIMEOUT TWL3			(I)	
61	+PO44004				Postamble
62	L?UI_Mr (VRI ::= UI_M.RI)		UM_T1		
63	(CURRENT_TEI ::= RANDOM (64, 126))				
64	L!UI_M		UM_T2(VRI, CURRENT_TEI)		
65	GOTO L5				
66	?TIMEOUT TWAIT			(I)	
67	+PO44004				Postamble

Extended Comments:

(1) If the IUT was in an unstable state (most states), this message prevents the IUT from activating some of the error procedures resulting in a TEI removal. The IUT is now in state 1, 2, 3, 4, 5, or 6.
(2) If the IUT is in state 5 or 6, an error procedure will be activated (resulting in a TEI removal). A DM F=1 prevents this. The IUT is now in state 1, 2, 3 or 4.
(3) During (1) and (2), the IUT may have sent several messages. If the IUT is in state 2 or 3, messages may still be sent. These message are ignored.
(4) The IUT is now in state 1 or 4.
(5) A datalink with TEI=CURRENT_TEI exist and is in state 4.
(6) A datalink with TEI=CURRENT_TEI does not exist.
(7) Checks if more TEI values are in use.
(8) This message acknowledges the existence of CURRENT_TEI.
(9) Waits until the responding time has expired.
(10) Other TEI values than CURRENT_TEI are also used.
(11) Resets all datalinks.
(12) Acquires one TEI value (CURRENT_TEI) and enter state 4.
(13) Some manual action is required to send a SETUP message. Since a datalink in state 7.0 does not exist yet, L3 of the IUT first sends a DL_ESTABLISH_REQ.
(14) IUT has entered state 5.
(15) After the IUT has entered state 7.0, the invoked SETUP is transmitted.
(16) The tester responds with a release complete.
(17) Disconnect the multiple established mode of operation.

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S50/V/PR/A/PR35001				
Identifier:	PR35001				
Purpose:	To bring the IUT in state 5.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	(TMP ::= (NR + 1) MOD 128)				
3	L!RR_C START TAC		RRC(P0, TMP)		(1)
4	L?SABMEr CANCEL TAC		SA(P1)		
5	(NS ::= 0, NR ::= 0)			(P)	
6	?TIMEOUT TAC			(I)	SABME not received
7	+PO44004				Postamble
Extended Comments:					
(1) RR command with N(R) error. This causes the IUT to initiate re-establishment.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S70/V/PR/A/PR37001				
Identifier:	PR37001				
Purpose:	To bring the IUT in state 7.0.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR34001				Preamble to S4
2	[PX_IUT_STA_S4]				
3	L!SABME START TAC		SA(P1)		
4	L?UAr CANCEL TAC		UA(F1)	(P)	
5	(NS ::= 0, NR ::= 0)				
6	L?DMr CANCEL TAC		DM(F1)	(I)	(1)
7	+PO44004				Postamble
8	?TIMEOUT TAC			(F)	(2)
9	+PO44004				Postamble
10	[NOT PX_IUT_STA_S4]				
11	START TWAIT				
12	L?SABMEr		SA(P1)	(P)	
13	L!UA		UA(F1)		
14	(NS ::= 0, NR ::= 0)				
15	?TIMEOUT TWAIT			(I)	(2)
16	+PO44004				Postamble
Extended Comments:					
(1) Unable to enter MF state					
(2) UA not provided by IUT.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S70/V/PR/A/PR37002				
Identifier:	PR37002				
Purpose:	To bring the IUT in state 7.0 and provide INFO generation from IUT.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	[BASIC_ACCESS]				
2	[PC_PTMP]			(P)	
3	+PR37004				(1)
4	[NOT PC_PTMP]			(P)	
5	+PR37003				(2)
6	[NOT BASIC_ACCESS]			(P)	
7	+PR37003				(3)
Extended Comments:					
(1) S7 preamble to be used for basic access Point-to-multipoint IUTs.					
(2) S7 preamble to be used for basic access Point-to-point IUTs.					
(3) S7 preamble to be used for primary rate access IUTs.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S70/V/PR/A/PR37003				
Identifier:	PR37003				
Purpose:	To bring the IUT in state 7.0 and provide INFO generation from the IUT. This preamble is used for IUTs configured for point-to-point.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				
2	L!Is START TWL3, START TAC		IN2(P0, NR, NS)		(1)
3	(NS ::= (NS + 1) MOD 128)				
4	L?RR_Rr CANCEL TAC		RRR(F0, NS)		(2)
5	L?Ir CANCEL TWL3		IN1(P0, NS, NR)		(3)
6	(NR ::= (NR + 1) MOD 128)			(P)	
7	?TIMEOUT TWL3			(I)	
8	+PO44004				Postamble
9	?TIMEOUT TAC			(F)	
10	+PO44004				Postamble
Extended Comments:					
(1) Sends a Release to L3 of the IUT.					
(2) Acknowledgement of the transmitted I-frame.					
(3) The IUT responds with a Release Complete.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S70/V/PR/A/PR37004				
Identifier:	PR37004				
Purpose:	To bring the IUT in state 7.0 and provide INFO generation from the IUT. This preamble is used for IUTs configured for point-to-multipoint..				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31401				
2	L!UI START TWL3		UI3		(2)
3	L?UI_Mr (VRI ::= UI_M.RI)		UM_T1		(3)
4	(CURRENT_TEI ::= RANDOM (64, 126))				
5	L!UI_M		UM_T2(VRI, CURRENT_TEI)		(4)
6	L?SABMEr		SA(P1)		
7	(NS ::= 0, NR ::= 0)				
8	+SUBTREE				
9	?TIMEOUT TWL3			(I)	(6)
10	+PO44004				Postamble
11	L?SABMEr		SA(P1)		
12	+SUBTREE				
13	?TIMEOUT TWL3			(I)	(6)
14	+PO44004				Postamble
15	**SUBTREE**				
16	L!UAr		UA(F1)		
17	L?Ir CANCEL TWL3		IN1(P0, NS, NR)		(7)
18	(NR ::= (NR + 1) MOD 128)			(P)	
19	?TIMEOUT TWL3			(I)	(6)
20	+PO44004				Postamble
Extended Comments: (2) Layer 3 SETUP message without any information element. The IUT should respond with a RELEASE COMPLETE (3) Identity requests if IUT was in state 1. (4) Identity assign message with Ri equal to that used by the IUT in its TEI request and Ai value equal to the assigned TEI value. (6) The IUT has not responded to the empty SETUP. Not possible to determine whether it is a Layer 2 or Layer 3 error. (7) Release Complete (coding of information field is not checked). References to requirements: subclauses 10.4.2, 10.5.2, 10.5.4.1, 10.5.4.2, 10.6.1.1					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S74/V/PR/A/PR37401				
Identifier:	PR37401				
Purpose:	To bring the IUT in state 7.4.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37001				Preamble to S7.0
2	L!RNR_R		RNR(F0, NR)	(P)	
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S80/V/PR/A/PR38001				
Identifier:	PR38001				
Purpose:	To bring the IUT in state 8.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37002				Preamble to S7.0 (1)
2	(TMP ::= (NR - 1) MOD 128)				
3	START TW200				
4	L?RR_Cr CANCEL TW200		RRC(P1, NS)	(P)	Polling with RR frame
5	L?Ir CANCEL TW200		IN1(P1, NS, TMP)	(P)	Polling with I-frame
6	?TIMEOUT TW200			(F)	
7	+PO44004				Postamble
Extended Comments: (1) Preamble to S7.0 with INFO generation.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PR/S84/V/PR/A/PR38401				
Identifier:	PR38401				
Purpose:	To bring the IUT in state 8.4.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR37401				Preamble to S7.4
2	START TW200				
3	L?RR_Cr CANCEL TW200		RRC(P1, NS)	(P)	
4	?TIMEOUT TW200			(F)	no response
5	+PO44004				Postamble
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/PO/S40/V/PO/A/PO44004				
Identifier:	PO44004				
Purpose:	To ensure that the IUT is in a stable state at the end of a test case. That is one of the states 1, 4 or 7.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				(1)
2	L?UI_Mr CANCEL TNOAC		UM_T7(0, CURRENT_TEI)		ID-verify
3	L!UI_M START TW200		UM_T4(0, CURRENT_TEI)		ID-check request
4	L?UI_Mr CANCEL TW200		UM_T5(CURRENT_TEI)		ID-check response
5	+SUBTREE				(2)
6	?TIMEOUT TW200			(I)	No ID check response
7	+SUBTREE				
8	L?UI_Mr CANCEL TNOAC		UM_T1		ID-request
9	(VRI ::= UI_M.RI)				
10	(CURRENT_TEI ::= RANDOM (64, 126))				
11	L!UI_M		UM_T2(VRI, CURRENT_TEI)		ID-assign
12	+SUBTREE				IUT is in state 4
13	L?Ir		IN9		Any I-frame
14	+SUBTREE				(7)
15	?TIMEOUT TNOAC				
16	+SUBTREE				
17	L?OTHERWISE CANCEL TNOAC				Ignore this PDU
18	+SUBTREE				
19	**SUBTREE**				
20	L!SABME START TAC		SA(P1)		(4)
21	L?UAr CANCEL TAC, START TNOAC		UA(F1)		IUT in state 5 or 7.0
22	L?DISCr CANCEL TNOAC		DI(P1)	R	(5)
23	L!UA		UA(F1)		IUT is in state 4
24	L?SABME CANCEL TNOAC		SA(P1)	R	IUT is in state 5
25	L!UA		UA(F1)		IUT is in state 7.0
26	?TIMEOUT TNOAC			R	IUT is in state 7.0
27	L?DMr CANCEL TAC		DM(F1)	R	(6)
28	L?SABMEr CANCEL TAC		SA(P1)		SABME-SABME collision
29	L!UA START TAC		UA(F1)		
30	L?UAr CANCEL TAC		UA(F1)	R	IUT is in state 7.0
31	?TIMEOUT TAC			I	
32	L?DISCr CANCEL TAC		DI(P1)		SABME-DISC collision
33	L!DM START TAC		DM(F1)		
34	L?DMr		DM(F1)	R	IUT is in state 4
35	?TIMEOUT TAC			I	
36	?TIMEOUT TAC			R	IUT is in state 1

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No	Behaviour Description	L	Cref	V	C
Extended Comments: (1) Wait to ensure that no collision of non-management messages occurs. (2) IUT has performed ID check procedure and is therefore not in state 1, 2 or 3. (3) IUT is in any state exept state 2 or 3. (4) Establish or re-establish (5) IUT not stable in state 7. IUT initiates release of data link. (6) IUT is not able to enter state 7.0. IUT is in state 4. (7) IUT has sent an I-frame. By entering SUBTREE which transmits a SABME the I queue is dicarded, all state variables are set to zero, exception conditions are cleared and the IUT shall, if possible, respond by UA and enter state 7.0.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S10/V/MS/A/CS51001				
Identifier:	CS51001				
Purpose:	To check that the IUT is in state 1.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L?UI_Mr CANCEL TNOAC		UM_T1	(P)	ID-request (1)
3	+PO44004				
4	?TIMEOUT TNOAC				
5	L!UI_M START TNOAC		UM_T4(0, 127)		ID check req (2)
6	L?UI_Mr CANCEL TNOAC		UM_T1	(P)	ID-request (1)
7	+PO44004				
8	?TIMEOUT TNOAC			(P)	
9	+PO44004				
Extended Comments: (1) In case the IUT is in state 1 it may initiate TEI assignment at any time. (2) If the IUT is in a TEI unassigned state it ignores the ID check request.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S30/V/MS/A/CS53001				
Identifier:	CS53001				
Purpose:	To check that the IUT is in state 3.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TW202				
2	L?UI_Mr (VRI ::= UI_M.RI) CANCEL TW202		UM_T1	(P)	ID-request IUT in state 3
3	+SUBTREE				
4	?TIMEOUT TW202			(F)	
5	+PO44004				
6	**SUBTREE**				
7	(CURRENT_TEI ::= RANDOM (64, 126))				
8	L!UI_M START TWL3		UM_T2(VRI, CURRENT_TEI)		ID-assign
9	L?SABMEr		SA(P1)	(P)	
10	L!UA		UA(F1)		
11	L?Ir (NR ::= (NR + 1) MOD 128) CANCEL TWL3		IN1(P0, NS, NR)	(P)	I-frame from IUT
12	L!RR_R		RRR(F0, NR)		
13	+PO44004				
14	?TIMEOUT TWL3			(P)	No I-frames from IUT
15	+PO44004				
16	?TIMEOUT TWL3			(P)	No SABME from IUT
17	+PO44004				

Extended Comments:
(1) Before entering this postamble, the IUT may have an I-frame in its I queue, which it transmits when possible. In order to leave the IUT in a stable state, SUBTREE allows the IUT to establish the data link and transmit the I-frame.

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S40/V/MS/A/CS54001				
Identifier:	CS54001				
Purpose:	To check that the IUT is in state 4.				
Default:	DF69901				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L?SABMEr [NOT PX_IUT_STA_S4]		SA(P1)		(1)
3	CANCEL TNOAC				
4	L!UA		UA(F1)	(P)	
5	+PO44004				Postamble
6	?TIMEOUT TNOAC			(P)	(2)
7	L!DISC START TAC		DI(P1)		
8	L?DMr CANCEL TAC		DM(F1)	(P)	
9	+PO44004				Postamble
10	L?SABMEr [NOT PX_IUT_STA_S4]		SA(P1)	(P)	(3)
11	CANCEL TNOAC				Postamble
12	L!DM		DM(F1)		
13	+PO44004				Postamble
14	?TIMEOUT TAC			(I)	(4)
15	+PO44004				Postamble
Extended Comments:					
(1) SABME received due to unstable state 4					
(2) Timeout to distinguish state 4 from state 5.					
(3) SABME due to unstable state 4 collided with DISC from tester					
(4) It is non-essential to respond to a DISC with a DM when in state 4. Therefore the verdict assigned is inconclusive.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S70/V/MS/A/CS57001				
Identifier:	CS57001				
Purpose:	To check that the IUT is in state 7.0.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TNOAC				
2	L?DISCr CANCEL TNOAC		DI(P1)	(I)	(1)
3	L!UA		UA(F1)		
4	+PO44004			(P)	
5	?TIMEOUT TNOAC			(P)	(2)
6	L!RR_C START TAC		RRC(P1, NR)		
7	L?RR_Rr CANCEL TAC		RRR(F1, NS)	(P)	
8	+PO44004				
9	?TIMEOUT TAC			(F)	
10	+PO44004				Postamble
Extended Comments:					
(1) It is not possible to determine whether the IUT was in state 7 (IUT unstable in state 7), or whether the IUT was in state 6.					
(2) Timeout to distinguish state 7.0 from state 7.4.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S71/V/MS/A/CS57101				
Identifier:	CS57101				
Purpose:	To check that the IUT is in state 7.1.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(TMP ::= (NS + K) MOD 128)				
2	L!Is START TAC		IN8(P1, NR, TMP)		(1)
3	L?RR_Rr CANCEL TAC		RRR(F1, NS)	(P)	
4	+PO44004				Postamble
5	?TIMEOUT TAC			(F)	
6	+PO44004				Postamble
Extended Comments:					
(1) I with RELEASE COMPLETE and NS out of window. This check procedure leaves the IUT in state 7.1.					
References to requirements: subclause 10.7.2.1					

Test Step Dynamic Behaviour					
Reference:	TBR3_L2/MS/S74/V/MS/A/CS57401				
Identifier:	CS57401				
Purpose:	To check that the IUT is in state 7.4.				
Default:	DF69902				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	START TW200				
2	L?RR_Cr		RRC(P1, NS)		
3	L!RNR_R CANCEL TW200		RNR(F1, NR)	(P)	
4	+PO44004				Postamble
5	?TIMEOUT TW200			(F)	(1)
6	+PO44004				Postamble
Extended Comments:					
(1) Timeout without receiving poll frame. This procedure leaves IUT in initial state. It does not distinguish between States 7.4 and 8.4.					

Default Dynamic Behaviour					
Reference:	TBR3_L2/DF/SAL/V/DF/A/DF69901				
Identifier:	DF69901				
Purpose:	Default subtree for all states except 7 and 8.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L?PH_DEAC_IN			(I)	(1)
2	[R = R]			R	
3	L?PH_ACT_IN			(I)	
4	[R = R]			R	
5	L?XID_C		XID	(I)	
6	L!DM START TNOAC		DM(F1)		
7	?TIMEOUT TNOAC			R	(1)
8	L?OTHERWISE			(F)	
9	L?OTHERWISE			(F)	(3)
10	L!DM START TNOAC		DM(F1)		
11	?TIMEOUT TNOAC			R	(1)
12	L?OTHERWISE			R	
Extended Comments:					
(1) Layer 1 deactivation.					
(3) Received message not foreseen.					

Default Dynamic Behaviour					
Reference:	TBR3_L2/DF/SAL/V/DF/A/DF69902				
Identifier:	DF69902				
Purpose:	Default subtree for MF (state 7) and Timer Recovery (state 8) States.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L?PH_DEAC_IN			(I)	(1)
2	[R = R]			R	
3	L?PH_ACT_IN			(I)	
4	[R = R]			R	
5	L?RNR_Rr		RNR_ANY	(I)	
6	L!DISC START TAC		DI(P1)		
7	L?DMr CANCEL TAC		DM(F1)	R	
8	L?UAr CANCEL TAC		UA(F1)	R	
9	?TIMEOUT TAC			(F)	no response
10	L?OTHERWISE			(F)	
11	L?RNR_Cr		RNC_ANY	(I)	(4)
12	L!DISC START TAC		DI(P1)		
13	L?DMr CANCEL TAC		DM(F1)	R	
14	L?UAr CANCEL TAC		UA(F1)	R	
15	?TIMEOUT TAC			(F)	no response
16	L?OTHERWISE			(F)	
17	L?XID_C		XID	(I)	
18	L!DISC START TAC		DI(P1)		
19	L?DMr CANCEL TAC		DM(F1)	R	
20	L?UAr CANCEL TAC		UA(F1)	R	
21	?TIMEOUT TAC			(F)	no response
22	L?OTHERWISE			(F)	
23	L?OTHERWISE			(F)	(3)
24	L!DISC START TAC		DI(P1)		
25	L?DMr CANCEL TAC		DM(F1)	R	
26	L?UAr CANCEL TAC		UA(F1)	R	
27	?TIMEOUT TAC			R	no response
28	L?OTHERWISE			R	

Extended Comments:
(1) Layer 1 deactivation.
(3) Received message not expected.
(4) IUT receiver not ready.

Annex D (normative): Layer 3 tests

D.1 Test case selection

Table D.1 contains the test case selection criteria for the interface procedure tests.

Table D.1: Test case selections for layer 3

Test Case Id	Selection criteria (Test Suite Parameter)
TC10002	
TC10004	
TC10005	
TC10006	
TC10008	IBCC
TC10009	IHLCC
TC10010	
TC10011	
TC10012	
TC10015	
TC10024	
TC10026	
TC10027	
TC10028	
TC10029	
TC20001	BSPRE
TC20002	
TC10101	
TC10102	
TC10103	
TC10104	NOT EBS
TC10105	
TC10107	
TC10115	
TC10116	
TC10120	
TC10125	
TC10201	NOT EBS
TC10202	NOT EBS
TC10203	NOT EBS
TC10204	NOT EBS
TC10222	NOT EBS
TC10223	NOT EBS
TC20203	NOT EBS
TC20204	BXINF AND NOT EBS
TC10301	
TC10302	
TC10303	
TC20301	
TC10401	
TC10402	

(continued)

Table D.1 (concluded): Test case selections for layer 3

Test Case Id	Selection criteria (Test Suite Parameter)
TC20401	
TC10701	BAL AND U7_MAINT
TC10718	BAL AND U7_MAINT
TC10801	
TC10802	
TC10805	
TC10901	BCP AND U9_MAINT
TC11003	
TC11004	
TC11005	
TC11007	
TC11008	
TC11021	
TC11028	
TC11029	
TC11031	
TC11032	
TC21003	
TC21005	BSPRE
TC11101	
TC11103	
TC11105	
TC11107	
TC11118	
TC11501	BSPRE
TC11503	BSPRE
TC11504	BSPRE
TC11508	BSPRE
TC11701	BSPRE
TC11703	BSPRE
TC11706	BSPRE
TC11903	
TC11904	
TC11906	
TC11920	
TC12501	OVR
TC12503	OVR
TC19003	NOT BDL

D.2 Layer 3 test suite

Suite overview

Test Suite Overview	
Suite Name:	TBR3_L3
Standards ref:	TBR3
PICS Proforma ref:	TBR3, annex A
PIXIT Proforma ref:	TBR3, annex E
PICS/PIXIT use:	
Test Method(s):	Remote Single Layer Test Method
Comments:	The Layer 3 test cases in the TBRs are based on the test cases from I-ETS 300 322 which is a conformance test suite for Layer 3. However, changes have been introduced in order not to use non-essential requirements in the TBR test cases. This means that an IUT passing a test case in the TBR test suite may not pass the corresponding test case in I-ETS 300 322. The ability to pass a test with the same test case identifier in I-ETS 300 322 provides an alternative means of verifying the requirement of the TBR. However, failure to pass the equivalent test in I-ETS 300 322 shall not be taken as an indication that the test in the TBR is also failed. An IUT is allowed to include messages and information elements which are not defined in clause 11 (Layer 3 requirements). In order to reflect this, these messages and information elements are included in part 2 and part 3 of this ATS. Testing shall be carried out at a temperature and humidity within the operational range of the TE. Structure of the test suite The following naming scheme has been used in order to identify test cases, test steps and default subtrees to indicate their position within the test suite hierarchy. <test case/step/default reference> ::=TBR4_L3/<tg1>/<tg2>/<tg3>/<tg4>/<tg5>/<tcid> <tg1> ::= PS, AC, PR, PO, MS, DF, CS <tg2> ::= U00, U01, U02, U03, U04, U07, U08, U09, U10, U11, U19, U25, R00 <tg3> ::= V, I, S <tg4> ::= <PDU type> <tg5> ::= N, O, I, A <tcid>::= <test case/step/default identifier> <tg1> "Area" Test Case Group PS = Passive IUT behaviour AC = Active IUT behaviour PR = Preamble PO = Postamble DF = Default Behaviour MS = Miscellaneous UM = Unexpected Message CS = Check State

<tg2> "Starting State" Test Case Group
Identifies the state in which the test case starts. UAL is used for test steps for which a start state cannot be defined

<tg3> "Type" Test Case Group
V = Valid
I = Inopportune
S = Syntactically Invalid

<tg4> "PDU" Test Case Group
AL = ALERTING, CA = CONNECT ACKNOWLEDGE, CN = CONNECT, CP = CALL PROCEEDING, DI = DISCONNECT, ER = ERROR, IN = INFORMATION, NO = NOTIFY, RC = RELEASE COMPLETE RL = RELEASE, RS = RESTART, SA = SETUP ACKNOWLEDGE ST = STATUS, SU = SETUP

<tg5> "Reference" Test Case Group
N = NETs are the source of the base of the test case
I = ICOT is the source of the base of the test case
O = Other source is the base of the test case
A is used for test steps and default steps

<tcid> ::= <letter><letter><digit><digit><digit><digit><digit>
The two letters indicates whether it is a test case, test step or default step (TC for test case, PR for preamble, CS for check state, PO for postamble, UM for unexpected message and DF for default tree).
The first digit indicates the Area (1 for PS, 2 for AC, 3 for PR, 4 for PO, 5 for CS and UM and 6 for DF).
The two following digits indicates the starting state.
The two last digits indicates a sequence number.

EXAMPLE: TBR4_L3/PS/U03/V/DI/N/TC10303:
The test suite is TBR4_L3.
The test case tests passive IUT behaviour.
The test starts with IUT in state U3.
A valid PDU is sent to the IUT.
A DISCONNECT is sent to the IUT.
The source of the base of the test case is the NETs.
The test case identifier isTC10303.

Some of the coding rules described in subclause 11.3.5.1 cannot be expressed in TTCN but shall be considered when implementing this TBR:
a) Single octet information elements may appear at any point within a message
b) Information elements containing 'spare bits', indicated as being set to "0". In order to allow compatibility with future implementations, messages should not be rejected when the spare bit is set to "1".
c) An information element with content length=0 shall be interpreted by the receiver as equivalent to that information element being absent
d) The extension mechanism of octet groups has to be supported to allow future extensions
e) It has to be specified for the Test Equipment if misplaced information element has to be ignored or not.
f) If an information element is repeated in a message in which repetition is not permited, only the contents of the information element appearing first shall be handled. When repetition of the information element is permitted, only the contents of permitted information elements shall be handled.
g) The procedures described in subclauses 11.4.6.5.1 "Mandatory information element missing" and 11.4.6.6.1 "Unrecognized information element" shall be implemented by the test equipment.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10002	TBR3_L3/PS/U00/V/RL/N/ TC10002	506	CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.
TC10004	TBR3_L3/PS/U00/V/ST/N/ TC10004	506	CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU indicating any state except the null state N0, the IUT responds with either a RELEASE or RELEASE COMPLETE PDU with cause value 101.
TC10005	TBR3_L3/PS/U00/V/SU/N/ TC10005	507	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a valid SETUP PDU without the Sending complete information element, the IUT responds with any of a SETUP ACKNOWLEDGE, a CALL PROCEEDING, an ALERTING or a CONNECT PDU and moves to the relevant state Overlap Sending U25, Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.
TC10006	TBR3_L3/PS/U00/V/SU/N/ TC10006	508	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a valid SETUP PDU with the Sending complete information element, the IUT responds with any of a CALL PROCEEDING, an ALERTING or a CONNECT PDU and moves to the relevant state Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.
TC10008	TBR3_L3/PS/U00/V/SU/N/ TC10008	509	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a valid SETUP PDU containing an incompatible Bearer capability information element (mandatory parameter) the IUT: - responds with a RELEASE COMPLETE PDU; or ignores the SETUP PDU (broadcast datalink); - responds with a RELEASE COMPLETE PDU (point-to-point datalink).

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10009	TBR3_L3/PS/U00/V/SU/N/TC10009	510	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a valid SETUP PDU containing an incompatible High layer compatibility information element (optional parameter) the IUT: - responds with a RELEASE COMPLETE PDU; or ignores the SETUP PDU (broadcast datalink); - responds with a RELEASE COMPLETE PDU (point-to-point datalink).
TC10010	TBR3_L3/PS/U00/I/DI/N/TC10010	511	CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that on receipt of an inpportune PDU (DISCONNECT), the IUT responds with a RELEASE PDU or a RELEASE COMPLETE PDU.
TC10011	TBR3_L3/PS/U00/I/SU/N/TC10011	512	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that on receipt of a repeated valid SETUP PDU with the same call reference as the initial SETUP PDU, the IUT does not respond to the second SETUP PDU and remains in the same state.
TC10012	TBR3_L3/PS/U00/S/ER/O/TC10012	514	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that on receipt of a PDU with an erroneous protocol discriminator coded other than '08'H, the IUT does not respond to the PDU and remains in the same state.
TC10015	TBR3_L3/PS/U00/S/ER/N/TC10015	515	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that on receipt of a PDU with mandatory information element missing, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.
TC10024	TBR3_L3/PS/U00/S/ER/O/TC10024	516	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 11 Ensure that on receipt of a PDU with invalid duplicated information elements, the IUT ignores the invalid duplication and processes the remaining contents of the PDU as valid.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10026	TBR3_L3/PS/U00/S/ER/O/ TC10026	517	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14 Ensure that on receipt of a PDU with mandatory information element content error, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.
TC10027	TBR3_L3/PS/U00/S/ER/N/ TC10027	518	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 15 Ensure that on receipt of a PDU with unrecognised information element coded "comprehension required", the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.
TC10028	TBR3_L3/PS/U00/S/ER/N/ TC10028	519	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16 Ensure that the IUT on receipt of a compatible SETUP PDU with all the mandatory information elements correctly coded and an unrecognised optional information element with comprehension not required responds with a STATUS PDU (optional) followed by either a SETUP ACKNOWLEDGE, CALL PROCEEDING, ALERTING or CONNECT PDU and moves to the relevant state Overlap Receiving U25, Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.
TC10029	TBR3_L3/PS/U00/S/ER/N/ TC10029	520	INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 17 Ensure that on receipt of a SETUP PDU with non-mandatory information element content error the IUT processes the PDU and its remaining contents as valid and optionally sends a STATUS PDU with cause value 100.
TC20001	TBR3_L3/AC/U00/V/RE/N/ TC20001	521	CALLED USER TESTS - STATE U0 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on sending of a RESUME PDU the IUT enters the Resume Request state U17.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC20002	TBR3_L3/AC/U00/V/SU/N/TC20002	522	NULL STATE TESTS - STATE U0 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a valid SETUP PDU and enters the Call Initiated state U1.
TC10101	TBR3_L3/PS/U01/V/CP/N/TC10101	522	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CALL PROCEEDING PDU the IUT enters the Outgoing Call Proceeding state U3.
TC10102	TBR3_L3/PS/U01/V/RC/N/TC10102	523	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state U0.
TC10103	TBR3_L3/PS/U01/V/RL/N/TC10103	523	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.
TC10104	TBR3_L3/PS/U01/V/SA/N/TC10104	524	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SETUP ACKNOWLEDGE PDU the IUT enters the Overlap Sending state U2.
TC10105	TBR3_L3/PS/U01/V/ST/N/TC10105	524	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.
TC10107	TBR3_L3/PS/U01/I/CA/N/TC10107	525	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 101, or STATUS ENQUIRY PDU and remains in the same state.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10115	TBR3_L3/PS/U01/S/ER/O/ TC10115	526	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 13 Ensure that on receipt of a CALL PROCEEDING PDU with mandatory information element missing the IUT only returns a STATUS PDU with cause value 96 and remains in the same state.
TC10116	TBR3_L3/PS/U01/S/ER/O/ TC10116	526	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14 Ensure that the IUT responds to the receipt of a CALL PROCEEDING PDU with mandatory information element with content error by sending a STATUS PDU with cause value 100 and remains in the same state.
TC10120	TBR3_L3/PS/U01/S/ER/N/ TC10120	527	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that the IUT responds to a syntactically invalid message type with a STATUS PDU with cause value 98 or 97, or with a STATUS ENQUIRY PDU and remains in the same state.
TC10125	TBR3_L3/PS/U01/I/RC/I/T C10125	527	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond and remains in the same state.
TC10201	TBR3_L3/PS/U02/V/AL/N/ TC10201	528	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of an ALERTING PDU the IUT enters the Call Delivered state U4.
TC10202	TBR3_L3/PS/U02/V/CN/N/ TC10202	528	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.
TC10203	TBR3_L3/PS/U02/V/CP/N/ TC10203	529	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CALL PROCEEDING PDU the IUT enters the Outgoing Call Proceeding state U3.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10204	TBR3_L3/PS/U02/V/DI/N/TC10204	529	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
TC10222	TBR3_L3/PS/U02/S/ER/O/TC10222	530	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 13 Ensure that on receipt of a DISCONNECT PDU with the mandatory information element missing the IUT returns a RELEASE PDU and enters the Release Request state U19.
TC10223	TBR3_L3/PS/U02/S/ER/O/TC10223	530	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14 Ensure that the IUT responds to the receipt of a DISCONNECT PDU with mandatory information element with content error by sending a RELEASE PDU and enters the Release Request state U19.
TC20203	TBR3_L3/AC/U02/V/DI/N/TC20203	531	OVERLAP SENDING STATE TESTS - STATE U2 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
TC20204	TBR3_L3/AC/U02/V/IN/N/TC20204	531	OVERLAP SENDING STATE TESTS - STATE U2 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits an INFORMATION PDU and remains in the same state.
TC10301	TBR3_L3/PS/U03/V/AL/N/TC10301	532	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of an ALERTING PDU the IUT enters the Call Delivered state U4.
TC10302	TBR3_L3/PS/U03/V/CN/N/TC10302	532	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10303	TBR3_L3/PS/U03/V/DI/N/TC10303	533	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
TC20301	TBR3_L3/AC/U03/V/DI/N/TC20301	533	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
TC10401	TBR3_L3/PS/U04/V/CN/N/TC10401	534	CALL DELIVERED STATE TESTS - STATE U4 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.
TC10402	TBR3_L3/PS/U04/V/DI/N/TC10402	534	CALL DELIVERED STATE TESTS - STATE U4 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
TC20401	TBR3_L3/AC/U04/V/DI/N/TC20401	535	CALL DELIVERED STATE TESTS - STATE U4 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
TC10701	TBR3_L3/PS/U07/V/DI/N/TC10701	535	CALL RECEIVED STATE TESTS - STATE U7 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
TC10718	TBR3_L3/PS/U07/S/ER/O/TC10718	536	CALL RECEIVED STATE TESTS - STATE U7 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16 Ensure that on receipt of a DISCONNECT PDU with unrecognised information element (coded comprehension not required) the IUT sends a RELEASE PDU and enters the Release Request state U19.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC10801	TBR3_L3/PS/U08/V/CA/N/TC10801	536	CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT ACKNOWLEDGE PDU the IUT enters the Active state U10.
TC10802	TBR3_L3/PS/U08/V/DI/N/TC10802	537	CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
TC10805	TBR3_L3/PS/U08/V/RL/N/TC10805	537	CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.
TC10901	TBR3_L3/PS/U09/V/DI/N/TC10901	538	INCOMING CALL PROCEEDING STATE TEST - STATE U9 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
TC11001	TBR3_L4/PS/U10/V/DI/N/TC11001	538	ACTIVE STATE TESTS - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
TC11003	TBR3_L3/PS/U10/V/NO/N/TC11003	539	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a NOTIFY PDU the IUT does not respond and remains in the same state.
TC11004	TBR3_L3/PS/U10/V/RC/N/TC11004	539	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state.
TC11005	TBR3_L3/PS/U10/V/RL/N/TC11005	540	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC11007	TBR3_L3/PS/U10/V/ST/N/TC11007	540	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.
TC11008	TBR3_L3/PS/U10/I/CN/N/TC11008	541	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 100, or with a STATUS ENQUIRY PDU and that no change of state occurs.
TC11021	TBR3_L3/PS/U10/S/ER/N/TC11021	542	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that the IUT responds to a syntactically invalid message type with a STATUS PDU with cause value 98 or 97, or with a STATUS ENQUIRY PDU and remains in the same state.
TC21003	TBR3_L3/AC/U10/V/DI/N/TC21003	542	ACTIVE STATE TEST - STATE U10 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
TC21005	TBR3_L3/AC/U10/V/SP/N/TC21005	543	ACTIVE STATE TEST - STATE U10 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on transmission of a SUSPEND PDU the IUT enters the Suspend Request state U15.
TC11101	TBR3_L3/PS/U11/V/DI/N/TC11101	543	DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
TC11103	TBR3_L3/PS/U11/V/NO/N/TC11103	544	DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a NOTIFY PDU the IUT does not respond or returns a STATUS PDU and remains in the same state.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC11105	TBR3_L3/PS/U11/V/RL/N/TC11105	544	DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.
TC11107	TBR3_L3/PS/U11/I/CP/N/TC11107	545	DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 101, or with a STATUS ENQUIRY PDU, and remains in the same state.
TC11118	TBR3_L3/PS/U11/S/ER/O/TC11118	546	DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16 Ensure that on receipt of a RELEASE PDU with unrecognized information element (coded comprehension not required) the IUT sends a RELEASE COMPLETE PDU and enters the Null state U0.
TC11501	TBR3_L3/PS/U15/V/DI/N/TC11501	546	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
TC11503	TBR3_L3/PS/U15/V/NO/N/TC11503	547	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a NOTIFY PDU the IUT does not respond or returns a STATUS PDU and remains in the same state.
TC11504	TBR3_L3/PS/U15/V/PA/N/TC11504	547	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SUSPEND ACKNOWLEDGE PDU the IUT enters to the state U0.

Test Group or Case Identifier	Test Group or Case Reference	Page	Description
TC11508	TBR3_L3/PS/U15/V/SR/N/TC11508	548	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SUSPEND REJECT PDU the IUT returns to the state U10.
TC11701	TBR3_L3/PS/U17/V/DI/N/TC11701	548	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
TC11703	TBR3_L3/PS/U17/V/RA/N/TC11703	549	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RESUME ACKNOWLEDGE PDU IUT returns to the state U10.
TC11706	TBR3_L3/PS/U17/V/RR/N/TC11706	549	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RESUME REJECT PDU the IUT returns to the state U0.
TC11903	TBR3_L3/PS/U19/V/RC/N/TC11903	550	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state U0.
TC11904	TBR3_L3/PS/U19/V/RL/N/TC11904	550	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT does not respond and enters the Null state U0. This is a test of RELEASE collision handling.
TC11906	TBR3_L3/PS/U19/V/ST/N/TC11906	551	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.

Test Step Identifier	Test Step Reference	Page	Description
PR30001	TBR3_L3/PR/U00/V/PR/A/PR30001	555	to bring the IUT to the state U0.
PR30101	TBR3_L3/PR/U01/V/PR/A/PR30101	556	to bring the IUT to the state U1.
PR30201	TBR3_L3/PR/U02/V/PR/A/PR30201	556	to bring the IUT to the state U2.
PR30301	TBR3_L3/PR/U03/V/PR/A/PR30301	557	to bring the IUT to the state U3.
PR30401	TBR3_L3/PR/U04/V/PR/A/PR30401	557	to bring the IUT to the state U4.
PR30701	TBR3_L3/PR/U07/V/PR/A/PR30701	558	to bring the IUT to the state U7.
PR30801	TBR3_L3/PR/U08/V/PR/A/PR30801	559	to bring the IUT to the state U8.
PR30901	TBR3_L3/PR/U09/V/PR/A/PR30901	560	to bring the IUT to the state U9.
PR31001	TBR3_L3/PR/U10/V/PR/A/PR31001	560	to bring the IUT to the state U10.
PR31101	TBR3_L3/PR/U11/V/PR/A/PR31101	561	to bring the IUT to the state U11.
PR31501	TBR3_L3/PR/U15/V/PR/A/PR31501	561	to bring the IUT to the state U15.
PR31701	TBR3_L3/PR/U17/V/PR/A/PR31701	562	to bring the IUT to the state U17.
PR31901	TBR3_L3/PR/U19/V/PR/A/PR31901	563	to bring the IUT to the state U19 via the states U6-U7 or U6-U8 or U6-U9 or U6-U25.
PR32501	TBR3_L3/PR/U25/V/PR/A/PR32501	564	to bring the IUT to the state U25.
PO49901	TBR3_L3/PO/UAL/V/PO/A/PO49901	565	to bring the IUT to the state U0.
CS50001	TBR3_L3/MS/U00/V/MS/A/CS50001	566	to check the IUT call state U0.
CS59901	TBR3_L3/MS/UAL/V/MS/A/CS59901	567	to check the IUT call state and the cause value.
UM59902	TBR3_L3/MS/UAL/V/MS/A/UM59902	568	allow without verdict the receipt of INFO, NOTIFY, STATUS ENQUIRY or any Q.932 PDU during the test body execution

Default Identifier	Default Reference	Page	Description
DF69901	TBR3_L3/DF/UAL/V/DF/A/DF69901	569	Default subtree for all test cases

Declarations Part

User Type Definitions			
Name	**Base Type**	**Definition**	**Comments**
GFP_MT_LIST	OCTETSTRING	('24'O, '28'O, '30'O, '31'O, '33'O, '37'O, '62'O, '64'O)	OCTETSTRING[1]; Message types defined in ETS 300 196, 11.2.1

User Operation Definition	
Operation Name:	INT_TO_BIT(intvalue, slength:INTEGER)
Result Type:	BITSTRING

Description: INT_TO_BIT(intvalue,slength)
This operation converts a single INTEGER value to a single BITSTRING value. The resulting string is slength bits long.

For example:
INT_TO_BIT(7,4) = '0111'B
INT_TO_BIT(99,7) = '1100011'B

User Operation Definition	
Operation Name:	BIT_TO_INT(bitvalue:BITSTRING)
Result Type:	INTEGER

Description: BIT_TO_INT(bitvalue)
This operation converts a single BITSTRING value to a single INTEGER value.

For example:
BIT_TO_INT('0111'B) = 7
BIT_TO_INT('1100011'B) = 99

Test Suite Parameters			
Name	**Type**	**PICS/PIXIT ref**	**Comments**
BDL	BOOLEAN	A8.1	TRUE if broadcast data link is used.
EBS	BOOLEAN	A15.2	TRUE if the IUT includes the Sending complete Information element in the outgoing SETUP message.
IBCC	BOOLEAN	A16.4, A16.5	TRUE if Bearer capability information element is checked in the incoming SETUP PDU.
IHLCC	BOOLEAN	A16.6	TRUE if High layer compatibility information element is checked in the incoming SETUP PDU.
OVR	BOOLEAN	A16.12	TRUE if Overlap receiving is implemented.
BSPRE	BOOLEAN	A18.1	TRUE if call rearrangement is implemented.
BXSET	BOOLEAN	E.7.1	<IUT!SETUP> TRUE for this version of the TBR.
BXINF	BOOLEAN	A15.6, E.7.2	<IUT!INFO> TRUE if the IUT supports sending INFORMATION PDUs.
BXCON	BOOLEAN	E.7.3	<IUT!CONN> TRUE for this version of the TBR.
BXDIS	BOOLEAN	E.7.4	<IUT!DISC> TRUE for this version of the TBR.
BXSUS	BOOLEAN	E.7.6	<IUT!SUSP>
BXRES	BOOLEAN	E.7.7	<IUT!RES>
U7_MAINT	BOOLEAN	E.8.1	STATE U7 maintained: TRUE, if U7 > 3s and U7 ability = YES FALSE, if U7 < 3s or U7 ability = NO
U9_MAINT	BOOLEAN	E.8.2	STATE U9 maintained: TRUE, if U9 > 3s and U9 ability = YES FALSE, if U9 < 3s or U9 ability = NO
SU_HLC	BOOLEAN	E.8.4	TRUE if a High layer compatibility value is included in the SETUP PDU.
SU_LLC	BOOLEAN	E.8.6	TRUE if a Low layer compatibility value is included in the SETUP PDU.
BCP	BOOLEAN	E.8.8	TRUE if CALL PROCEEDING PDU is implemented.
BAL	BOOLEAN	E.8.9	TRUE if ALERTING PDU is implemented.
BCA	BOOLEAN	E.8.10	TRUE if CONNECT ACKNOWLEDGE PDU is mplemented.
BCAPV	OCTETSTRING	E.8.11	
IBCAP	OCTETSTRING	E.8.12	
HLCV	OCTETSTRING	E.8.13	

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Test Suite Parameters			
Name	**Type**	**PICS/PIXIT ref**	**Comments**
IHLC1	OCTETSTRING	E.8.14	
LLCV	OCTETSTRING	E.8.15	
LIPN	OCTETSTRING	E.8.17	Called party number length
IPN	OCTETSTRING	E.8.17	Called party number value
CDPN_OCTET3	OCTETSTRING	E.8.17	Octet 3 of the Called party number Information element.
CGPNV	OCTETSTRING	E.8.21	
CGPSV	OCTETSTRING	E.8.21	
UUIV	OCTETSTRING	E.8.21	

Test Suite Constants			
Name	**Type**	**Value**	**Comments**
EMPTY	OCTETSTRING	''O	

Test Case Variables			
Name	**Type**	**Value**	**Comments**
CREF	BITSTRING	'0000001'B	call reference value BITSTRING[7]
C	INTEGER	0	used as retransmission counter
ECV	BITSTRING	''B	Expected Cause value BITSTRING[7]
STAT_TRANSM	BOOLEAN	FALSE	used to handle the reception of STATUS PDUs
REST	BOOLEAN	FALSE	used to handle the reception of RESTART PDUs
r_bch_num	BITSTRING	'01'B	B-channel to be reset, BITSTRING[2]
NOT_FL	BITSTRING	'0'B	used to invert flag

PCO Type Declarations			
Name	**Type**	**Role**	**Comments**
L	SAP	LT	SAP at the lower tester controlling and observing the exchange of call control PDUs (messages) on the ISDN Layer 3 D-channel. The lower tester is the user of the data link layer service.

Timer Declarations			
Timer Name	**Duration**	**Units**	**Comments**
TWAIT	189	sec	anyLT is waiting for IUT initiated test event (timer used for test synchronisation)
TAC	32	sec	any LT is waiting for IUT initiated test event(timer used for test synchronisation)
TNOAC	2	sec	any LT is controlling IUT inactivity (timer used for test synchronisation)

Abbreviation Declarations		
Abbreviation	**Expansion**	**Comments**
ALERT	DL_DAT_RQ <MUN ^ ALERT>	send ALERTING PDU
CALL_PROC	DL_DAT_RQ <MUN ^ CALL_PROC>	send CALL PROCEEDING PDU
CON_CON	DL_DAT_RQ <MUN ^ CON_CON>	send CONGESTION CONTROL PDU
CONN	DL_DAT_RQ <MUN ^ CONN>	send CONNECT PDU
CONN_ACK	DL_DAT_RQ <MUN ^ CONN_ACK>	send CONNECT ACKNOWLEDGE PDU
DISC	DL_DAT_RQ <MUN ^ DISC>	send DISCONNECT PDU
INFO	DL_DAT_RQ <MUN ^ INFO>	send INFORMATION PDU
NOTIFY	DL_DAT_RQ <MUN ^ NOTIFY>	send NOTIFY PDU
PROG	DL_DAT_RQ <MUN ^ PROG>	send PROGRESS PDU
REL	DL_DAT_RQ <MUN ^ REL>	send RELEASE PDU
REL_COM	DL_DAT_RQ <MUN ^ REL_COM>	send RELEASE COMPLETE PDU
RES_ACK	DL_DAT_RQ <MUN ^ RES_ACK>	send RESUME ACKNOWLEDGE PDU
RES_REJ	DL_DAT_RQ <MUN ^ RES_REJ>	send RESUM REJECT PDU
SETUP_P	DL_DAT_RQ <MUN ^ SETUP>	send SETUP PDU via point-to-point
SETUP	DL_UDAT_RQ <MUN ^ SETUP>	send SETUP PDU via broadcast
SETUP_ACK	DL_DAT_RQ <MUN ^ SETUP_ACK>	send SETUP ACKNOWLEDGE PDU
STATUS	DL_DAT_RQ <MUN ^ STATUS>	send STATUS PDU
ST_ENQ	DL_DAT_RQ <MUN ^ ST_ENQ>	send STATUS ENQUIRY PDU
SUSP_ACK	DL_DAT_RQ <MUN ^ SUSP_ACK>	send SUSPEND ACKNOWLEDGE PDU
SUSP_REJ	DL_DAT_RQ <MUN ^ SUSP_REJ>	send SUSPEND REJ PDU
USER_INFO	DL_DAT_RQ <MUN ^ USER_INFO>	send USER INFORMATION PDU
ERROR	DL_DAT_RQ <MUN ^ ERROR>	send ERROR PDU
ERROR_B	DL_UDAT_RQ <MUN ^ ERROR>	send ERROR PDU via broadcast
ALERTr	DL_DAT_IN <MUN ~ ALERT>	receive ALERTING PDU
CALL_PROCr	DL_DAT_IN <MUN ~ CALL_PROC>	receive CALL PROCEEDING PDU
CON_CONr	DL_DAT_IN <MUN ~ CON_CON>	receive CONGESTION CONTROL PDU

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Abbreviation Declarations		
Abbreviation	**Expansion**	**Comments**
CONNr	DL_DAT_IN <MUN ~ CONN>	receive CONNECT PDU
CONN_ACKr	DL_DAT_IN <MUN ~ CONN_ACK>	receive CONNECT ACKNOWLEDGE PDU
DISCr	DL_DAT_IN <MUN ~ DISC>	receive DISCONNECT PDU
INFOr	DL_DAT_IN <MUN ~ INFO>	receive INFORMATION PDU
GFP_MSGr	DL_DAT_IN <MUN ~ GFP_MSG>	receive GFP PDU
NOTIFYr	DL_DAT_IN <MUN ~ NOTIFY>	receive NOTIFY PDU
PROGr	DL_DAT_IN <MUN ~ PROG>	receive PROGRESS PDU
RELr	DL_DAT_IN <MUN ~ REL>	receive RELEASE PDU
REL_COMr	DL_DAT_IN <MUN ~ REL_COM>	receive RELEASE COMPLETE PDU
RESr	DL_DAT_IN <MUN ~ RES>	receive RESUME PDU
SETUPr	DL_DAT_IN <MUN ~ SETUP>	receive SETUP PDU
SETUP_ACKr	DL_DAT_IN <MUN ~ SETUP_ACK>	receive SETUP ACKNOWLEDGE PDU
STATUSr	DL_DAT_IN <MUN ~ STATUS>	receive STATUS PDU
ST_ENQr	DL_DAT_IN <MUN ~ ST_ENQ>	receive STATUS ENQUIRY PDU
SUSPr	DL_DAT_IN <MUN ~ SUSP>	receive SUSPEND PDU

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_EST_RQ(DL_ESTABLISH_Request)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to request the establishment of multiple frame operation (L3 ---> L2)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_EST_IN(DL_ESTABLISH_Indication)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to indicate the establishment of multiple frame operation (L2 ---> L3)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_EST_CO(DL_ESTABLISH_Confirm)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to confirm the establishment of multiple frame operation (L2 ---> L3)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_REL_RQ(DL_RELEASE_Request)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to request the termination of an established multiple frame operation (L3 ---> L2)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_REL_IN(DL_RELEASE_Indication)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to indicate the termination of an established multiple frame operation or to report an unsuccessful establishment attempt (L2 ---> L3)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_REL_CO(DL_RELEASE_Confirm)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to confirm the termination of an established multiple frame operation (L2 ---> L3)

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_DAT_RQ(DL_DATA_Request)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to request the transmission of layer 3 PDUs (L3 ---> L2)
Service Parameter Information		
Field Name	**Type**	**Comments**
MUN(Message Unit)	OCTETSTRING	contains network layer (peer-to-peer message) PDU. acknowledged operation used.

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_DAT_IN(DL_DATA_Indication)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to indicate the receipt of layer 3 PDUs (L2 ---> L3)
Service Parameter Information		
Field Name	**Type**	**Comments**
MUN(Message Unit)	OCTETSTRING	contains network layer (peer-to-peer message) PDU. acknowledged operation used.

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_UDAT_RQ(DL_UNIT_DATA-Request)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to request the transmission of layer 3 PDUs using unacknowledged operation (L3 ---> L2)
Service Parameter Information		
Field Name	**Type**	**Comments**
MUN(Message Unit)	OCTETSTRING	contains network layer (peer-to-peer message) PDU. Unacknowledged operation is only used on basic access interface structures to provide point-to-multipoint operation.

ASP Type Declaration		
ASP Name:	**PCO Type:**	**Comments:**
DL_UDAT_IN(DL_UNIT_DATA_Indication)	SAP	CEId: = (SAPI,CES) mapped onto DLCI: = (SAPI,TEI) ASP is used to indicate the re-ceipt of layer 3 PDUs using unacknowledged operation (L3 ---> L2)
Service Parameter Information		
Field Name	**Type**	**Comments**
MUN(Message Unit)	OCTETSTRING	contains network layer (peer-to-peer message) PDU. Unacknowledged operation used.

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
ALERT	SAP	ALERTing u <-> n Ref. to subclause 11.2.1, Table 11.2
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[3]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, note 1, OCTETSTRING[2..5]
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
UUI	OCTETSTRING [2 .. 131]	User-user information, O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
CALL_PROC	SAP	CALL PROCeeding u <-> n local Ref. to subclause 11.2.2, Table 11.3
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, O, note 1, OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
CONN	SAP	CONNect u <-> n Ref. to subclause 11.2.3, Table 11.4
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, O, note 1, OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
CODN	OCTETSTRING [2 .. 24]	Connected number, O
CODS	OCTETSTRING [2 .. 23]	Connected subaddress, O
LLC	OCTETSTRING [2 .. 16]	Low layer compatibillity, O
UUI	OCTETSTRING [2 .. 131]	User-user information, O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
CONN_ACK	SAP	CONNect ACKnowledge u <-> n local Ref. to subclause 11.2.4, Table 11.5
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, O, NOTE OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
DISC	SAP	DISConnect u <-> n Ref. to subclause 11.2.5, Table 11.6
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause, O, OCTETSTRING[4..32]
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
UUI	OCTETSTRING [2 .. 131]	User-user information, O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
INFO	SAP	INFOrmation u <-> n local Ref. to subclause 11.2.6, Table 11.7
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
SCI	OCTETSTRING [1]	Sending complete, O
CAU	GROUP	Cause, O, OCTETSTRING[2..32]
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
KPF	OCTETSTRING [2 .. 34]	Keypad facility (n ->u), O
CDPN	GROUP	Called party number, O, OCTETSTRING[2..23]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
NOTIFY	SAP	NOTIFY u <-> n access Ref. to subclause 11.2.7, table 11.8
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
NOID	GROUP	Notification indicator, M, OCTETSTRING[3]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
GFP_MSG	SAP	u -> n Ref. to Recommendation:ETS 300 196,11.2.1
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2..3]
MT	GFP_MT_LIST	Message type, M
IE_LIST	OCTETSTRING	

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
REL	SAP	RELease u <-> n local Ref. to subclause 11.2.9, table 11.10
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause, O, note 2, OCTETSTRING[2..32]
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
UUI	OCTETSTRING [2 .. 131]	User-user information, O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
REL_COM	SAP	RELease COMplete u <-> n local Ref. to subclause 11.2.10, table 11,11
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[3]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause,O, note 2, OCTETSTRING[2..32]
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
UUI	OCTETSTRING [2 .. 131]	User-user info (u->n), O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RES	SAP	RESume u -> n local Ref. to subclause 11.2.11, table 11.12
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CID	OCTETSTRING [2 .. 10]	Call identity, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RES_ACK	SAP	RESume ACKnowledge n -> u local Ref. to subclause 11.2.12, table 11.13
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CHI	GROUP	Channel identification, M, OCTETSTRING[2..3]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RES_REJ	SAP	RESume REJect n -> u local Ref. to subclause 11.2.13, Table 11.14
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause, M, OCTETSTRING[2..32]
DSP	GROUP	Display, O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RESTART	SAP	RESTART u <-> n local Ref. to subclause 11.2.21.1, Table 11.23
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CHI	GROUP	Channel identification, O, note 2, OCTETSTRING[2..3]
RI	GROUP	Restart indicator,M, OCTETSTRING[3]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
RESTART_ACK	SAP	RESTART ACKnoledge u <-> n local Ref. to subclause 11.2.21.2 Table 11.24
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[3]
MT	OCTETSTRING [1]	Message type, M
CHI	GROUP	Channel identification, O, note 2, OCTETSTRING[2..5]
RI	GROUP	Restart indicator, M, OCTETSTRING[3]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SETUP	SAP	SETUP u <-> n Ref. to subclause 11.2.14, Table 11.15; ETS 300 267
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
SCI	OCTETSTRING [1]	Sending complete information, O
BCAP	OCTETSTRING [4 .. 13]	Bearer capability, M
BCAP_2	OCTETSTRING [4 .. 13]	Bearer capability, O
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, O, note 2, OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NSF	OCTETSTRING [2 .. 254]	Network-specific facilities, O
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]
KPF	OCTETSTRING [2 .. 34]	Keypad facility n ->u, O
CGPN	OCTETSTRING [2 .. 24]	Calling party number, O
CGPS	OCTETSTRING [2 .. 23]	Calling party subaddress, O
CDPN	GROUP	Called party number, O, OCTETSTRING[2..23]
CDPS	OCTETSTRING [2 .. 23]	Called party subaddress, O
TNS	OCTETSTRING [2 .. 254]	Transit network selection, O
LLC	OCTETSTRING [0 .. 16]	Low layer compatibility, O
HLC	OCTETSTRING [0 .. 4]	High layer compatibility, O
HLC_2	OCTETSTRING [0 .. 4]	High layer compatibility, O
UUI	OCTETSTRING [2 .. 131]	User-user information, O

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SETUP_ACK	SAP	SETUP ACKnowledge u <-> n local Ref. to subclause 11.2.15, Table 11.16
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CHI	GROUP	Channel identification, O, note 1, OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility, O
PI	GROUP	Progress indicator, O, OCTETSTRING[2..4]
NOID	GROUP	Notification indicator, O, OCTETSTRING[2..258]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
STATUS	SAP	STATUS u <-> n local Ref. to subclause 11.2.16, Table 11.17
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause, M, OCTETSTRING[2..32]
CST	GROUP	Call state, M, OCTETSTRING[3]
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
ST_ENQ	SAP	STatus_ENQuiry u <-> n local Ref. to subclause 11.2.17, Table 11.18
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
DSP	GROUP	Display (n ->u), O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SUSP	SAP	SUSPend u -> n local Ref. to subclause 11.2.18, Table 11.19
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
EFAC	OCTETSTRING [2 .. 254]	Extended facility, O
CID	OCTETSTRING [2 .. 10]	Call identity, O
FAC	OCTETSTRING [2 .. 254]	Facility, O
NOID	GROUP	Notification indicator O OCTETSTRING[2..258]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SUSP_ACK	SAP	SUSPend_ACKnowledge n -> u local Ref. to subclause 11.2.19, Table 11.20
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
DSP	GROUP	Display, O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
SUSP_REJ	SAP	SUSPend REJect n -> u local Ref. to subclause 11.2.20, Table 11.21
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator, M
CR	GROUP	Call reference, M, OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type, M
CAU	GROUP	Cause, M, OCTETSTRING[2..32]
DSP	GROUP	Display, O, OCTETSTRING[2..34]

PDU Type Declaration		
PDU Name:	**PCO Type:**	**Comments:**
ERROR	SAP	n -> u local
PDU Field Information		
Field Name	**Type**	**Comments**
PD	OCTETSTRING [1]	Protocol discriminator
CR	GROUP	Call reference OCTETSTRING[2]
MT	OCTETSTRING [1]	Message type
SCI	OCTETSTRING [1]	Sending complete information
BCAP	OCTETSTRING [4 .. 13]	Bearer capability n ->u
CHI	GROUP	Channel identification OCTETSTRING[2..3]
FAC	OCTETSTRING [2 .. 254]	Facility
PI	GROUP	Progress indicator OCTETSTRING[2..4]
NSF	OCTETSTRING [2 .. 254]	Network-specific facililties
DSP	GROUP	Display OCTETSTRING[2..34]
KPF	OCTETSTRING [2 .. 34]	Keypad facility n ->u
CGPN	OCTETSTRING [2 .. 24]	Calling party number
CGPS	OCTETSTRING [2 .. 23]	Calling party subaddr.
CDPN	GROUP	Called party number OCTETSTRING[2..23]
CDPS	OCTETSTRING [2 .. 23]	Called party subaddr.
TNS	OCTETSTRING [2 .. 254]	Transit network selection
LLC	OCTETSTRING [0 .. 16]	Low layer compatib.
HLC	OCTETSTRING [0 .. 4]	High layer compat.
MD	OCTETSTRING [1]	More data
UUI	OCTETSTRING [2 .. 131]	User-user information

PDU Field Group Type Declaration		
Field Group Name:	**Comments:**	
CAU	Info Element CAUse Ref. to subclause 11.3.5.10	
PDU Field Information		
Field Name	**Type**	**Comments**
CAU_I	OCTETSTRING [1]	Identifier
CAU_L	OCTETSTRING [1]	Length
CAU_E3_LOC	OCTETSTRING [1]	Location
CAU_E4_CV	GROUP	Cause Value OCTETSTRING[1]
CAU_DI	OCTETSTRING	Diagnostics

PDU Field Group Type Declaration		
Field Group Name:	**Comments:**	
CAU_E4_CV	Info Element CAUse Octet 4	
PDU Field Information		
Field Name	**Type**	**Comments**
CAU_E4_CV1	BITSTRING [1]	Extension bit
CAU_E4_CV2	BITSTRING [7]	Cause value

PDU Field Group Type Declaration	
Field Group Name: CDPN	**Comments:** Info Element CalleD Party Number Ref. to subclause 11.3.5.8

PDU Field Information		
Field Name	**Type**	**Comments**
CDPN_I	OCTETSTRING [1]	Identifier
CDPN_L	OCTETSTRING [1]	Length
CDPN_E3_NPI	OCTETSTRING [1]	Numbering plan identification
CDPN_E4_ND	OCTETSTRING [1 .. 20]	Number digits

PDU Field Group Type Declaration	
Field Group Name: CHI	**Comments:** Info Element CHannel Identification Ref. to subclause 11.3.5.11

PDU Field Information		
Field Name	**Type**	**Comments**
CHI_I	OCTETSTRING [1]	Identifier
CHI_L	OCTETSTRING [1]	Length
CHI_E3_P1	BITSTRING [4]	First nibble of Channel selection
CHI_E3_PE	BITSTRING [1]	Preferred/Exclusive Bit
CHI_E3_P3	BITSTRING [1]	D-channel indicator
CHI_E3_P4	BITSTRING [2]	Information channel selection

PDU Field Group Type Declaration	
Field Group Name: CR	**Comments:** Call Reference Ref. to subclause 11.3.3

PDU Field Information		
Field Name	**Type**	**Comments**
CR_L	OCTETSTRING [1]	Length
CR_F	BITSTRING [1]	Flag
CR_R	BITSTRING [7]	Call reference value

PDU Field Group Type Declaration	
Field Group Name: CST	**Comments:** Info Element Call STate Ref. to subclause 11.3.5.7

PDU Field Information		
Field Name	**Type**	**Comments**
CST_I	OCTETSTRING [1]	Identifier
CST_L	OCTETSTRING [1]	Length
CST_CSV	GROUP	Call state value

PDU Field Group Type Declaration	
Field Group Name: CST_CSV	**Comments:** Info Element Call STate octet 3

PDU Field Information		
Field Name	**Type**	**Comments**
CST_CSV1	BITSTRING [2]	Coding standard
CST_CSV2	BITSTRING [6]	Call state value/global interface state value

PDU Field Group Type Declaration		
Field Group Name: DSP	**Comments:** Info Element DiSPlay Ref. to subclause 4.5.15 of ETS 300 102-1	
PDU Field Information		
Field Name	**Type**	**Comments**
DSP_I	OCTETSTRING [1]	Identifier
DSP_L	OCTETSTRING [1]	Length
DSP_DI	OCTETSTRING [0 .. 34]	Display information

PDU Field Group Type Declaration		
Field Group Name: NOID	**Comments:** Info Element NOtification InDicator Ref. to subclause 11.3.5.14	
PDU Field Information		
Field Name	**Type**	**Comments**
NOID_I	OCTETSTRING [1]	Identifier
NOID_L	OCTETSTRING [1]	Length
NOID_E3_ND	OCTETSTRING [1]	Notification description

PDU Field Group Type Declaration		
Field Group Name: PI	**Comments:** Info Element Progress Indicator Ref. to subclause 11.3.5.15	
PDU Field Information		
Field Name	**Type**	**Comments**
PI_I	OCTETSTRING [1]	Identifier
PI_L	OCTETSTRING [1]	Length
PI_E3_LOC	OCTETSTRING [1]	Location
PI_E4_PD	OCTETSTRING [1]	Progress description

PDU Field Group Type Declaration		
Field Group Name: RI	**Comments:** Info Element Restart Indicator Ref. to subclause 11.3.5.16	
PDU Field Information		
Field Name	**Type**	**Comments**
RI_I	OCTETSTRING [1]	Identifier
RI_L	OCTETSTRING [1]	Length
RI_CL	BITSTRING [5]	Octet 3, bits 4 to 8
RI_CL1	BITSTRING [3]	Octet 3, Class

PDU Field Group Type Declaration		
Field Group Name: UE	**Comments:** Unrecognized optional info Element	
PDU Field Information		
Field Name	**Type**	**Comments**
UE_UEI	OCTETSTRING [1]	Identifier
UE_L	OCTETSTRING [1]	Length
UE_A	OCTETSTRING [1]	Additional octet

Constraints Part

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ALERT(ALERTING)	AL1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000001'B
EFAC	*
CHI	*
FAC	*
PI	*
NOID	*
DSP	-
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ALERT(ALERTING)	AL2
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000001'B
EFAC	-
CHI	-
FAC	-
PI	-
NOID	-
DSP	-
UUI	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name: CALL_PROC(CALL PROCEEDING)	**Constraint Name:** CP1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000010'B
EFAC	*
CHI	*
FAC	*
PI	*
NOID	*
DSP	-
Comments: PDU with "don't care" values (LT <--- IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: CALL_PROC(CALL PROCEEDING)	**Constraint Name:** CP2
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000010'B
EFAC	-
CHI	CHI1
FAC	-
PI	-
NOID	-
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: CALL_PROC(CALL PROCEEDING)	**Constraint Name:** CP3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000010'B
EFAC	-
CHI	CHI1
FAC	-
PI	-
NOID	-
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
CONN(CONNECT)	CN1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000111'B
EFAC	*
CHI	*
FAC	*
PI	*
NOID	*
DSP	-
CODN	*
CODS	*
LLC	*
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; LLC optional LT and IUT parameter; LLCV is a test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
CONN(CONNECT)	CN2
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000111'B
EFAC	-
CHI	-
FAC	-
PI	-
NOID	-
DSP	-
CODN	-
CODS	-
LLC	-
UUI	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; LLC optional LT and IUT parameter; LLCV is a test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
CONN(CONNECT)	CN3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000111'B
EFAC	-
CHI	-
FAC	-
PI	-
NOID	-
DSP	-
CODN	-
CODS	-
LLC	-
UUI	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; LLC optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
CONN_ACK(CONNECT ACKNOWLEDGE)	CA1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00001111'B
EFAC	*
CHI	-
FAC	*
NOID	*
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); "*" replaced with "-"; PDU with "don't care" values (LT <--- IUT); CHI available for supplementary services (n--->u); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
CONN_ACK(CONNECT ACKNOWLEDGE)	CA3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00001111'B
EFAC	-
CHI	-
FAC	-
NOID	-
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); CHI available for supplementary services (n--->u); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
DISC(DISCONNECT)	DI1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01000101'B
CAU	*
EFAC	*
FAC	*
PI	-
NOID	*
DSP	-
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
DISC(DISCONNECT)	DI2(FLAG:BITSTRING; CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01000101'B
CAU	CAU2(CVAL)
EFAC	-
FAC	-
PI	-
NOID	-
DSP	-
UUI	-
Comments: PDU without optional parameters (LT ---> IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
INFO(INFORMATION)	IN1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01111011'B
SCI	*
CAU	-
EFAC	*
FAC	*
NOID	*
DSP	-
KPF	*
CDPN	?
Comments: PDU with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter; CPDN optional LT and IUT parameter used during overlap procedures;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
INFO(INFORMATION)	IN3(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01111011'B
SCI	'10100001'B
CAU	-
EFAC	-
FAC	-
NOID	-
DSP	DSP1
KPF	-
CDPN	CDPN1
Comments: PDU with optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter; CPDN optional LT and IUT parameter used during overlap procedures;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
INFO(INFORMATION)	IN4
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR4
MT	'01111011'B
SCI	*
CAU	-
EFAC	*
FAC	*
NOID	*
DSP	-
KPF	*
CDPN	*
Comments: PDU with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter; CPDN optional LT and IUT parameter used during overlap procedures;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
GFP_MSG	MSG
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR4
MT	?
IE_LIST	*
Comments: PDU with a valid CREF. Used for test cases where PDUs shall be absorbed by the tester (LT <--- IUT);	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
NOTIFY(NOTIFY)	NO2(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01101110'B
NOID	NOID2
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); NOID mandatory LT and IUT parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: NOTIFY(NOTIFY)	**Constraint Name:** NO3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR4
MT	'01101110'B
NOID	NOID1
DSP	-
Comments: PDU without optional parameters (LT <--- IUT); NOID mandatory LT and IUT parameter; NOID1 with "don't care" value; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: REL(RELEASE)	**Constraint Name:** RL1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01001101'B
CAU	*
EFAC	*
FAC	*
NOID	*
DSP	-
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); CAU optional LT and IUT parameter; mandatory if RELEASE PDU is 1st clearing PDU or as a result of T305 expiry; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name: REL(RELEASE)	**Constraint Name:** RL3(FLAG:BITSTRING; CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01001101'B
CAU	CAU2(CVAL)
EFAC	-
FAC	-
NOID	-
DSP	-
UUI	-
Comments: PDU with optional parameters (LT ---> IUT); CAU optional LT and IUT parameter; mandatory if RELEASE PDU is 1st clearing PDU or as a result of T305 expiry; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
REL_COM(RELEASE COMPLETE)	RC1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01011010'B
CAU	*
EFAC	*
FAC	*
NOID	*
DSP	-
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); CAU optional LT and IUT parameter; mandatory in the 1st clearing message; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
REL_COM(RELEASE COMPLETE)	RC2(FLAG:BITSTRING; CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01011010'B
CAU	CAU2(CVAL)
EFAC	-
FAC	-
NOID	-
DSP	-
UUI	-
Comments: PDU with optional parameters (LT ---> IUT); FLAG and CVAL are used as constraints parameter; RC2(FLAG,CVAL); CAU optional LT and IUT parameter; mandatory in the 1st clearing message; DSP optional LT parameter; no IUT parameter; UUI optional LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RES(RESUME)	RE1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR5
MT	'00100110'B
EFAC	*
CID	*
FAC	*
NOID	*
Comments: PDU with "don't care" valuesreceived from the IUT (LT <--- IUT); CID optional IUT parameter; included when used in the SUSPEND PDU;	

PDU Constraint Declaration	
PDU Name: RES_ACK(RESUME ACKNOWLEDGE)	**Constraint Name:** RA1
Field Value Information	
Field Name	**Value**
PD CR MT CHI DSP	'00001000'B CR1 '00101110'B CHI1 -
Comments: PDU without optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: RES_REJ(RESUME REJECT)	**Constraint Name:** RR1(CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD CR MT CAU DSP	'00001000'B CR1 '00100010'B CAU2(CVAL) -
Comments: PDU without optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: RESTART_ACK(RESTART ACKNOWLEDGE)	**Constraint Name:** RSA2(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD CR MT CHI DSP RI	'00001000'B CR50(FLAG) '01001110'B CHI10 - RI4
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory if RI is "indicated channels"; DSP optional LT parameter; no IUT parameter; RI mandatory LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RESTART_ACK(RESTART ACKNOWLEDGE)	RSA5(FLAG:BITSTRING; CLV:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR50(FLAG)
MT	'01001110'B
CHI	-
DSP	-
RI	RI1(CLV)
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory if RI is "indicated channels"; DSP optional LT parameter; no IUT parameter; RI indicates 'single interface' or 'all interfaces'; mandatory LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RESTART_ACK(RESTART ACKNOWLEDGE)	RSA6(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR50(FLAG)
MT	'01001110'B
CHI	CHI11
DSP	-
RI	RI4

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RESTART(RESTART)	RST1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR50(FLAG)
MT	'01000110'B
CHI	*
RI	RI3
Comments: PDU without optional parameters (LT <--- IUT); CHI mandatory if RI is "indicated channels"; DSP optional LT parameter; no IUT parameter; RI mandatory LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RESTART(RESTART)	RST3(FLAG:BITSTRING; CLV:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR50(FLAG)
MT	'01000110'B
CHI	CHI8
RI	RI1(CLV)
Comments: PDU without optional parameters (LT <--- IUT); CHI mandatory if RI is "indicated channels"; DSP optional LT parameter; no IUT parameter; RI mandatory LT and IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
RESTART(RESTART)	RST5(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR50(FLAG)
MT	'01000110'B
CHI	CHI10
RI	RI4

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP(SETUP)	SU1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR5
MT	'00000101'B
SCI	*
BCAP	?
BCAP_2	*
EFAC	*
CHI	*
FAC	*
PI	*
NSF	*
NOID	*
DSP	-
KPF	*
CGPN	*
CGPS	*
CDPN	*
CDPS	*
TNS	*
LLC	*
HLC	*
HLC_2	*
UUI	*
Comments: PDU with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP(SETUP)	SU2
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	BCAPV
BCAP_2	-
EFAC	-
CHI	CHI1
FAC	-
PI	-
NSF	-
NOID	-
DSP	-
KPF	-
CGPN	CGPNV
CGPS	CGPSV
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
HLC_2	-
UUI	UUIV
Comments: PDU with optional parameters SCI and CDPN (LT ---> IUT); BCAPV is used as test suite parameter; DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP(SETUP)	SU3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	-
BCAP	BCAPV
BCAP_2	-
EFAC	-
CHI	CHI1
FAC	-
PI	-
NSF	-
NOID	-
DSP	-
KPF	-
CGPN	CGPNV
CGPS	CGPSV
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
HLC_2	-
UUI	UUIV
Comments: PDU with optional parameters and CDPN (LT ---> IUT); BCAPV is used as test suite parameter; DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP(SETUP)	SU4
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	IBCAP
BCAP_2	-
EFAC	-
CHI	CHI1
FAC	-
PI	-
NSF	-
NOID	-
DSP	-
KPF	-
CGPN	CGPNV
CGPS	CGPSV
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
HLC_2	-
UUI	UUIV
Comments: PDU with incompatible BCAP element (LT ---> IUT); IBCAP is used as test suite parameter; DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name: SETUP(SETUP)	**Constraint Name:** SU5
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	BCAPV
BCAP_2	-
EFAC	-
CHI	CHI1
FAC	-
PI	-
NSF	-
NOID	-
DSP	-
KPF	-
CGPN	CGPNV
CGPS	CGPSV
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	IHLC1
HLC_2	-
UUI	UUIV
Comments: PDU with incompatible HLC element (LT ---> IUT); BCAPV and IHLC1 are used as test suite parameters; DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP(SETUP)	SU6
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	-
BCAP	BCAPV
BCAP_2	-
EFAC	-
CHI	CHI1
FAC	-
PI	-
NSF	-
NOID	-
DSP	-
KPF	-
CGPN	CGPNV
CGPS	CGPSV
CDPN	-
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
HLC_2	-
UUI	UUIV
Comments: PDU with optional parameters and without CDPN (LT ---> IUT); BCAPV is used as test suite parameter; DSP optional LT parameter; no IUT parameter; SCI, PI, CGPN, CGPS, CPDN, CDPS, TNS, LLC, HLC, UUI optional LT and IUT parameters; KPF optional IUT parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
SETUP_ACK(SETUP ACKNOWLEDGE)	SUA1
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00001101'B
EFAC	*
CHI	*
FAC	*
PI	*
NOID	*
DSP	-
Comments: PDU with "don't care" values (LT <--- IUT); PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: SETUP_ACK(SETUP ACKNOWLEDGE)	**Constraint Name:** SUA2
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00001101'B
EFAC	-
CHI	CHI1
FAC	-
PI	-
NOID	-
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); CHI mandatory parameter, if in 1st PDU in response to SETUP PDU unless user accepts the specific B-channel; PI is used in connection with interworking or in band information patterns; optional parameter; DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: STATUS(STATUS)	**Constraint Name:** ST1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01111101'B
CAU	CAU1
CST	CST1
DSP	-
Comments: PDU without optional parameters; CAU1 and CST1 with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: STATUS(STATUS)	**Constraint Name:** ST2(FLAG:BITSTRING; CVAL:INTEGER; CSTV:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01111101'B
CAU	CAU2(CVAL)
CST	CST2(CSTV)
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: STATUS(STATUS)	**Constraint Name:** ST3(FLAG:BITSTRING; CVAL:INTEGER; CSTV:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01111101'B
CAU	CAU4(CVAL)
CST	CST2(CSTV)
DSP	-
Comments: PDU without optional parameters; CAU4 with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: ST_ENQ(STATUS ENQUIRY)	**Constraint Name:** SQ1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01110101'B
DSP	-
Comments: PDU without optional parameters (LT <---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: ST_ENQ(STATUS ENQUIRY)	**Constraint Name:** SQ3
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR4
MT	'01110101'B
DSP	-
Comments: PDU without optional parameters; CR4 with "don't care" values (LT <--- IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: SUSP(SUSPEND)	**Constraint Name:** SP1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'00100101'B
EFAC	*
CID	*
FAC	*
NOID	*
Comments: PDU with "don't care" valuesreceived from the IUT (LT <--- IUT); CID optional IUT parameter;	

PDU Constraint Declaration	
PDU Name: SUSP_ACK(SUSPEND ACKNOWLEDGE)	**Constraint Name:** SPA1(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'00101101'B
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: SUSP_REJ(SUSPEND REJECT)	**Constraint Name:** SPR1(FLAG:BITSTRING; CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'00100001'B
CAU	CAU2(CVAL)
DSP	-
Comments: PDU without optional parameters (LT ---> IUT); DSP optional LT parameter; no IUT parameter;	

PDU Constraint Declaration	
PDU Name: ERROR	**Constraint Name:** ERR1
Field Value Information	
Field Name	**Value**
PD	'11111111'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	BCAPV
CHI	CHI1
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: SETUP PDU with invalid protocol identifier (LT ---> IUT); BCAPV is used as test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR4
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	-
CHI	CHI1
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: SETUP PDU without BCAP (mandatory information element is missing) (LT ---> IUT);	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR5
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000100'B
SCI	-
BCAP	-
CHI	-
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	-
CDPS	-
TNS	-
LLC	-
HLC	-
MD	-
UUI	-
Comments: PDU with unknown message type (LT ---> IUT);	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR7
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000100'B
SCI	-
BCAP	-
CHI	-
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	-
CDPS	-
TNS	-
LLC	-
HLC	-
MD	-
UUI	-
Comments: PDU with unknown message type (LT ---> IUT);	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR20
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000010'B
CHI	-
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	-
CDPS	-
TNS	-
LLC	-
HLC	-
MD	-
UUI	-
Comments: Syntactically Invalid CALL PROCEEDING PDU (LT ---> IUT); mandatory information element CHI missing;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR21
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR1
MT	'00000010'B
CHI	CHI2
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	-
CDPS	-
TNS	-
LLC	-
HLC	-
MD	-
UUI	-
Comments: Syntactically Invalid CALL PROCEEDING PDU (LT ---> IUT); mandatory information element CHI with content error;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR50(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01000101'B
CAU	-
FAC	-
PI	-
DSP	-
UUI	-
Comments: Syntactically Invalid DISCONNECT PDU (LT ---> IUT); mandatory information element CAU missing; FLAG is used as constraints parameter;	

PDU Constraint Declaration	
PDU Name: ERROR	**Constraint Name:** ERR52(FLAG:BITSTRING; CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01000101'B
UE	UE2
CAU	CAU2(CVAL)
FAC	-
PI	-
DSP	-
UUI	-
Comments: Syntactically Invalid DISCONNECT PDU (LT ---> IUT); unrecognized information element UE; comprehension not required; FLAG and CVAL are used as constraints parameter;	

PDU Constraint Declaration	
PDU Name: ERROR	**Constraint Name:** ERR53(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01000101'B
CAU	CAU6
FAC	-
PI	-
DSP	-
UUI	-
Comments: Syntactically Invalid DISCONNECT PDU (LT ---> IUT); mandatory information element CAU with content error; FLAG is used as constraints parameter;	

PDU Constraint Declaration	
PDU Name: ERROR	**Constraint Name:** ERR66(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01001101'B
UE	UE2
CAU	CAU8
FAC	-
DSP	-
UUI	-
Comments: Syntactically Invalid RELEASE PDU (LT ---> IUT); unrecognized information element UE; comprehension not required; FLAG is used as constraints parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR81(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR3(FLAG)
MT	'01011010'B
UE	UE2
CAU	CAU7
FAC	-
DSP	-
UUI	-
Comments: Syntactically Invalid RELEASE COMPLETE PDU (LT ---> IUT); REL_COM / unrecognized information element UE; comprehension not required; FLAG is used as constraints parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR107
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	-
BCAP	BCAPV
CHI	CHI1
FAC	-
PI	-
NSF	-
DSP	DSP1
DSP_2	DSP1
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: Syntactically Invalid SETUP PDU (LT ---> IUT); duplicate information elements; repetition not permitted; BCAPV is used as test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR109
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
UE	UE1
SCI	'10100001'B
BCAP	BCAPV
CHI	CHI1
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: Syntactically Invalid SETUP PDU (LT ---> IUT); unrecognized non-mandatory information element UE; comprehension required; BCAPV is used as test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR110
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
UE	UE2
SCI	-
BCAP	BCAPV
CHI	CHI1
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: Syntactically Invalid SETUP PDU (LT ---> IUT); unrecognized information element UE; comprehension not required; BCAPV is used as test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR111
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	'10100001'B
BCAP	BCAPV
CHI	CHI2
FAC	-
PI	-
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: Syntactically Invalid SETUP PDU (LT ---> IUT); mandatory information element CHI with content error; BCAPV is used as test suite parameter;	

PDU Constraint Declaration	
PDU Name:	**Constraint Name:**
ERROR	ERR112
Field Value Information	
Field Name	**Value**
PD	'00001000'B
CR	CR2
MT	'00000101'B
SCI	-
BCAP	BCAPV
CHI	CHI1
FAC	-
PI	PI5
NSF	-
DSP	-
KPF	-
CGPN	-
CGPS	-
CDPN	CDPN1
CDPS	-
TNS	-
LLC	LLCV
HLC	HLCV
UUI	-
Comments: Syntactically Invalid SETUP PDU (LT ---> IUT); non-mandatory information element PI with content error; BCAPV is used as test suite parameter;	

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU1
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	?
CAU_E3_LOC	?
CAU_E4_CV	?
CAU_DI	*

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU2(CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	'00000010'B
CAU_E3_LOC	'10000010'B
CAU_E4_CV	CAU_E41(CVAL)
CAU_DI	-

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU4(CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	?
CAU_E3_LOC	?
CAU_E4_CV	CAU_E41(CVAL)
CAU_DI	*

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU6
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	'00000010'B
CAU_E3_LOC	'10000010'B
CAU_E4_CV	CAU_E42
CAU_DI	-

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU7
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	'00000010'B
CAU_E3_LOC	'10000010'B
CAU_E4_CV	CAU_E43
CAU_DI	-

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU	CAU8
Field Value Information	
Field Name	**Value**
CAU_I	'00001000'B
CAU_L	'00000010'B
CAU_E3_LOC	'10000010'B
CAU_E4_CV	CAU_E44
CAU_DI	-

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU_E4_CV	CAU_E41(CVAL:INTEGER)
Field Value Information	
Field Name	**Value**
CAU_E4_CV1	'1'B
CAU_E4_CV2	INT_TO_BIT(CVAL, 7)

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU_E4_CV	CAU_E42
Field Value Information	
Field Name	**Value**
CAU_E4_CV1	'0'B
CAU_E4_CV2	'0000000'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU_E4_CV	CAU_E43
Field Value Information	
Field Name	**Value**
CAU_E4_CV1	'1'B
CAU_E4_CV2	'0011111'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CAU_E4_CV	CAU_E44
Field Value Information	
Field Name	**Value**
CAU_E4_CV1	'1'B
CAU_E4_CV2	'0010000'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CDPN	CDPN1
Field Value Information	
Field Name	**Value**
CDPN_I	'01110000'B
CDPN_L	LIPN
CDPN_E3_NPI	CDPN_OCTET3
CDPN_E4_ND	IPN
Comments: LIPN and IPN are test suite parameters	

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CHI	CHI1
Field Value Information	
Field Name	**Value**
CHI_I	'00011000'B
CHI_L	'00000001'B
CHI_E3_P1	'1000'B
CHI_E3_PE	'1'B
CHI_E3_P3	'0'B
CHI_E3_P4	'01'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CHI	CHI2
Field Value Information	
Field Name	**Value**
CHI_I	'00011000'B
CHI_L	'00000001'B
CHI_E3_P1	'1111'B
CHI_E3_PE	'1'B
CHI_E3_P3	'1'B
CHI_E3_P4	'11'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CHI	CHI8
Field Value Information	
Field Name	**Value**
CHI_I	'00011000'B
CHI_L	'00000011'B
CHI_E3_P1	'1000'B
CHI_E3_PE	'?'B
CHI_E3_P3	'0'B
CHI_E3_P4	'01'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CHI	CHI10
Field Value Information	
Field Name	**Value**
CHI_I	'00011000'B
CHI_L	'00000011'B
CHI_E3_P1	'1000'B
CHI_E3_PE	'1'B
CHI_E3_P3	'0'B
CHI_E3_P4	r_bch_num
Comments: LT ----> IUT	

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CHI	CHI11
Field Value Information	
Field Name	**Value**
CHI_I	'00011000'B
CHI_L	'00000011'B
CHI_E3_P1	'1000'B
CHI_E3_PE	'1'B
CHI_E3_P3	'0'B
CHI_E3_P4	r_bch_num
Comments: (IUT -----> LT) Used in RESTART ACKNOWLEDGE PDU. Indicates specific B-channel which has been restarted.	

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CR	CR1
Field Value Information	
Field Name	**Value**
CR_L	'00000001'B
CR_F	'1'B
CR_R	CREF

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CR	CR2
Field Value Information	
Field Name	**Value**
CR_L	'00000001'B
CR_F	'0'B
CR_R	CREF

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CR	CR3(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
CR_L	'00000001'B
CR_F	FLAG
CR_R	CREF

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
CR	CR4
Field Value Information	
Field Name	**Value**
CR_L	'00000001'B
CR_F	?
CR_R	CREF

PDU Field Group Constraint Declaration	
Field Group Name: CR	**Constraint Name:** CR5
Field Value Information	
Field Name	**Value**
CR_L CR_F CR_R	'00000001'B '0'B *

PDU Field Group Constraint Declaration	
Field Group Name: CR	**Constraint Name:** CR50(FLAG:BITSTRING)
Field Value Information	
Field Name	**Value**
CR_L CR_F CR_R	'00000010'B FLAG '0000000'B
Comments: Global call reference for basic access	

PDU Field Group Constraint Declaration	
Field Group Name: CST	**Constraint Name:** CST1
Field Value Information	
Field Name	**Value**
CST_I CST_L CST_CSV	'00010100'B '00000001'B ?

PDU Field Group Constraint Declaration	
Field Group Name: CST	**Constraint Name:** CST2(CSTV:INTEGER)
Field Value Information	
Field Name	**Value**
CST_I CST_L CST_CSV	'00010100'B '00000001'B CSV1(CSTV)

PDU Field Group Constraint Declaration	
Field Group Name: CST_CSV	**Constraint Name:** CSV1(CSTV:INTEGER)
Field Value Information	
Field Name	**Value**
CST_CSV1 CST_CSV2	'00'B INT_TO_BIT(CSTV, 6)

PDU Field Group Constraint Declaration	
Field Group Name: DSP	**Constraint Name:** DSP1
Field Value Information	
Field Name	**Value**
DSP_I DSP_L DSP_DI	'00101000'B '00000001'B '00110001'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
NOID	NOID1
Field Value Information	
Field Name	**Value**
NOID_I	'00100111'B
NOID_L	'00000001'B
NOID_E3_ND	?

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
NOID	NOID2
Field Value Information	
Field Name	**Value**
NOID_I	'00100111'B
NOID_L	'00000001'B
NOID_E3_ND	'10000000'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
PI	PI5
Field Value Information	
Field Name	**Value**
PI_I	'00011110'B
PI_L	'00000010'B
PI_E3_LOC	'10000010'B
PI_E4_PD	'11111111'B

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
RI	RI1(CLV:INTEGER)
Field Value Information	
Field Name	**Value**
RI_I	'01111001'B
RI_L	'00000001'B
RI_CL	'10000'B
RI_CL1	INT_TO_BIT(CLV, 3)

PDU Field Group Constraint Declaration	
Field Group Name:	**Constraint Name:**
RI	RI3
Field Value Information	
Field Name	**Value**
RI_I	'01111001'B
RI_L	'00000001'B
RI_CL	'10000'B
RI_CL1	?

PDU Field Group Constraint Declaration	
Field Group Name: RI	**Constraint Name:** RI4
Field Value Information	
Field Name	**Value**
RI_I RI_L RI_CL RI_CL1	'01111001'B '00000001'B '10000'B '000'B

PDU Field Group Constraint Declaration	
Field Group Name: UE	**Constraint Name:** UE1
Field Value Information	
Field Name	**Value**
UE_UEI UE_L UE_A	'00000001'B '00000001'B '00000000'B

PDU Field Group Constraint Declaration	
Field Group Name: UE	**Constraint Name:** UE2
Field Value Information	
Field Name	**Value**
UE_UEI UE_L UE_A	'10000000'B - -

Dynamic Part

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U00/V/RL/N/TC10002				
Identifier:	TC10002				
Purpose:	CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	L!REL START TAC		RL3(0, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(1)
4	+CS50001(0)				state=0? (2)
5	?TIMEOUT TAC			(F)	TAC timeout
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) Valid RELEASE COMPLETE PDU.
(2) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U00/V/ST/N/TC10004				
Identifier:	TC10004				
Purpose:	CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU indicating any state except the null state N0, the IUT responds with either a RELEASE or RELEASE COMPLETE PDU with cause value 101.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	L!STATUS START TAC		ST2(0, 81, 2)		valid STATUS PDU (1)
3	L?RELr CANCEL TAC	L1	RL1(1)		valid RELEASE PDU
4	L!REL_COM		RC2(0, 101)	P	(2)
5	L?REL_COMr CANCEL TAC		RC1(1)	P	(2)
6	?TIMEOUT TAC			(F)	no response
7	+PO49901(0)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) A STATUS PDU with call state <> 0 is send to the IUT.
(2) Valid RELEASE COMPLETE PDU.

Reference to requirements: subclause 11.4.6.8(a)

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/V/SU/N/TC10005

Identifier: TC10005

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a valid SETUP PDU without the Sending complete information element, the IUT responds with any of a SETUP ACKNOWLEDGE, a CALL PROCEEDING, an ALERTING or a CONNECT PDU and moves to the relevant state Overlap Sending U25, Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	
4	+CS59901(25, 0)				state=25? (3)
5	L?CALL_PROCr CANCEL TAC		CP1	(P)	
6	+CS59901(9, 0)				state=9? (3)
7	L?ALERTr CANCEL TAC		AL1	(P)	
8	+CS59901(7, 0)				state=7? (3)
9	L?CONNr CANCEL TAC		CN1	(P)	
10	+CS59901(8, 0)				state=8? (3)
11	?TIMEOUT TAC			(F)	TAC timeout
12	+PO49901(0)				postamble to U0
13	+UM59902				unexpected message
14	GOTO L1				
15	**SUBTREE**				
16	[BDL = TRUE]				parameter (1)
17	L!SETUP START TAC		SU3		(2)
18	[BDL = FALSE]				parameter (1)
19	L!SETUP_P START TAC		SU3		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) A valid and compatible SETUP PDU with only mandatory parameters is transmitted.

(3) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclauses 11.4.2.1, 11.4.2.4, 11.4.2.5.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/V/SU/N/TC10006

Identifier: TC10006

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a valid SETUP PDU with the Sending complete information element, the IUT responds with any of a CALL PROCEEDING, an ALERTING or a CONNECT PDU and moves to the relevant state Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?CALL_PROCr CANCEL TAC	L1	CP1	(P)	
4	+CS59901(9, 0)				state=9? (3)
5	L?ALERTr CANCEL TAC		AL1	(P)	
6	+CS59901(7, 0)				state=7? (3)
7	L?CONNr CANCEL TAC		CN1	(P)	
8	+CS59901(8, 0)				state=8? (3)
9	?TIMEOUT TAC			(F)	TAC timeout
10	+PO49901(0)				postamble to U0
11	+UM59902				unexpected message
12	GOTO L1				
13					
14	**SUBTREE**				
15	[BDL = TRUE]				parameter (1)
16	L!SETUP START TAC		SU2		(2)
17	[BDL = FALSE]				parameter (1)
18	L!SETUP_P START TAC		SU2		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) A valid and compatible SETUP PDU with the Sending complete information element is transmitted.

(3) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclauses 11.4.2.1, 11.4.2.5.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/V/SU/N/TC10008

Identifier: TC10008

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a valid SETUP PDU containing an incompatible Bearer capability information element (mandatory parameter) the IUT:
- responds with a RELEASE COMPLETE PDU; or ignores the SETUP PDU (broadcast datalink);
- responds with a RELEASE COMPLETE PDU (point-to-point datalink).

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	[BDL = TRUE]				parameter (1)
3	L!SETUP START TAC		SU4		(2)
4	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(3)
5	+CS50001(0)				state=0? (4)
6	?TIMEOUT TAC			(P)	TAC timeout
7	+CS50001(0)				state=0? (4)
8	+UM59902				unexpected message
9	GOTO L1				
10	[BDL = FALSE]				parameter (1)
11	L!SETUP_P START TAC		SU4		(2)
12	L?REL_COMr CANCEL TAC	L2	RC1(1)	(P)	(3)
13	+CS50001(0)				state=0? (4)
14	?TIMEOUT TAC			(F)	TAC timeout
15	+PO49901(0)				
16	+UM59902				unexpected message
17	GOTO L2				

Extended Comments:

(1) The global boolean variable BDL is FALSE by point-to-point data link and TRUE by broadcasting link use.
(2) A valid SETUP PDU with an incompatible bearer capability information element is transmitted.
(3) Valid RELEASE COMPLETE PDU.
(4) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.2.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/V/SU/N/TC10009

Identifier: TC10009

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a valid SETUP PDU containing an incompatible High layer compatibility information element (optional parameter) the IUT:
- responds with a RELEASE COMPLETE PDU; or ignores the SETUP PDU (broadcast datalink);
- responds with a RELEASE COMPLETE PDU (point-to-point datalink).

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	[BDL = TRUE]				parameter (1)
3	L!SETUP START TAC		SU5		(2)
4	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(3)
5	+CS50001(0)				state=0? (4)
6	?TIMEOUT TAC			(P)	TAC timeout
7	+CS50001(0)				state=0? (4)
8	+UM59902				unexpected message
9	GOTO L1				
10	[BDL = FALSE]				parameter (1)
11	L!SETUP_P START TAC		SU5		(2)
12	L?REL_COMr CANCEL TAC	L2	RC1(1)	(P)	(3)
13	+CS50001(0)				state=0? (4)
14	?TIMEOUT TAC			(F)	TAC timeout
15	+PO49901(0)				postamble to U0
16	+UM59902				unexpected message
17	GOTO L2				

Extended Comments:

(1) The global boolean variable BDL is FALSE by point-to-point data link, and TRUE by broadcasting link use.

(2) A valid SETUP PDU with an incompatible high layer compatibility information element is transmitted.

(3) Valid RELEASE COMPLETE PDU.

(4) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.2.2.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/I/DI/N/TC10010

Identifier: TC10010

Purpose: CALLED USER TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS

Ensure that on receipt of an inpportune PDU (DISCONNECT), the IUT responds with a RELEASE PDU or a RELEASE COMPLETE PDU.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	L!DISC START TAC		DI2(0, 16)		(1)
3	L?RELr CANCEL TAC	L1	RL1(1)		valid RELEASE PDU
4	L!REL_COM		RC2(0, 81)	P	(2)
5	L?REL_COMr CANCEL TAC		RC1(1)	P	(2)
6	?TIMEOUT TAC			(F)	TAC timeout
7	+PO49901(0)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:

(1) Inoppotune DISCONNECT PDU.

(2) Valid RELEASE COMPLETE PDU.

Reference to requirements: subclause 11.4.6.2(a)

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/I/SU/N/TC10011

Identifier: TC10011

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS

Ensure that on receipt of a repeated valid SETUP PDU with the same call reference as the initial SETUP PDU, the IUT does not respond to the second SETUP PDU and remains in the same state.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE1				
3	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	
4	+SUBTREE2				
5	+LOCAL_TREE2	L2			
6	L?CALL_PROCr		CP1	(P)	
7	+LOCAL_TREE2	L3			
8	?TIMEOUT TNOAC			(P)	
9	+CS59901(9, 0)				
10	+UM59902				unexpected message
11	GOTO L3				
12	?TIMEOUT TNOAC			(P)	no IUT response
13	+CS59901(25, 0)				state=25? (2)
14	+UM59902				unexpected message
15	GOTO L2				
16	L?CALL_PROCr CANCEL TAC		CP1	(P)	
17	+SUBTREE2				
18	+LOCAL_TREE2	L4			
19	?TIMEOUT TNOAC			(P)	no IUT response
20	+CS59901(9, 0)				state=9? (2)
21	+UM59902				unexpected message
22	GOTO L4				
23	L?ALERTr CANCEL TAC		AL1	(P)	
24	+SUBTREE2				
25	+LOCAL_TREE1	L5			
26	?TIMEOUT TNOAC			(P)	no IUT response
27	+CS59901(7, 0)				state=7? (2)
28	+UM59902				unexpected message
29	GOTO L5				
30	L?CONNr CANCEL TAC		CN1	(P)	
31	+SUBTREE2				
32	?TIMEOUT TNOAC	L6		(P)	no IUT response
33	+CS59901(8, 0)				state=8? (2)
34	+UM59902				unexpected message
35	GOTO L6				
36	?TIMEOUT TAC			(F)	TAC timeout
37	+PO49901(0)				postamble to U0
38	+UM59902				unexpected message
39	GOTO L1				
40					

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No	Behaviour Description	L	Cref	V	C
41	**LOCAL_TREE1**				
42	L?CONNr		CN1	(P)	
43	?TIMEOUT TNOAC	L7		(P)	
44	+CS59901(8, 0)				state=8? (2)
45	+UM59902				unexpected message
46	GOTO L7				
47					
48	**LOCAL_TREE2**				
49	+LOCAL_TREE1				
50	L?ALERTr		AL1	(P)	
51	+LOCAL_TREE1				
52	?TIMEOUT TNOAC	L8		(P)	
53	+CS59901(7, 0)				state=7? (2)
54	+UM59902				unexpected message
55	GOTO L8				
56					
57	**SUBTREE1**				
58	[BDL = TRUE]				(1)
59	L!SETUP START TAC		SU2		
60	[BDL = FALSE]				(1)
61	L!SETUP_P START TAC		SU2		
62	**SUBTREE2**				
63	[BDL = TRUE]				(1)
64	L!SETUP START TNOAC		SU2		
65	[BDL = FALSE]				(1)
66	L!SETUP_P START TNOAC		SU2		

Extended Comments:
(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.2(d)

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/O/TC10012

Identifier: TC10012

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS

Ensure that on receipt of a PDU with an erroneous protocol discriminator coded other than '08'H, the IUT does not respond to the PDU and remains in the same state.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	?TIMEOUT TNOAC	L1		(P)	TNOAC timeout
4	+CS50001(0)				state=0? (3)
5	+UM59902				unexpected message
6	GOTO L1				
7					
8	**SUBTREE**				
9	[BDL = TRUE]				(1)
10	L!ERROR_B START TNOAC		ERR1		(2)
11	[BDL = FALSE]				(1)
12	L!ERROR START TNOAC		ERR1		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) A SETUP PDU with erroneous protocol discriminator transmitted.

(3) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/N/TC10015

Identifier: TC10015

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS

Ensure that on receipt of a PDU with mandatory information element missing, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				(1)
3	?REL_COM CANCEL TAC	L1	RC1(1)	(P)	(4)
4	+CS50001(0)				state=0? (3)
5	?TIMEOUT TAC			(F)	TAC timeout
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
9					(1)
10	**SUBTREE**				
11	[BDL = TRUE]				(1)
12	L!ERROR_B START TAC		ERR4		(2)
13	[BDL = FALSE]				(1)
14	L!ERROR START TAC		ERR4		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) SETUP PDU without bearer capability information element is used.

(3) The subtree CS50001(0) is used for checking the IUT state.

(4) Valid RELEASE COMPLETE PDU.

Reference to requirements: subclause 11.4.6.5.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/O/TC10024

Identifier: TC10024

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 11

Ensure that on receipt of a PDU with invalid duplicated information elements, the IUT ignores the invalid duplication and processes the remaining contents of the PDU as valid.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	
4	+CS59901(25, 0)				state=25? (2)
5	L?CALL_PROCr CANCEL TAC		CP1	(P)	
6	+CS59901(9, 0)				state=9? (2)
7	L?ALERTr CANCEL TAC		AL1	(P)	
8	+CS59901(7, 0)				state=7? (2)
9	L?CONNr CANCEL TAC		CN1	(P)	
10	+CS59901(8, 0)				state=8? (2)
11	?TIMEOUT TAC			(F)	TAC timeout
12	+PO49901(0)				postamble to U0
13	+UM59902				unexpected message
14	GOTO L1				
15					
16	**SUBTREE**				
17	[BDL = TRUE]				(1)
18	L!ERROR_B START TAC		ERR107		invalid SETUP PDU
19	[BDL = FALSE]				(1)
20	L!ERROR START TAC		ERR107		invalid SETUP PDU

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.4

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/O/TC10026

Identifier: TC10026

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14

Ensure that on receipt of a PDU with mandatory information element content error, the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(3)
4	+CS50001(0)				state=0? (4)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
9					
10	**SUBTREE**				
11	[BDL = TRUE]				(1)
12	L!ERROR_B START TAC		ERR111		(2)
13	[BDL = FALSE]				(1)
14	L!ERROR START TAC		ERR111		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) An invalid SETUP PDU with a mandatory information element content error is used.

(3) Valid RELEASE COMPLETE PDU

(4) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.5.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/N/TC10027

Identifier: TC10027

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 15

Ensure that on receipt of a PDU with unrecognised information element coded "comprehension required", the IUT responds with a RELEASE COMPLETE PDU and remains in the same state.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(3)
4	+CS50001(0)				state=0? (4)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
9					
10	**SUBTREE**				
11	[BDL = TRUE]				(1)
12	L!ERROR_B START TAC		ERR109		(2)
13	[BDL = FALSE]				(1)
14	L!ERROR START TAC		ERR109		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link

(2) An invalid SETUP PDU containing an unrecognised optional information element with comprehension required coded as '01'H.

(3) Valid RELEASE COMPLETE PDU

(4) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.6.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/N/TC10028

Identifier: TC10028

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16

Ensure that the IUT on receipt of a compatible SETUP PDU with all the mandatory information elements correctly coded and an unrecognised optional information element with comprehension not required responds with a STATUS PDU (optional) followed by either a SETUP ACKNOWLEDGE, CALL PROCEEDING, ALERTING or CONNECT PDU and moves to the relevant state Overlap Receiving U25, Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	(STAT_TRANSM ::= FALSE, ECV ::= 99)				
3	+SUBTREE				
4	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	valid PDU
5	+CS59901(25, 0)				state=25? (3)
6	L?CALL_PROCr CANCEL TAC		CP1	(P)	valid PDU
7	+CS59901(9, 0)				state=9? (3)
8	L?ALERTr CANCEL TAC		AL1	(P)	valid PDU
9	+CS59901(7, 0)				state=7? (3)
10	L?CONNr CANCEL TAC		CN1	(P)	valid PDU
11	+CS59901(8, 0)				state=8? (3)
12	L?STATUSr [(STAT_TRANSM = FALSE) AND (STATUS.CAU.CAU_E4_CV2 = ECV)]		ST1(1)	(P)	valid STATUS PDU
13	(STAT_TRANSM ::= TRUE)				
14	GOTO L1				
15	?TIMEOUT TAC			(F)	no response
16	+PO49901(0)				postamble to U0
17	+UM59902				unexpected message
18	GOTO L1				
19					
20	**SUBTREE**				
21	[BDL = TRUE]				(1)
22	L!ERROR_B START TAC		ERR110		(2)
23	[BDL = FALSE]				(1)
24	L!ERROR START TAC		ERR110		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link

(2) An invalid SETUP PDU containing an unrecognised optional information element with comprehension not required coded as '80'H.

(3) The subtree CS59901 is used for checking the IUT relevant states.

Reference to requirements: subclause 11.4.6.6.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U00/S/ER/N/TC10029

Identifier: TC10029

Purpose: INCOMING CALL HANDLING TESTS - STATE U0 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 17

Ensure that on receipt of a SETUP PDU with non-mandatory information element content error the IUT processes the PDU and its remaining contents as valid and optionally sends a STATUS PDU with cause value 100.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	(STAT_TRANSM ::= FALSE, ECV ::= 100)				
3	+SUBTREE				
4	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	valid PDU
5	+CS59901(25, 0)				state=25? (3)
6	L?CALL_PROCr CANCEL TAC		CP1	(P)	valid PDU
7	+CS59901(9, 0)				state=9? (3)
8	L?ALERTr CANCEL TAC		AL1	(P)	valid PDU
9	+CS59901(7, 0)				state=7? (3)
10	L?CONNr CANCEL TAC		CN1	(P)	valid PDU
11	+CS59901(8, 0)				state=8? (3)
12	L?STATUSr [(STAT_TRANSM = FALSE) AND (STATUS.CAU.CAU_E4_CV2 = ECV)]		ST1(1)	(P)	valid STATUS PDU
13	(STAT_TRANSM ::= TRUE)				
14	GOTO L1				
15	?TIMEOUT TAC			(F)	no response
16	+PO49901(0)				postamble to U0
17	+UM59902				unexpected message
18	GOTO L1				
19					
20	**SUBTREE**				
21	[BDL = TRUE]				(1)
22	L!ERROR_B START TAC		ERR112		(2)
23	[BDL = FALSE]				(1)
24	L!ERROR START TAC		ERR112		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link

(2) A SETUP PDU with an invalid progress indicator is used.

(3) The subtree CS59901 is used for checking the expected IUT states.

Reference to requirements: subclause 11.4.6.6.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/AC/U00/V/RE/N/TC20001
Identifier: TC20001
Purpose: CALLED USER TESTS - STATE U0 - ACTIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on sending of a RESUME PDU the IUT enters the Resume Request state U17.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	< IUT ! RES >		RE1		invoke RESUME PDU
3	START TWAIT				
4	L?RESr (CREF ::= RES.CR.CR_R)	L1	RE1	(P)	valid RESUME PDU
	CANCEL TWAIT				
5	+CS59901(17, 1)				state=17? (1)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(1)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.4.4

Test Case Dynamic Behaviour

Reference: TBR3_L3/AC/U00/V/SU/N/TC20002
Identifier: TC20002
Purpose: NULL STATE TESTS - STATE U0 - ACTIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that the IUT transmits a valid SETUP PDU and enters the Call Initiated state U1.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	< IUT ! SETUP >		SU1		wait for SETUP
3	START TWAIT				
4	L?SETUPr [(SETUP.BCAP = BCAPV) AND ((SU_LLC = TRUE) AND (SETUP.LLC = LLCV) OR (SU_LLC = FALSE) AND (SETUP.LLC = EMPTY)) AND ((SU_HLC = TRUE) AND (SETUP.HLC = HLCV) OR (SU_HLC = FALSE) AND (SETUP.HLC = EMPTY))] (CREF ::= SETUP.CR.CR_R) CANCEL TWAIT	L1	SU1	(P)	valid SETUP PDU
5	+CS59901(1, 1)				state=1? (1)
6	?TIMEOUT TWAIT			I	no response
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.1.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U01/V/CP/N/TC10101
Identifier: TC10101
Purpose: CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a CALL PROCEEDING PDU the IUT enters the Outgoing Call Proceeding state U3.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30101				preamble to U1
2	L!CALL_PROC		CP2		(1)
3	+CS59901(3, 1)				state=3? (2)

Extended Comments:
(1) Valid CALL PROCEEDING PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.1.3.1

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/V/RC/N/TC10102				
Identifier:	TC10102				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state U0.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!REL_COM START TNOAC		RC2(1, 65)		(1)
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(1)				state=0? (2)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) Valid RELEASE COMPLETE PDU. (2) The subtree CS50001(1) is used for checking the IUT state. Reference to requirements: subclause 11.4.6.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/V/RL/N/TC10103				
Identifier:	TC10103				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!REL START TAC		RL3(1, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(0)	(P)	(1)
4	+CS50001(1)				state=0? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) Valid RELEASE COMPLETE PDU. (2) The subtree CS50001(1) is used for checking the IUT state. Reference to requirements: subclause 11.4.6.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/V/SA/N/TC10104				
Identifier:	TC10104				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SETUP ACKNOWLEDGE PDU the IUT enters the Overlap Sending state U2.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!SETUP_ACK START TNOAC		SUA2		(1)
3	?TIMEOUT TNOAC	L1		(P)	
4	+CS59901(2, 1)				state=2? (2)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) Valid SETUP ACKNOWLEDGE PDU. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.1.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/V/ST/N/TC10105				
Identifier:	TC10105				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!STATUS START TNOAC		ST2(1, 111, 0)		
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(1)				state=0? (1)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) The subtree CS50001(1) is used for checking the IUT state. Reference to requirements: subclause 11.4.6.8(c)					

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U01/I/CA/N/TC10107

Identifier: TC10107

Purpose: CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS

Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 101, or STATUS ENQUIRY PDU and remains in the same state.

Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30101				preamble to U1
2	L!CONN_ACK START TAC		CA3		inopportune PDU
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 1) AND ((STATUS.CAU.CAU_E4_CV2 = 98) OR (STATUS.CAU.CAU_E4_CV2 = 101))] CANCEL TAC	L1	ST1(0)	(P)	valid STATUS PDU
4	+CS59901(1, 1)				
5	L?ST_ENQr CANCEL TAC		SQ1(0)	(P)	
6	L!STATUS		ST2(1, 30, 1)		
7	+CS59901(1, 1)				state = 1?
8	?TIMEOUT TAC			(F)	no response
9	+PO49901(1)				postamble to U0
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:

Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/S/ER/O/TC10115				
Identifier:	TC10115				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 13 Ensure that on receipt of a CALL PROCEEDING PDU with mandatory information element missing the IUT only returns a STATUS PDU with cause value 96 and remains in the same state.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!ERROR START TAC		ERR20		(1)
3	L?STATUSr [(STATUS.CAU.CAU_E4_CV2 = 96) AND (STATUS.CST.CST_CSV2 = 1)] CANCEL TAC	L1	ST1(0)	(P)	
4	+CS59901(1, 1)				state=1? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) Invalid CALL PROCEEDING PDU. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.6.5.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U01/S/ER/O/TC10116				
Identifier:	TC10116				
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14 Ensure that the IUT responds to the receipt of a CALL PROCEEDING PDU with mandatory information element with content error by sending a STATUS PDU with cause value 100 and remains in the same state.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30101				preamble to U1
2	L!ERROR START TAC		ERR21		invalid PDU (1)
3	L?STATUSr CANCEL TAC	L1	ST3(0, 100, 1)	(P)	valid STATUS PDU
4	+CS59901(1, 1)				state=1?
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) An invalid CALL PROCEEDING PDU with an invalid channel identification information element is used. Reference to requirements: subclause 11.4.6.5.2					

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/PS/U01/S/ER/N/TC10120
Identifier:	TC10120
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that the IUT responds to a syntactically invalid message type with a STATUS PDU with cause value 98 or 97, or with a STATUS ENQUIRY PDU and remains in the same state.
Default:	DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30101				preamble to U1
2	L!ERROR START TAC		ERR7		invalid PDU (1)
3	L?STATUSr	L1	ST1(0)	(P)	valid STATUS PDU
	[(STATUS.CST.CST_CSV2 = 1) AND ((STATUS.CAU.CAU_E4_CV2 = 97) OR (STATUS.CAU.CAU_E4_CV2 = 98))] CANCEL TAC				
4	+CS59901(1, 1)				
5	L?ST_ENQr CANCEL TAC		SQ1(0)	(P)	
6	L!STATUS		ST2(1, 30, 1)		
7	+CS59901(1, 1)				state = 1?
8	?TIMEOUT TAC			(F)	no response
9	+PO49901(1)				postamble to U0
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:
(1) PDU with invalid message type is used.
Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/PS/U01/I/RC/I/TC10125
Identifier:	TC10125
Purpose:	CALL INITIATED STATE TESTS - STATE U1 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond and remains in the same state.
Default:	DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30101				preamble to U1
2	(C ::= BIT_TO_INT (CREF) + 1, CREF ::= INT_TO_BIT (C, 7))				call ref not in use
3	L!REL_COMr START TNOAC		RC2(1, 16)		(1)
4	(C ::= BIT_TO_INT (CREF) - 1, CREF ::= INT_TO_BIT (C, 7))				call ref in use
5	?TIMEOUT TNOAC	L1		(P)	no response
6	+CS59901(1, 1)				state=1? (2)
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) Valid RELEASE COMPLETE PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.2(c)

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U02/V/AL/N/TC10201				
Identifier:	TC10201				
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of an ALERTING PDU the IUT enters the Call Delivered state U4.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30201				preamble to U2
2	L!ALERT		AL2		valid ALERT PDU
3	+CS59901(4, 1)				state=4? (1)
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.1.4					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U02/V/CN/N/TC10202				
Identifier:	TC10202				
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30201				preamble to U2
2	[BCA = FALSE]				parameter (1)
3	L!CONN		CN2		valid CONNECT PDU
4	+CS59901(10, 1)				state=10? (2)
5	[BCA = TRUE]				
6	L!CONN START TAC		CN2		valid CONNECT PDU
7	L?CONN_ACKr CANCEL TAC	L1	CA1	(P)	ignore
8	+CS59901(10, 1)				state=10? (2)
9	?TIMEOUT TAC			(F)	no response
10	+PO49901(1)				postamble to U0
11	+UM59902				unexpected message
12	GOTO L1				
Extended Comments: (1) The test suite parameter BCA has the value TRUE if the sending of CONNECT ACKNOWLEDGE PDU is implemented. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.1.5					

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U02/V/CP/N/TC10203
Identifier: TC10203
Purpose: OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a CALL PROCEEDING PDU the IUT enters the Outgoing Call Proceeding state U3.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30201				preamble to U2
2	L!CALL_PROC		CP2		(1)
3	+CS59901(3, 1)				state=3? (2)

Extended Comments:
(1) Valid CALL PROCEEDING PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.1.3.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U02/V/DI/N/TC10204
Identifier: TC10204
Purpose: OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30201				preamble to U2
2	L!DISC START TAC		DI2(1, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.3.4.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U02/S/ER/O/TC10222				
Identifier:	TC10222				
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 13 Ensure that on receipt of a DISCONNECT PDU with the mandatory information element missing the IUT returns a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30201				preamble to U2
2	L!ERROR START TAC		ERR50(1)		invalid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.6.5.1					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U02/S/ER/O/TC10223				
Identifier:	TC10223				
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 14 Ensure that the IUT responds to the receipt of a DISCONNECT PDU with mandatory information element with content error by sending a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30201				preamble to U2
2	L!ERROR START TAC		ERR53(1)		invalid PDU (1)
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) An invalid DISCONNECT PDU with an invalid cause information element is used. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.6.5.2					

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/AC/U02/V/DI/N/TC20203
Identifier:	TC20203
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
Default:	DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30201				preamble to U2
2	< IUT ! DISC >		DI1(0)		
3	START TWAIT				(1)
4	L?DISCr CANCEL TWAIT	L1	DI1(0)	(P)	valid DISCONNECT PDU
5	+CS59901(11, 1)				state=11? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(1)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) Wait for a DISCONNECT PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.3.3

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/AC/U02/V/IN/N/TC20204
Identifier:	TC20204
Purpose:	OVERLAP SENDING STATE TESTS - STATE U2 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits an INFORMATION PDU and remains in the same state.
Default:	DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30201				preamble to U2
2	< IUT ! INFO >		IN1(0)		
3	START TWAIT				(1)
4	L?INFOr CANCEL TWAIT	L1	IN1(0)	(P)	
5	+CS59901(2, 1)				state=2? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(1)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) Wait for an INFORMATION PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.1.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U03/V/AL/N/TC10301
Identifier: TC10301
Purpose: OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of an ALERTING PDU the IUT enters the Call Delivered state U4.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30301				preamble to U3
2	L!ALERT		AL2		valid ALERT PDU
3	+CS59901(4, 1)				state=4? (1)

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.1.4

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U03/V/CN/N/TC10302
Identifier: TC10302
Purpose: OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30301				preamble to U3
2	[BCA = FALSE]				parameter (1)
3	L!CONN		CN2		valid CONNECT PDU
4	+CS59901(10, 1)				state=10? (2)
5	[BCA = TRUE]				
6	L!CONN START TAC		CN2		valid CONNECT PDU
7	L?CONN_ACKr CANCEL TAC	L1	CA1	(P)	(3)
8	+CS59901(10, 1)				state=10? (2)
9	?TIMEOUT TAC			(F)	TAC timeout
10	+PO49901(1)				postamble to U0
11	+UM59902				unexpected message
12	GOTO L1				

Extended Comments:
(1) The test suite parameter BCA has the value TRUE if the sending of CONNECT ACKNOWLEDGE PDU is supported.
(2) The subtree CS59901 is used for checking the IUT state.
(3) Valid CONNECT ACKNOWLEDGE PDU.

Reference to requirements: subclause 11.4.1.5

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U03/V/DI/N/TC10303				
Identifier:	TC10303				
Purpose:	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30301				preamble to U3
2	L!DISC START TAC		DI2(1, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/AC/U03/V/DI/N/TC20301				
Identifier:	TC20301				
Purpose:	OUTGOING CALL PROCEEDING STATE TESTS - STATE U3 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30301				preamble to U3
2	< IUT ! DISC >		DI1(0)		
3	START TWAIT				(1)
4	L?DISCr CANCEL TWAIT	L1	DI1(0)	(P)	valid DISCONNECT PDU
5	+CS59901(11, 1)				state=11? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(1)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				
Extended Comments: (1) Wait for a DISCONNECT PDU. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U04/V/CN/N/TC10401				
Identifier:	TC10401				
Purpose:	CALL DELIVERED STATE TESTS - STATE U4 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a CONNECT PDU the IUT enters the Active state U10.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30401				preamble to U4
2	[BCA = FALSE]				parameter (1)
3	L!CONN		CN2		valid CONNECT PDU
4	+CS59901(10, 1)				state=10? (2)
5	[BCA = TRUE]				
6	L!CONN START TAC		CN2		valid CONNECT PDU
7	L?CONN_ACKr CANCEL TAC	L1	CA1	(P)	(3)
8	+CS59901(10, 1)				state=10? (2)
9	?TIMEOUT TAC			(F)	TAC timeout
10	+PO49901(1)				postamble to U0
11	+UM59902				unexpected message
12	GOTO L1				
Extended Comments: (1) The test suite parameter BCA has the value TRUE if the sending of CONNECT ACKNOWLEDGE PDU is supported. (2) The subtree CS59901 is used for checking the IUT state. (3) Valid CONNECT ACKNOWLEDGE PDU. Reference to requirements: subclause 11.4.1.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U04/V/DI/N/TC10402				
Identifier:	TC10402				
Purpose:	CALL DELIVERED STATE TESTS - STATE U4 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30401				preamble to U4
2	L!DISC START TAC		DI2(1, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour

Reference: TBR3_L3/AC/U04/V/DI/N/TC20401
Identifier: TC20401
Purpose: CALL DELIVERED STATE TESTS - STATE U4 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR30401				preamble to U4
2	< IUT ! DISC >		DI1(0)		
3	START TWAIT				(1)
4	L?DISCr CANCEL TWAIT	L1	DI1(0)	(P)	valid DISCONNECT PDU
5	+CS59901(11, 1)				state=11? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(1)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) Wait for a DISCONNECT PDU.
2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.3.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U07/V/DI/N/TC10701
Identifier: TC10701
Purpose: CALL RECEIVED STATE TESTS - STATE U7 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30701				preamble to U7
2	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.3.4.2

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U07/S/ER/O/TC10718
Identifier: TC10718
Purpose: CALL RECEIVED STATE TESTS - STATE U7 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16

Ensure that on receipt of a DISCONNECT PDU with unrecognised information element (coded comprehension not required) the IUT sends a RELEASE PDU and enters the Release Request state U19.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30701				preamble to U7
2	L!ERROR START TAC		ERR52(0, 16)		invalid PDU (1)
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) An invalid DISCONNECT PDU containing an unrecognised information element with comprehension not required coded as '80'H.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.6.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U08/V/CA/N/TC10801
Identifier: TC10801
Purpose: CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that on receipt of a CONNECT ACKNOWLEDGE PDU the IUT enters the Active state U10.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30801				preamble to U8
2	L!CONN_ACK		CA1		(1)
3	+CS59901(10, 0)				state=10? (2)

Extended Comments:
(1) Valid CONNECT ACKNOWLEDGE PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.2.7

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U08/V/DI/N/TC10802				
Identifier:	TC10802				
Purpose:	CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30801				preamble to U8
2	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U08/V/RL/N/TC10805				
Identifier:	TC10805				
Purpose:	CONNECT REQUEST STATE TEST - STATE U8 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30801				preamble to U8
2	L!REL START TAC		RL3(0, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(1)
4	+CS50001(0)				state=0? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) Valid RELEASE COMPLETE PDU. (2) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclauses 11.4.2.8, 11.4.6.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U09/V/DI/N/TC10901				
Identifier:	TC10901				
Purpose:	INCOMING CALL PROCEEDING STATE TEST - STATE U9 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30901				preamble to U9
2	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L4/PS/U10/V/DI/N/TC11001				
Identifier:	TC11001				
Purpose:	ACTIVE STATE TESTS - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				preamble to U10
2	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U10/V/NO/N/TC11003				
Identifier:	TC11003				
Purpose:	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a NOTIFY PDU the IUT does not respond and remains in the same state.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				preamble to U10
2	L!NOTIFY START TNOAC		NO2(0)		valid NOTIFY PDU
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS59901(10, 0)				state=10? (1)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.7					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U10/V/RC/N/TC11004				
Identifier:	TC11004				
Purpose:	ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				preamble to U10
2	L!REL_COM START TNOAC		RC2(0, 16)		(1)
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (2)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) Valid RELEASE COMPLETE PDU. (2) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclause 11.4.6.3					

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U10/V/RL/N/TC11005
Identifier: TC11005
Purpose: ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	L!REL START TAC		RL3(0, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(1)	(P)	(1)
4	+CS50001(0)				state=0? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) Valid RELEASE COMPLETE PDU.
(2) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U10/V/ST/N/TC11007
Identifier: TC11007
Purpose: ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	L!STATUS START TNOAC		ST2(0, 111, 0)		
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (1)
5	+UM59902				unexpected message
6	GOTO L1				

Extended Comments:
(1) The subtree CS50001(0) is used for checking the IUT state.
Reference to requirements: subclause 11.4.6.8(c)

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U10/I/CN/N/TC11008

Identifier: TC11008

Purpose: ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS

Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 100, or with a STATUS ENQUIRY PDU and that no change of state occurs.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	L!CONN START TAC		CN3		inopportune PDU
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 10) AND ((STATUS.CAU.CAU_E4_CV2 = 98) OR (STATUS.CAU.CAU_E4_CV2 = 101))] CANCEL TAC	L1	ST1(1)	(P)	valid STATUS PDU
4	+CS59901(10, 0)				
5	L?ST_ENQr CANCEL TAC		SQ1(1)	(P)	
6	L!STATUS		ST2(0, 30, 10)		
7	+CS59901(10, 0)				state = 10?
8	?TIMEOUT TAC			(F)	no response
9	+PO49901(0)				postamble to U0
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:

Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U10/S/ER/N/TC11021
Identifier: TC11021
Purpose: ACTIVE STATE TEST - STATE U10 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS

Ensure that the IUT responds to a syntactically invalid message type with a STATUS PDU with cause value 98 or 97, or with a STATUS ENQUIRY PDU and remains in the same state.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	L!ERROR START TAC		ERR5		invalid PDU (1)
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 10) AND ((STATUS.CAU.CAU_E4_CV2 = 97) OR (STATUS.CAU.CAU_E4_CV2 = 98))] CANCEL TAC	L1	ST1(1)	(P)	valid STATUS PDU
4	+CS59901(10, 0)				
5	L?ST_ENQr CANCEL TAC		SQ1(1)	(P)	
6	L!STATUS		ST2(0, 30, 10)		
7	+CS59901(10, 0)				state = 10?
8	?TIMEOUT TAC			(F)	no response
9	+PO49901(0)				
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:
(1) A PDU with invalid message type is used.
Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/AC/U10/V/DI/N/TC21003
Identifier: TC21003
Purpose: ACTIVE STATE TEST - STATE U10 - ACTIVE IUT BEHAVIOUR VALID TEST EVENTS

Ensure that the IUT transmits a DISCONNECT PDU and enters the Disconnect Request state U11.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	< IUT ! DISC >		DI1(1)		
3	START TWAIT				(1)
4	L?DISCr CANCEL TWAIT	L1	DI1(1)	(P)	valid DISCONNECT PDU
5	+CS59901(11, 0)				state=11? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(0)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) Wait for a DISCONNECT PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.3.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/AC/U10/V/SP/N/TC21005
Identifier: TC21005
Purpose: ACTIVE STATE TEST - STATE U10 - ACTIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on transmission of a SUSPEND PDU the IUT enters the Suspend Request state U15.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	< IUT ! SUSP >		SP1(1)		
3	START TWAIT				(1)
4	L?SUSPr CANCEL TWAIT	L1	SP1(1)	(P)	valid SUSPEND PDU
5	+CS59901(15, 0)				state=15? (2)
6	?TIMEOUT TWAIT			(I)	no response
7	+PO49901(0)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L1				

Extended Comments:
(1) Wait for a SUSPEND PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.4.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U11/V/DI/N/TC11101
Identifier: TC11101
Purpose: DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR31101				preamble to U11
2	L!DISC START TAC		DI2(1, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.3.5

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U11/V/NO/N/TC11103
Identifier: TC11103
Purpose: DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a NOTIFY PDU the IUT does not respond or returns a STATUS PDU and remains in the same state.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR31101				preamble to U11
2	L!NOTIFY START TNOAC		NO2(1)		
3	L?STATUSr	L1	ST1(0)	(P)	valid STATUS PDU
	[STATUS.CST.CST_CSV2 = 11]				
	CANCEL TNOAC				
4	+CS59901(11, 1)				state=11? (1)
5	?TIMEOUT TNOAC			(P)	no response
6	+CS59901(11, 1)				state=11? (1)
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.7

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U11/V/RL/N/TC11105
Identifier: TC11105
Purpose: DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that on receipt of a RELEASE PDU the IUT responds with a RELEASE COMPLETE PDU and enters the Null state U0.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR31101				preamble to U11
2	L!REL START TAC		RL3(1, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(0)	(P)	(1)
4	+CS50001(1)				state=0? (2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) Valid RELEASE COMPLETE PDU.
(2) The subtree CS50001(1) is used for checking the IUT state.

Reference to requirements: subclause 11.4.3.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U11/I/CP/N/TC11107

Identifier: TC11107

Purpose: DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR
INOPPORTUNE TEST EVENTS

Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 101, or with a STATUS ENQUIRY PDU, and remains in the same state.

Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR31101				preamble to U11
2	L!CALL_PROC START TAC		CP2		inopportune PDU
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 11) AND ((STATUS.CAU.CAU_E4_CV2 = 98) OR (STATUS.CAU.CAU_E4_CV2 = 101))] CANCEL TAC	L1	ST1(0)	(P)	valid STATUS PDU
4	+CS59901(11, 1)				
5	L?ST_ENQr CANCEL TAC		SQ1(0)	(P)	
6	L!STATUS		ST2(1, 30, 11)		
7	+CS59901(11, 1)				state = 11?
8	?TIMEOUT TAC			(F)	no response
9	+PO49901(1)				postamble to U0
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:

Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U11/S/ER/O/TC11118
Identifier: TC11118
Purpose: DISCONNECT REQUEST STATE TESTS - STATE U11 - PASSIVE IUT BEHAVIOUR
SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16

Ensure that on receipt of a RELEASE PDU with unrecognized information element (coded comprehension not required) the IUT sends a RELEASE COMPLETE PDU and enters the Null state U0.
Default: DF69901(1)

No	Behaviour Description	L	Cref	V	C
1	+PR31101				preamble to U11
2	L!ERROR START TAC		ERR66(1)		invalid PDU (1)
3	L?REL_COMr CANCEL TAC	L1	RC1(0)	(P)	(2)
4	+CS50001(1)				state=0? (3)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) An invalid RELEASE PDU containing an unrecognized information element with comprehension not required coded as '80'H.
(2) Valid RELEASE COMPLETE PDU.
(3) The subtree CS50001(1) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.6.1

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/U15/V/DI/N/TC11501
Identifier: TC11501
Purpose: SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31501				preamble to U15
2	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:
(1) The subtree CS59901 is used for checking the IUT state.
Reference to requirements: subclause 11.4.3.4.2

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U15/V/NO/N/TC11503				
Identifier:	TC11503				
Purpose:	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a NOTIFY PDU the IUT does not respond or returns a STATUS PDU and remains in the same state.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31501				preamble to U15
2	L!NOTIFY START TNOAC		NO2(0)		
3	L?STATUSr [STATUS.CST.CST_CSV2 = 15] CANCEL TNOAC	L1	ST1(1)	(P)	valid STATUS PDU
4	+CS59901(15, 0)				state=15? (1)
5	?TIMEOUT TNOAC			(P)	no response
6	+CS59901(15, 0)				state=15? (1)
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.7					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U15/V/PA/N/TC11504				
Identifier:	TC11504				
Purpose:	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SUSPEND ACKNOWLEDGE PDU the IUT enters to the state U0.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31501				preamble to U15
2	L!SUSP_ACK		SPA1(0)		(1)
3	+CS50001(0)				state=0? (2)
Extended Comments: (1) Valid SUSPEND ACKNOWLEDGE PDU. (2) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclause 11.4.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U15/V/SR/N/TC11508				
Identifier:	TC11508				
Purpose:	SUSPEND REQUEST STATE TESTS - STATE U15 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a SUSPEND REJECT PDU the IUT returns to the state U10.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31501				preamble to U15
2	L!SUSP_REJ		SPR1(0, 84)		(1)
3	+CS59901(10, 0)				state=10? (2)
Extended Comments: (1) Valid SUSPEND REJECT PDU. (2) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.4.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U17/V/DI/N/TC11701				
Identifier:	TC11701				
Purpose:	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that the IUT responds to a DISCONNECT PDU with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31701				preamble to U17
2	L!DISC START TAC		DI2(1, 16)		valid DISCONNECT PDU
3	L?RELr CANCEL TAC	L1	RL1(0)	(P)	valid RELEASE PDU
4	+CS59901(19, 1)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(1)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U17/V/RA/N/TC11703				
Identifier:	TC11703				
Purpose:	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RESUME ACKNOWLEDGE PDU IUT returns to the state U10.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31701				preamble to U17
2	L!RES_ACK		RA1		(1)
3	+CS59901(10, 1)				state=10? (2)

Extended Comments:
(1) Valid RESUME ACKNOWLEDGE PDU.
(2) The subtree CS59901 is used for checking the IUT state.

Reference to requirements: subclause 11.4.4.4

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U17/V/RR/N/TC11706				
Identifier:	TC11706				
Purpose:	RESUME REQUEST STATE TESTS - STATE U17 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RESUME REJECT PDU the IUT returns to the state U0.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31701				preamble to U17
2	L!RES_REJ START TNOAC		RR1(83)		(1)
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (2)
5	+UM59902				unexpected message
6	GOTO L1				

Extended Comments:
(1) Valid RESUME REJECT PDU.
(2) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.4.5

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U19/V/RC/N/TC11903				
Identifier:	TC11903				
Purpose:	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE COMPLETE PDU the IUT does not respond but returns to the Null state U0.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31901				preamble to U19
2	L!REL_COM START TNOAC		RC2(0, 16)		(1)
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (2)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) Valid RELEASE COMPLETE PDU. (2) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.3					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U19/V/RL/N/TC11904				
Identifier:	TC11904				
Purpose:	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a RELEASE PDU the IUT does not respond and enters the Null state U0. This is a test of RELEASE collision handling.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31901				preamble to U19
2	L!REL START TNOAC		RL3(0, 16)		valid RELEASE PDU
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (1)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclause 11.4.3.5					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U19/V/ST/N/TC11906				
Identifier:	TC11906				
Purpose:	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a STATUS PDU specifying the Null state N0, the IUT enters the Null state U0.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31901				preamble to U19
2	L!STATUS START TNOAC		ST2(0, 111, 0)		
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (1)
5	+UM59902				unexpected message
6	GOTO L1				
Extended Comments: (1) The subtree CS50001(0) is used for checking the IUT state. Reference to requirements: subclause 11.4.6.8(c)					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U19/I/CP/N/TC11908				
Identifier:	TC11908				
Purpose:	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR INOPPORTUNE TEST EVENTS Ensure that the IUT responds to an inopportune PDU with a STATUS PDU with cause value 98 or 101, or with a STATUS ENQUIRY PDU and remains in the same state.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31901				preamble to U19
2	L!CALL_PROC START TAC		CP3		inopportune PDU
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 19) AND ((STATUS.CAU.CAU_E4_CV2 = 98) OR (STATUS.CAU.CAU_E4_CV2 = 101))] CANCEL TAC	L1	ST1(1)		valid STATUS PDU
4	L!REL_COM		RC2(0, 16)	P	
5	L?ST_ENQr CANCEL TAC		SQ1(1)	(P)	
6	L!STATUS		ST2(0, 30, 19)		
7	+CS59901(19, 0)				state = 19?
8	?TIMEOUT TAC			(F)	no response
9	L!REL_COM		RC2(0, 16)		
10	+UM59902				unexpected message
11	GOTO L1				
Extended Comments: Reference to requirements: subclause 11.4.6.3					

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/PS/U19/S/ER/N/TC11909
Identifier:	TC11909
Purpose:	RELEASE REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS Ensure that the IUT responds to a syntactically invalid message type with a STATUS PDU with cause value 98 or 97, or with a STATUS ENQUIRY PDU and remains in the same state.
Default:	DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31901				preamble to U19
2	L!ERROR START TAC		ERR5		invalid PDU (1)
3	L?STATUSr [(STATUS.CST.CST_CSV2 = 19) AND ((STATUS.CAU.CAU_E4_CV2 = 97) OR (STATUS.CAU.CAU_E4_CV2 = 98))] CANCEL TAC	L1	ST1(1)		valid STATUS PDU
4	L!REL_COM		RC2(0, 16)	P	
5	L?ST_ENQr CANCEL TAC		SQ1(1)	(P)	
6	L!STATUS		ST2(0, 30, 19)		
7	+CS59901(19, 0)				state = 19?
8	?TIMEOUT TAC			(F)	no response
9	L!REL_COM		RC2(0, 16)		
10	+UM59902				unexpected message
11	GOTO L1				

Extended Comments:
(1) A PDU with invalid message type is used.
Reference to requirements: subclause 11.4.6.3

Test Case Dynamic Behaviour	
Reference:	TBR3_L3/PS/U19/S/ER/O/TC11920
Identifier:	TC11920
Purpose:	DISCONNECT REQUEST STATE TESTS - STATE U19 - PASSIVE IUT BEHAVIOUR SYNTACTICALLY INVALID TEST EVENTS - ERROR CATEGORY 16 Ensure that on receipt of a RELEASE COMPLETE PDU with unrecognized information element (coded comprehension not required) the IUT does not respond and enters to the Null state U0.
Default:	DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31901				preamble to U19
2	L!ERROR START TNOAC		ERR81(0)		invalid PDU (1)
3	?TIMEOUT TNOAC	L1		(P)	no response
4	+CS50001(0)				state=0? (2)
5	+UM59902				unexpected message
6	GOTO L1				

Extended Comments:
(1) An invalid RELEASE COMPLETE PDU containing an unrecognized optional information element with comprehension not required coded as '80'H.
(2) The subtree CS50001(0) is used for checking the IUT state.

Reference to requirements: subclause 11.4.6.6.1

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U25/V/DI/N/TC12501				
Identifier:	TC12501				
Purpose:	OVERLAP RECEIVING STATE TESTS - STATE U25 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of a DISCONNECT PDU the IUT responds with a RELEASE PDU and enters the Release Request state U19.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR32501				preamble to U25
2	L!DISC START TAC		DI2(0, 16)		
3	L?RELr CANCEL TAC	L1	RL1(1)	(P)	valid RELEASE PDU
4	+CS59901(19, 0)				state=19? (1)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclause 11.4.3.4.2					

Test Case Dynamic Behaviour					
Reference:	TBR3_L3/PS/U25/V/IN/N/TC12503				
Identifier:	TC12503				
Purpose:	OVERLAP RECEIVING STATE TESTS - STATE U25 - PASSIVE IUT BEHAVIOUR VALID TEST EVENTS Ensure that on receipt of an INFORMATION PDU with sufficient called number information the IUT responds with either a CALL PROCEEDING, ALERTING or CONNECT PDU and moves to the relevant state Incoming Call Proceeding U9, Call Received U7 or Connect Request U8.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR32501				preamble to U25
2	L!INFO START TAC		IN3(0)		valid INFORMATION PDU
3	L?CALL_PROCr CANCEL TAC	L1	CP1	(P)	
4	+CS59901(9, 0)				state=9? (1)
5	L?ALERTr CANCEL TAC		AL1	(P)	
6	+CS59901(7, 0)				state=7? (1)
7	L?CONNr CANCEL TAC		CN1	(P)	
8	+CS59901(8, 0)				state=8? (1)
9	?TIMEOUT TAC			(F)	no response
10	+PO49901(0)				postamble to U0
11	+UM59902				unexpected message
12	GOTO L1				
Extended Comments: (1) The subtree CS59901 is used for checking the IUT state. Reference to requirements: subclauses 11.4.2.4, 11.4.2.5.1					

Test Case Dynamic Behaviour

Reference: TBR3_L3/PS/R00/V/RS/N/TC19003

Identifier: TC19003

Purpose: GLOBAL CALL REF. - STATE R0 - PASSIVE IUT BEHAVIOUR
VALID TEST EVENTS

Ensures that on receipt of a RESTART PDU the specified channel is returned to the Idle condition, the Call Reference is returned to the Null state and a RESTART ACKNOWLEDGE PDU is sent.

Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR31001				preamble to U10
2	L!RESTART START TAC(120)		RST5(0)		(3)
3	L?RESTART_ACKr CANCEL TAC	L1	RSA6(1)	(P)	(1)
4	+CS50001(0)				(2)
5	?TIMEOUT TAC			(F)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				

Extended Comments:

(1) Valid RESTART ACKNOWLEDGE PDU.

(2) The test step CS50001(0) is used for checking the IUT state U0.

(3) Set the B-channel to be restarted equal to the B-channel used by the IUT.

Reference to requirements: subclause 11.4.8

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U00/V/PR/A/PR30001				
Identifier:	PR30001				
Purpose:	to bring the IUT to the state U0.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	L!DL_REL_RQ START TAC				layer2 release
2	L?DL_REL_CO CANCEL TAC			(P)	UA or DM received (1)
3	L!DL_EST_RQ START TAC				(2)
4	L?DL_EST_CO CANCEL TAC	L1		(P)	UA received (3)
5	L?DL_REL_IN START TNOAC				DM received (4)
6	L?DL_EST_IN CANCEL TAC, CANCEL TNOAC			(P)	(5)
7	?TIMEOUT TNOAC				
8	L!DL_EST_RQ				re-establishment
9	GOTO L1				
10	L?OTHERWISE			I	
11	L?DL_EST_IN			(P)	(6)
12	GOTO L1				(7)
13	?TIMEOUT TAC			I	no response
14	L?OTHERWISE			I	invalid event
15	?TIMEOUT TAC			I	no response
16	L?OTHERWISE			I	invalid event

Extended Comments:
(1) layer 2 released
(2) This DL-ESTABLISH-REQUEST primitive is issued in any case and requires a confirmation by means of DL-ESTABLISH-CONFIRM primitive. The layer 2 of the test tool will send SABME from either states 4, 7 or 8.
(3) UA received and DL-ESTABLISH-CONFIRM primitive is issued to layer 3 (Data link established).
(4) IUT still busy.
(5) SABME received by layer 2, DL-ESTABLISH-INDICATION primitive is issued to layer 3 and UA is sent by layer 2 (Data link established).
(6) SABME received by layer2 (state 4.0), DL-ESTABLISH-INDICATION primitive is issued to layer 3 and UA is sent by layer 2 (Data link established).
(7) Since the DL-ESTABLISH-REQUEST primitive is already issued, DL-ESTABLISH-CONFIRM primitive is required.
The layer 2 of the IUT shall have a TEI assigned value before the execution of this preamble.
The procedure to assign the TEI value to the IUT is matter for the test laboratory.

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U01/V/PR/A/PR30101				
Identifier:	PR30101				
Purpose:	to bring the IUT to the state U1.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	< IUT ! SETUP >		SU1		
3	START TWAIT				wait for SETUP PDU
4	L?SETUPr (CREF ::= SETUP.CR.CR_R) CANCEL TWAIT	L1	SU1	(P)	valid SETUP PDU
5	[BXINF AND SETUP.SCI = EMPTY]			(P)	
6	[BXINF AND NOT SETUP.SCI = EMPTY]			F	
7	?TIMEOUT TWAIT			I	
8	+UM59902				unexpected message
9	GOTO L1				
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U02/V/PR/A/PR30201				
Identifier:	PR30201				
Purpose:	to bring the IUT to the state U2.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	< IUT ! SETUP >		SU1		
3	START TWAIT				wait for SETUP PDU
4	L?SETUPr (CREF ::= SETUP.CR.CR_R) CANCEL TWAIT	L1	SU1	(P)	valid SETUP PDU
5	[BXINF AND SETUP.SCI = EMPTY]			(P)	
6	L!SETUP_ACK		SUA2		(1)
7	[BXINF AND NOT SETUP.SCI = EMPTY]			F	
8	?TIMEOUT TWAIT			I	no response
9	+UM59902				unexpected message
10	GOTO L1				
Extended Comments:					
(1) Valid SETUP ACKNOWLEDGE PDU					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U03/V/PR/A/PR30301				
Identifier:	PR30301				
Purpose:	to bring the IUT to the state U3.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	< IUT ! SETUP >		SU1		
3	START TWAIT				wait for SETUP PDU
4	L?SETUPr (CREF ::= SETUP.CR.CR_R) CANCEL TWAIT	L1	SU1	(P)	valid SETUP PDU
5	[EBS]				
6	L!CALL_PROC		CP2		(1)
7	[NOT EBS]				
8	L!SETUP_ACK START TWAIT		SUA2		
9	< IUT ! INFO >		IN1(0)		(2)
10	L?INFOr CANCEL TWAIT	L2	IN1(0)	(P)	valid INFORMATION PDU
11	L!CALL_PROC		CP2		(1)
12	?TIMEOUT TWAIT			(I)	no response
13	+PO49901(1)				postamble to U0
14	+UM59902				unexpected message
15	GOTO L2				
16	?TIMEOUT TWAIT			I	no response
17	+UM59902				unexpected message
18	GOTO L1				
Extended Comments: (1) Valid CALL PROCEEDING PDU. (2) Wait for an INFORMATION PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U04/V/PR/A/PR30401				
Identifier:	PR30401				
Purpose:	to bring the IUT to the state U4.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30301				preamble to U3
2	L!ALERT		AL2		valid ALERT PDU
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U07/V/PR/A/PR30701				
Identifier:	PR30701				
Purpose:	to bring the IUT to the state U7.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?ALERTr CANCEL TAC	L1	AL1	(P)	valid ALERT PDU
4	L?CALL_PROCr START TAC		CP1	(P)	(3)
5	L?ALERTr CANCEL TAC	L2	AL1	(P)	valid ALERT PDU
6	?TIMEOUT TAC			(F)	no response
7	+PO49901(0)				postamble to U0
8	+UM59902				unexpected message
9	GOTO L2				
10	?TIMEOUT TAC			(F)	no response
11	+PO49901(0)				
12	+UM59902				unexpected message
13	GOTO L1				
14					
15	**SUBTREE**				
16	[BDL = TRUE]				(1)
17	L!SETUP START TAC		SU2		(2)
18	[BDL = FALSE]				(1)
19	L!SETUP_P START TAC		SU2		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) A valid SETUP PDU with the sending complete information element is transmitted.

(3) Valid CALL PROCEEDING PDU.

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U08/V/PR/A/PR30801				
Identifier:	PR30801				
Purpose:	to bring the IUT to the state U8.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	+SUBTREE				
3	< IUT ! CONN >		CN1		wait for CONNECT PDU
4	L?CONNr CANCEL TWAIT	L1	CN1	(P)	valid CONNECT PDU
5	L?ALERTr		AL1		valid ALERT PDU
6	L?CONNr CANCEL TWAIT	L2	CN1	(P)	valid CONNECT PDU
7	?TIMEOUT TWAIT			(I)	no response
8	+PO49901(0)				postamble to U0
9	+UM59902				unexpected message
10	GOTO L2				
11	L?CALL_PROCr		CP1		(3)
12	L?CONNr CANCEL TWAIT	L3	CN1	(P)	valid CONNECT PDU
13	L?ALERTr		AL1		valid ALERT PDU
14	L?CONNr CANCEL TWAIT	L4	CN1	(P)	valid CONNECT PDU
15	?TIMEOUT TWAIT			(I)	no response
16	+PO49901(0)				postamble to U0
17	+UM59902				unexpected message
18	GOTO L4				
19	?TIMEOUT TWAIT			(I)	no response
20	+PO49901(0)				postamble to U0
21	+UM59902				unexpected message
22	GOTO L3				
23	?TIMEOUT TWAIT			(I)	no response
24	+PO49901(0)				postamble to U0
25	+UM59902				unexpected message
26	GOTO L1				
27					
28	**SUBTREE**				
29	[BDL = TRUE]				(1)
30	L!SETUP START TWAIT		SU2		(2)
31	[BDL = FALSE]				(1)
32	L!SETUP_P START TWAIT		SU2		(2)

Extended Comments:

(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.

(2) A valid SETUP PDU with the sending complete information element is transmitted.

(3) Valid CALL PROCEEDING PDU.

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U09/V/PR/A/PR30901				
Identifier:	PR30901				
Purpose:	to bring the IUT to the state U9.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	+SUBTREE				parameter
3	L?CALL_PROCr CANCEL TAC	L1	CP1	(P)	(3)
4	?TIMEOUT TAC			(F)	no response
5	+PO49901(0)				postamble to U0
6	+UM59902				unexpected message
7	GOTO L1				
8					
9	**SUBTREE**				
10	[BDL = TRUE]				(1)
11	L!SETUP START TAC		SU2		(2)
12	[BDL = FALSE]				(1)
13	L!SETUP_P START TAC		SU2		(2)
Extended Comments: (1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link. (2) A valid SETUP PDU with the sending complete information element is transmitted. (3) Valid CALL PROCEEDING PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U10/V/PR/A/PR31001				
Identifier:	PR31001				
Purpose:	to bring the IUT to the state U10.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30801				preamble to U8
2	L!CONN_ACK		CA1		(1)
Extended Comments: (1) Valid CONNECT ACKNOWLEDGE PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U11/V/PR/A/PR31101				
Identifier:	PR31101				
Purpose:	to bring the IUT to the state U11.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	< IUT ! SETUP >		SU1		wait for SETUP PDU
3	START TWAIT				
4	L?SETUPr (CREF ::= SETUP.CR.CR_R) CANCEL TWAIT	L1	SU1	(P)	valid SETUP PDU
5	[EBS]				
6	L!CALL_PROC		CP2		
7	+SUBTREE				
8	[NOT EBS]				
9	L!SETUP_ACK		SUA2		(1)
10	+SUBTREE				
11	?TIMEOUT TWAIT			I	no response
12	+UM59902				unexpected message
13	GOTO L1				
14	**SUBTREE**				
15	< IUT ! DISC >		DI1(0)		
16	START TWAIT				
17	L?DISCr CANCEL TWAIT	L2	DI1(0)	(P)	valid DISCONNECT PDU
18	?TIMEOUT TWAIT			(I)	no response
19	+PO49901(1)				postamble to U0
20	+UM59902				unexpected message
21	GOTO L2				
Extended Comments: (1) Wait for a DISCONNECT PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U15/V/PR/A/PR31501				
Identifier:	PR31501				
Purpose:	to bring the IUT to the state U15.				
Default:	DF69901(0)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR31001				preamble to U10
2	< IUT ! SUSP >		SP1(1)		wait for SUSPEND PDU
3	START TWAIT				
4	L?SUSPr CANCEL TWAIT	L1	SP1(1)	(P)	valid SUSPEND PDU
5	?TIMEOUT TWAIT			(I)	no response
6	+PO49901(0)				postamble to U0
7	+UM59902				unexpected message
8	GOTO L1				
Extended Comments:					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PR/U17/V/PR/A/PR31701				
Identifier:	PR31701				
Purpose:	to bring the IUT to the state U17.				
Default:	DF69901(1)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	+PR30001				preamble to U0
2	< IUT ! RES >		RE1		wait for RESUME PDU
3	START TWAIT				
4	L?RESr (CREF ::= RES.CR.CR_R)	L1	RE1	(P)	valid RESUME PDU
5	?TIMEOUT TWAIT			F	no response
6	+UM59902				unexpected message
7	GOTO L1				
Extended Comments:					

Test Step Dynamic Behaviour

Reference: TBR3_L3/PR/U19/V/PR/A/PR31901
Identifier: PR31901
Purpose: to bring the IUT to the state U19 via the states U6-U7 or U6-U8 or U6-U9 or U6-U25.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?ALERTr CANCEL TAC	L1	AL1	(P)	valid ALERT PDU
4	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
5	+LOCAL_TREE_2	L2			
6	+UM59902				unexpected message
7	GOTO L2				
8	L?CONNr CANCEL TAC		CN1	(P)	valid CONNECT PDU
9	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
10	+LOCAL_TREE_1	L3			
11	+UM59902				unexpected message
12	GOTO L3				
13	L?CALL_PROCr CANCEL TAC		CP1	(P)	(2)
14	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
15	+LOCAL_TREE_3	L4			
16	+UM59902				unexpected message
17	GOTO L4				
18	L?SETUP_ACKr CANCEL TAC		SUA1	(P)	(3)
19	L!DISC START TAC		DI2(0, 16)		valid DISCONNECT PDU
20	L?CALL_PROCr	L5	CP1	(P)	(2)
21	+LOCAL_TREE_3	L6			
22	+UM59902				unexpected message
23	GOTO L6				
24	+LOCAL_TREE_3				
25	+UM59902				unexpected message
26	GOTO L5				
27	?TIMEOUT TAC			(F)	no response
28	+PO49901(0)				postamble to U0
29	+UM59902				unexpected message
30	GOTO L1				
31	**LOCAL_TREE_1**				
32	L?RELr CANCEL TAC		RL1(1)	(P)	
33	?TIMEOUT TAC			(F)	
34	+PO49901(0)				postamble to U0
35	**LOCAL_TREE_2**				
36	L?CONNr		CN1		
37	+LOCAL_TREE_1	L7			
38	+UM59902				unexpected message
39	GOTO L7				

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No	Behaviour Description	L	Cref	V	C
40	+LOCAL_TREE_1				
41	**LOCAL_TREE_3**				
42	L?ALERTr		AL1		
43	+LOCAL_TREE_2	L8			
44	+UM59902				unexpected message
45	GOTO L8				
46	+LOCAL_TREE_2				
47					
48	**SUBTREE**				
49	[BDL = TRUE]				(1)
50	L!SETUP START TAC		SU3		
51	[BDL = FALSE]				(1)
52	L!SETUP_P START TAC		SU3		

Extended Comments:
(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.
(2) Valid CALL PROCEEDING PDU.
(3) Valid SETUP ACKNOWLEDGE PDU.

Test Step Dynamic Behaviour

Reference: TBR3_L3/PR/U25/V/PR/A/PR32501
Identifier: PR32501
Purpose: to bring the IUT to the state U25.
Default: DF69901(0)

No	Behaviour Description	L	Cref	V	C
1	+PR30001				preamble to U0
2	+SUBTREE				
3	L?SETUP_ACKr CANCEL TAC	L1	SUA1	(P)	(3)
4	?TIMEOUT TAC			(F)	no response
5	+PO49901(0)				postamble to U0
6	+UM59902				unexpected message
7	GOTO L1				
8					
9	**SUBTREE**				
10	[BDL = TRUE]				parameter (1)
11	L!SETUP START TAC		SU6		(2)
12	[BDL = FALSE]				parameter (1)
13	L!SETUP_P START TAC		SU6		(2)

Extended Comments:
(1) BDL is TRUE for a broadcast data link and FALSE for a point-to-point data link.
(2) A valid SETUP PDU without optional parameters is transmitted.
(3) Valid SETUP ACKNOWLEDGE PDU.

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/PO/UAL/V/PO/A/PO49901				
Identifier:	PO49901(FL:BITSTRING)				
Purpose:	to bring the IUT to the state U0.				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
2	L!REL START TAC		RL3(FL, 16)		valid RELEASE PDU
3	L?REL_COMr CANCEL TAC	L1	RC1(NOT_FL)	R	(2)
4	?TIMEOUT TAC			I	o response
5	+UM59902				unexpected message
6	GOTO L1				
7	L?OTHERWISE			I	invalid event
Extended Comments: (1) The formal parameter FL is used as call reference flag bit. (2) Valid RELEASE COMPLETE PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/MS/U00/V/MS/A/CS50001				
Identifier:	CS50001(FL:BITSTRING)				
Purpose:	to check the IUT call state U0.				
Default:	DF69901(FL)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
2	L!ST_ENQ START TAC	L1	SQ1(FL)		checking PDU
3	L?RELr [REL.CAU.CAU_E4_CV2 = 81] CANCEL TAC	L2	RL1(NOT_FL)		valid RELEASE PDU
4	L!REL_COM		RC2(FL, 81)	P	(1)
5	L?REL_COMr [REL_COM.CAU.CAU_E4_CV2 = 81] CANCEL TAC		RC1(NOT_FL)	P	(1)
6	L?STATUSr [(STAT_TRANSM = FALSE) AND (STATUS.CAU.CAU_E4_CV2 = ECV)]		ST1(NOT_FL)	(P)	valid STATUS PDU
7	(STAT_TRANSM ::= TRUE)				
8	GOTO L2				
9	L?DL_REL_IN CANCEL TAC				
10	L!DL_EST_RQ (C ::= C + 1) START TAC				
11	L?DL_EST_CO CANCEL TAC, START TNOAC				
12	[C < 2]				
13	GOTO L2				
14	[C = 2]				
15	CANCEL TNOAC			(I)	
16	+PO49901(0)				
17	?TIMEOUT TAC			I	
18	?TIMEOUT TNOAC				no response
19	GOTO L1				postamble to U0
20	?TIMEOUT TAC			(F)	no response
21	+PO49901(0)				postamble to U0
22	+UM59902				unexpected message
23	GOTO L2				
Extended Comments: (1) Valid RELEASE COMPLETE PDU.					

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/MS/UAL/V/MS/A/CS59901				
Identifier:	CS59901(ES:INTEGER; FL:BITSTRING)				
Purpose:	to check the IUT call state and the cause value.				
Default:	DF69901(FL)				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
2	L!ST_ENQ START TAC		SQ1(FL)		(3)
3	+SUBTREE_1(ES, FL)	L1			
4	L?CALL_PROCr [ES = 25] (ES ::= 9)		CP1	(P)	(4)
5	+SUBTREE_1(ES, FL)	L2			
6	L?ALERTr (ES ::= 7)		AL1	(P)	ignore ALERT PDU
7	+SUBTREE_1(ES, FL)	L3			
8	L?CONNr (ES ::= 8)		CN1	(P)	ignore CONNECT PDU
9	+SUBTREE_1(ES, FL)	L4			
10	+SUBTREE_2(ES, FL)				
11	GOTO L4				
12	+SUBTREE_2(ES, FL)				
13	GOTO L3				
14	L?CONNr (ES ::= 8)		CN1	(P)	ignore CONNECT PDU
15	+SUBTREE_1(ES, FL)	L5			
16	+SUBTREE_2(ES, FL)				
17	GOTO L5				
18	+SUBTREE_2(ES, FL)				
19	GOTO L2				
20	L?ALERTr [(ES = 25) OR (ES = 9)] (ES ::= 7)		AL1	(P)	ignore ALERT PDU
21	+SUBTREE_1(ES, FL)	L6			
22	L?CONNr (ES ::= 8)		CN1	(P)	ignore CONNECT PDU
23	+SUBTREE_1(ES, FL)	L7			
24	+SUBTREE_2(ES, FL)				
25	GOTO L7				
26	+SUBTREE_2(ES, FL)				
27	GOTO L6				
28	L?CONNr [(ES = 25) OR (ES = 9) OR (ES = 7)] (ES ::= 8)		CN1	(P)	ignore CONNECT PDU
29	+SUBTREE_1(ES, FL)	L8			
30	+SUBTREE_2(ES, FL)				
31	GOTO L8				
32	+SUBTREE_2(ES, FL)				
33	GOTO L1				
34	**SUBTREE_1(ES:INTEGER; FL:BITSTRING)**				
35	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
36	L?STATUSr [(STATUS.CST.CST_CSV = ES) AND ((STATUS.CAU.CAU_E4_CV2 = 30) OR (STATUS.CAU.CAU_E4_CV2 = 97) OR (STATUS.CAU.CAU_E4_CV2 = 98))] CANCEL TAC		ST1(NOT_FL)	(P)	valid STATUS PDU
37	[ES <> 19]				
38	+PO49901(FL)				postamble to U0
39	[ES = 19]				

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No	Behaviour Description	L	Cref	V	C
40	L!REL_COM		RC2(FL, 16)	P	
41	**SUBTREE_2(ES:INTEGER; FL:BITSTRING)**				
42	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
43	?TIMEOUT TAC			(F)	no response
44	[ES <> 19]				
45	+PO49901(FL)				postamble to U0
46	[ES = 19]				
47	L!REL_COM		RC2(FL, 16)	F	
48	L?STATUSr [(STAT_TRANSM = FALSE) AND (STATUS.CAU.CAU_E4_CV2 = ECV)]		ST1(NOT_FL)	(P)	valid STATUS PDU
49	(STAT_TRANSM ::= TRUE)				
50	+UM59902				unexp. message

Extended Comments:
(1) The formal parameter FL is used as call reference flag bit.
(2) The formal parameter ES is used as expected IUT call state.
(3) Valid STATUS ENQUIRY PDU.
(4) Ignore CALL PROCEEDING PDU.

Test Step Dynamic Behaviour

Reference: TBR3_L3/MS/UAL/V/MS/A/UM59902
Identifier: UM59902
Purpose: allow without verdict the receipt of INFO, NOTIFY, STATUS ENQUIRY or any Q.932 PDU during the test body execution

No	Behaviour Description	L	Cref	V	C
1	L?INFOr		IN4		
2	L?NOTIFYr		NO3		
3	L?ST_ENQr		SQ3		
4	L?GFP_MSGr		MSG		

Extended Comments:
References to requirements: ETS 300 102, Q.932

Test Step Dynamic Behaviour					
Reference:	TBR3_L3/DF/UAL/V/DF/A/DF69901				
Identifier:	DF69901(FL:BITSTRING)				
Purpose:	Default subtree for all test cases				
No	**Behaviour Description**	**L**	**Cref**	**V**	**C**
1	(C ::= 1 - BIT_TO_INT (FL), NOT_FL ::= INT_TO_BIT (C, 1))				
2	L?DL_REL_IN	L4		(I)	DL failure
3	[REST = FALSE]	L1		R	
4	[REST = TRUE]				
5	L!DL_EST_RQ START TAC				
6	L?DL_EST_CO CANCEL TAC			(P)	
7	L!RESTART_ACK (REST ::= FALSE)		RSA2(1)		
8	GOTO L1				
9	?TIMEOUT TAC			R	no response
10	L?OTHERWISE			R	invalid event
11	L?DL_EST_IN			(I)	DL reset
12	[REST = FALSE]	L2			
13	L!REL START TAC		RL3(FL, 16)		valid RELEASE PDU
14	L?REL_COMr CANCEL TAC		RC1(NOT_FL)	R	(1)
15	?TIMEOUT TAC			R	no response
16	+UM59902				unexpected message
17	GOTO L2				
18	L?OTHERWISE			R	invalid event
19	[REST = TRUE]				
20	L!RESTART_ACK (REST ::= FALSE)		RSA2(1)		
21	GOTO L2				
22	L?RESTARTr [RESTART.RI.RI_CL1 = 6]		RST1(0)	(I)	single interface
23	L!RESTART_ACK		RSA5(1, 6)	R	
24	L?RESTARTr [RESTART.RI.RI_CL1 = 7]		RST1(0)	(I)	all interfaces
25	L!RESTART_ACK		RSA5(1, 7)	R	
26	L?RESTARTr (r_bch_num ::= RESTART.CHI.CHI_E3_P4) START TWAIT		RST3(0, 0)	(I)	indicated channels
27	L!RESTART_ACK		RSA2(1)		
28	GOTO L4				
29	?TIMEOUT TWAIT START TAC				
30	L?RESTARTr (r_bch_num ::= RESTART.CHI.CHI_E3_P4) CANCEL TAC		RST3(0, 0)	(I)	indicated channels
31	L!RESTART_ACK		RSA2(1)	R	
32	?TIMEOUT TAC			R	
33	L?OTHERWISE			(F)	
34	[REST = FALSE]	L3			
35	L!REL START TAC		RL3(FL, 16)		valid RELEASE PDU
36	L?REL_COMr CANCEL TAC		RC1(NOT_FL)	R	(1)
37	?TIMEOUT TAC			R	no response
38	+UM59902				unexpected message
39	GOTO L3				
40	L?OTHERWISE			R	invalid event
41	[REST = TRUE]				

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No	Behaviour Description	L	Cref	V	C
42 43	L!RESTART_ACK (REST ::= FALSE) GOTO L3		RSA2(1)		
Extended Comments: (1) Valid RELEASE COMPLETE PDU.					

Annex E (informative): Protocol Implementation eXtra Information for Testing (PIXIT)

E.1 Introduction

In order to test a TE, information relating to the implementation and its testing environment in addition to that provided by the TBR-RT is needed. The form containing such extra information is called a Protocol Implementation eXtra Information for Testing (PIXIT). The PIXIT contained in this annex is intended to provide a standard layout for the provision of such information by suppliers to test laboratories. Test laboratories may choose to ask for further information or to request the information in a different format.

E.2 References

The PIXIT item references, if any, generally are the associated TBR subclause numbers.

E.3 Proforma structure and contents

The PIXIT proformas are tables containing pre-printed text and empty table space intended to be used by the supplier for explanations, specification of details, etc.

The proforma "Environmental Test Conditions" is intended to indicate the environmental conditions to be used during testing.

NOTE: In case no environmental value or range is indicated by the client, the test laboratory should use a value within the ranges pre-printed in the proforma.

E.4 Table/item identification

Each pre-printed item in a PIXIT table is provided with a serial number in the left hand table column called "Item". This provides a unique identifier of the item, distinguishing it from TBR-RT items

E.5 Guidance on completing the PIXIT

For each layer to be tested, the associated PIXIT proformas should be completed by the supplier.

The information provided in the PIXIT should be consistent with information provided in the corresponding TBR-RT.

E.6 Environmental test conditions

Table E.1: Environmental test conditions:

Ambient temperature (range)	Relative humidity range	Power supply	
		Voltage	Frequency
°C	%	V ± %	Hz ± %
If no values / ranges are indicated above, values in the following ranges will be used			
19°C - 25°C for Layer 1 within normal operating conditions for Layers 2 and 3	5 % - 75 %	within ± 5 % of normal operating voltage	within ± 4 % of normal operating frequency
OTHER TEST CONDITIONS (indicate any other condition that may be needed / useful during testing):			

E.7 Layer 1 PIXIT

Table E.2: Procedural information

Item	Reference	Description
E.2.1	B.2	Explain how specific patterns can be transmitted in the B-channels, either by providing a loopback or a 64 kbit/s clear data path to both B-channels. Indicate whether there is any delay before the input is capable of being reproduced at the output without any slips.
E.2.2	9.1.3	If the IUT is to be permanently connected to the network according to subclause 9.1.3, state the signal identification of the wires used for connection and the location of the I_a interface point for the purpose of Layer 1 testing.
E.2.3	9.4.2.3	State how the terminal can be made to initiate activation procedures (Layer 1 receives the PH-ACTIVATE REQUEST primitive).
E.2.4	9.5.3	State how the terminal can be placed in a condition in which the maximum power is drawn from PS1.

(continued)

Table E.2 (concluded): Procedural information

Item	Reference	Description
E.2.5	9.5.3, 9.5.5	If more than one power feeding source can be used as declared in items 1 and 2 of table A.1, state how the IUT can be placed in each of the declared power consumption modes.
E.2.6	9.2.7, 9.2.10, 9.5.4	State how and where the IUT is connected to earth (ground) under normal operating conditions.
E.2.7	B.1.2	Explain how the termination resistor (if implemented) may be disabled.

Table E.3: Implemented values

Item	Reference	Description	Value
E.3.1		State the duration of the selftest.	
E.3.2	9.4.2.4	State the value of the timer T3.	
E.3.3	9.4.2.3	State the value of timer T_APPLI1 which represents the delay needed by the application to establish a call. (Layer 1 is deactivated).	
E.3.4	9.4.2.3	State the value of timer T_APPLI2 which represents the delay needed by the application to clear a call.	
E.3.5	9.4.2.3	State whether the TE initiates automatic TEI assignment immediately after receiving INFO 4 following connection to the network.	
E.3.6	9.4.2.3	State whether the TE implements Case 1 or Case 2 of note 6 of table 9.9. (Only applicable to locally powered TEs with a connection detector.)	
E.3.7	9.5.5.2.1	State the time needed by the TE to reach the operational condition after removal of short circuit for: - normal mode - restricted mode - at low input VOLTAGE	
E.3.8	9.5.5.2.3	State the time needed for the TE to restrict its power consumption after the switch-over from normal mode to restricted mode PS1 (applicable to designated terminals only).	

Table E.4: Supplier's additional information

E.4.1	Indicate any additional information necessary to successfully perform Layer 1 testing.

E.8 Layer 2 PIXIT

Table E.5: Additional Layer 2 information

Item	Reference	Description
E.5.1	10.5.2	If non-automatic TEI assignment is used: - state the TEI value(s) implemented; - explain the operation needed to assign a TEI (note).
E.5.2	10.6.1	Does the IUT, when in state 4 and no I-frames are to be sent, remain in state 4 for more than 6 seconds.
E.5.3	10.6.1	Explain how the transmission of a SABME frame can be invoked by the user:
E.5.4	10.5.2	Explain how the transmission of an identity request frame can be invoked by the user:
NOTE:	Only to be completed if an operator can assign a non-automatic TEI value to the TE.	

Table E.6: Supplier's additional information

E.6.1	Indicate any additional information necessary to successfully perform Layer 2 testing.

E.9 Layer 3 PIXIT

Table E.7: Test co-ordination information

Item.	Reference	Description
If the following procedures are supported on the terminal, explain how they can be invoked by the user.		
E.7.1	11.4.1.1	Initiation of an outgoing call. Where the different options are available, state how to initiate a call - where all Called party number information is present in the SETUP message, and the SETUP message contains the Sending complete information element; - where all Called party number information is present in the SETUP message, and the SETUP message does not contain the Sending complete information element; - where not all Called party number information is present in the SETUP message, and the SETUP message contains the Sending complete information element.
E.7.2	11.4.1.2	Sending additional Called party number information in INFORMATION messages (Overlap sending):
E.7.3	11.4.2.6	Answering of an incoming call. (i.e. sending a CONNECT message.)
E.7.4	11.4.3.3	Initiation of call clearing. (i.e. sending a DISCONNECT message.)
E.7.5	11.4.3.4.1	Continuation of call clearing from the Disconnect Indication state.
E.7.6	11.4.4.1	Call suspension. (i.e. sending a SUSPEND message.)
E.7.7	11.4.4.4	Call re-establishment. (i.e. sending a RESUME message.)

Table E.8: Additional Layer 3 information

Item	Reference	Description
E.8.1	11.1.1.7	If entering state U7, does the terminal remain in that state for at least 3 seconds?
E.8.2	11.1.9	If entering state U9, does the terminal remain in that state for at least 3 seconds?
E.8.3	11.3.5.5	State a value of the Bearer capability used by the terminal in outgoing SETUP messages?
E.8.4	11.3.5.12	Does the terminal include the High layer compatibility information element in outgoing SETUP messages?
E.8.5	11.3.5.13	State a set of contents of the High layer compatibility used by the terminal in outgoing SETUP messages. (Only applicable if answer to E.8.4 is YES).
E.8.6	11.3.5.12	Does the terminal include the Low layer compatibility information element in outgoing SETUP messages?
E.8.7	11.3.5.13	State a set of contents of the Low layer compatibility used by the terminal in outgoing SETUP messages. (Only applicable if answer to E.8.6 is YES).
E.8.8	11.4.2.4, 11.4.2.5.1	Does the terminal support sending of the CALL PROCEEDING PDU?
E.8.9	11.4.2.4, 11.4.2.5.1	Does the terminal support sending of the ALERTING PDU?
E.8.10	11.4.1.5	Does the terminal support sending of the CONNECT ACKNOWLEDGE PDU?
E.8.11	11.3.5.5, 11.4.2.2.1	State a value of the Bearer capability information element which the TE accepts for the purpose of compatibility checking of incoming calls

(continued)

Table E.8 (concluded): Additional Layer 3 information

Item	Reference	Description
E.8.12	11.3.5.5, 11.4.2.2.1	State a value of the Bearer capability information element which the TE rejects for the purpose of compatibility checking of incoming calls. (Only applicable if the answer to A16.4 or A16.5 is YES)
E.8.13	11.3.5.12, 11.4.2.2.1	State a value of the High layer compatibility information element which the TE accepts for the purpose of compatibility checking of incoming calls
E.8.14	11.3.5.12, 11.4.2.2.1	State a value of the High layer compatibility information element which the TE rejects for the purpose of compatibility checking of incoming calls. (Only applicable if the answer to A16.6 is YES)
E.8.15	11.3.5.13, 11.4.2.2.1	State a value of the Low layer compatibility information element which the TE accepts for the purpose of compatibility checking of incoming calls. (Only applicable if the answer to A16.7 is YES)
E.8.16	11.3.5.13, 11.4.2.2.1	State a value of the Low layer compatibility information element which the TE rejects for the purpose of compatibility checking of incoming calls. (Only applicable if the answer to A16.7 is YES)
E.8.17	11.3.5.8, 11.4.2.2.2	State a value of the Called party number information element which the TE accepts for the purpose of address checking of incoming calls
E.8.18	11.3.5.8, 11.4.2.2.2	State a value of the Called party number information element which the TE rejects for the purpose of address checking of incoming calls. (Only applicable if the answer to A16.8 is YES)
E.8.19	11.3.5.9, 11.4.2.2.2	State a value of the Called party subaddress information element which the TE accepts for the purpose of address checking of incoming calls. (Only applicable if the answer to A16.8 is YES)
E.8.20	11.3.5.9, 11.4.2.2.2	State a value of the Called party subaddress information element which the TE rejects for the purpose of address checking of incoming calls
E.8.21	11.2.14	State any other optional information element contents which are necessary for the terminal to accept an incoming call.

Annex F (informative): Justifications for the requirements in the TBR

F.1 Principles applicable to the whole TBR

F.1.1 General principles

The following general principles form the basis of whether a requirement is essential.

1) The only point at which conformance with the TBR is monitored is the network interface. Internal implementation of the TE is not constrained in any way. The network interface is described as a "Point of Control and Observation" (PCO) in ISO 9646. ISO 9646 stresses that the addition of a second PCO would, in effect, be the addition of a requirement on the equipment under test to provide it.

2) Other interfaces (e.g. an interface for connection of other equipment, or the man-machine interface) may be used to stimulate the TE into performing actions whose effects at the user-network interface are monitored (i.e. such other interfaces may be used for control but not for observation).

3) The TE does not interwork with the network in the B-channels for the purpose of setting up, clearing, etc, or virtual connections as described in Article 4 (f). Therefore, requirements relating to B-channels in the base standards are not included in the TBR. The TE uses the B-channels to interwork with the distant TE **via** the network. This is an Article 4 (g) issue which is outside the scope of this TBR and is the subject of Terminal TBRs such as TBR 8. This TBR therefore includes no requirement for the TE to be capable of any meaningful exchange of information in the B-channel of a call in the Active state.

F.1.2 Requirements versus definitions

Generally, clauses that describe a state, frame, field, message, information element or system parameter are classed as definitions. Such definitions have only been included in the TBR where they are referred to, either directly or via other definitions, by essential requirements. These definitions are in addition to those included within clause 3 of the TBR.

Clauses that specify a change of state within the TE or an exchange of information across the interface are classed as requirements. The information exchanged by the TE is usually described by the definitions referred to above.

Only requirements have test cases attached to them, and only requirements are listed in the TBR-RT. Definitions are not testable *per se*.

F.1.3 Error conditions

The TBR assumes that (except for bit errors arising during transmission of the signal to the TE from the public exchange) the network operates without error according to the base standards. This has an effect on whether certain requirements of the base standard (particularly at Layers 2 and 3) are essential. The principle followed is that where the base standard requires a specific response on the user side to a message which the network side is not permitted to send, the requirement is generally considered not to be essential.

In most cases, the requirements affected are those for the handling of various kinds of messages containing content errors from the network. However, some other requirements are also affected. These are listed individually in the tables below.

Nevertheless, some Layer 3 error condition requirements from subclause 5.8 of ETS 300 102-1 have been retained in the TBR to account for the following possibilities:

- implementation in the network of an already defined supplementary service not supported by the TE;

- implementation in the network of a more recent version of ETS 300 102 than the one on which this TBR is based;

- implementation in the network of a supplementary service not yet defined. This is difficult to determine for certain. However, there are a number of fairly well-established guidelines concerning the drafting of DSS1 protocols for supplementary services, and it can be stated with some certainty that certain message types will not be used in the definition of supplementary services.

In general, the intention is to provide a reasonable degree of "future-proofing" of the terminal, to ensure that it remains compatible with reasonably foreseeable evolutions of the network.

F.1.4 General editorial changes to text from the base standards

The following general changes have been made when including text from the base standards within this TBR:

- deletion of requirements and definitions applicable only to the network side;
- deletion of the words "ETSI requirement" wherever they occur;
- editorial changes to express text using the correct modal auxiliary verbs (i.e. using "is" for definitions, and "shall" for requirements);
- replacement of "this ETS" or "this Recommendation" with "this TBR" wherever appropriate;
- at the end of every requirement, relevant test cases are indicated;
- deletion of the word "optional(ly)" in expressions like "may optionally";
- deletion of references to deleted clauses and annexes.

F.1.5 Detailed list of changes with respect to the base standards

Detailed changes to requirements of individual clauses of the base standards are given in a series of tables below. The format of the tables is as follows.

The first column contains the clause number and clause title of the clause of the base standard.

The second column contains the clause number of this TBR which contains text on the same subject.

The third column contains the following:

- an "X" if no text from that clause has been included in the TBR;
- an "H" if the clause includes no text of its own, but is only clause heading for subclauses;
- a "D" if text has been included as a definition;
- an "I" if text has been included as a note or as introductory text to subsequent clauses;
- a reference to one or more paragraphs of Article 4 of Directive 91/263/EEC if text has been included as a requirement. The reference is to the paragraph of the Directive under which the requirement is justified.

The fourth column includes any comment particular to that clause, including:

- for requirements, a justification for the clause being regarded as essential;
- a justification for changes made compared to the base standard. In particular, any technical changes (as opposed to merely editorial) are highlighted.

General changes in accordance with the principles described above are not listed on an individual basis.

F.1.6 Untested requirements

Certain requirements which have been regarded as essential, are not accompanied by a test. The reason for the absence of a test is generally that the requirement was not included in the NETs, that a test method is therefore not readily available, and that time and resources did not permit the development of a new test. Notes have been included in the affected requirements clauses, indicating which requirements are untested. A second edition of the TBR may result in such tests being included.

F.1.7 Primitives

The following principles have been used to determine which primitives are essential, and how the essential primitives should be tested.

1) A primitive is conceptual and internal to the TE. The issue of a primitive at one layer, and the corresponding response (internal or external) at the adjacent layer is essential if, and only if, it is part of a process in which the external response to an external stimulus is essential.

   The use of a particular primitive may be essential in relation to one external stimulus, but not in relation to another. The external stimulus and the external response are not necessarily at adjacent layers.

2) The network interface is the only Point of Control and Observation (PCO) for determining the result of a test.

3) Points in addition to, or instead of, the network interface may be used for the stimulus of a TE during testing.

4) Internal implementation of primitives is not essential and not tested.

It was agreed to include the primitives within the TBR in order to describe the necessary interactions between layers of the protocol.

Consensus could not be reached on which requirements for specific interactions between Layers 1 and 2 are essential. The principle issues are as follows.

PH-ACTIVATE INDICATION

Although there is a full specification at Layer 1 of the circumstances in which the primitive is issued, there is no requirement in ETS 300 125 for actions on receipt of it. However, it is clear that Layers 2 and 3 cannot operate at all unless the activation of Layer 1 has been detected. At basic access, the relevant tests have been included from the CTS test suite, which is intended for adoption by ETSI as an ETS.

PH-DEACTIVATE INDICATION

There is a full specification at Layer 1 of the circumstances in which the primitive is issued. There are also requirements in ETS 300 125 for specific responses in certain states to "persistent deactivation". Tests from the CTS test suite have been included. A minority opinion was that, since there is no means of testing the actions on deactivation until re-activation has been achieved, and no specific requirement to recognise re-activation (see PH-ACTIVATE INDICATION above), that any test involves the testing of requirements not included within the TBR.

PH-ACTIVATE REQUEST

The action by Layer 1 on receipt of PH-AR is fully specified in ETS 300 012. ETS 300 125 includes no statements concerning the circumstances in which the primitive shall be issued. However, it is clearly necessary for Layer 2 to be capable of causing Layer 1 to activate, in order to make an outgoing call on an interface which has been deactivated. The circumstances have been left unspecified, and a PIXIT question included within the TBR concerning how to cause the TE to initiate activation.

MPH-INFORMATION INDICATION

Where a basic access TE supports automatic TEI assignment and is locally powered with a connection detector, one of the circumstances in which an MPH-INFORMATION INDICATION (disconnected) primitive is issued is on disconnection of the TE from the access. ETS 300 125 requires that receipt of that primitive results in the TE entering the TEI unassigned state. If the TE does not do this, there is some risk that duplicate TEI assignment may occur on reconnection of the TE to the same or a different basic access operating in a multipoint configuration. Duplicate TEI assignment may cause a call in process of being set up to fail. On this basis the requirement was considered essential by part of the steering group.

The opposite opinion was expressed by others to the effect that loss of calls occurs in these circumstances only when:

a) a TE not implementing the requirement is disconnected from one basic access and connected to another, and
b) there is another TE already connected to the second access, and
c) it is using the same TEI, and
d) it is in process of setting up a call at the moment that the other TE first signals the presence of its TEI, or is in the active state and responds by clearing the call internally.

If the duplicate TEI assignment occurs, then the existing Layer 2 management procedures will recover the situation without further loss of calls, and without the need for manual intervention. The same thing occurs if a locally powered terminal without a connection detector is disconnected and reconnected, because the absence of the connection detector means that the Layer 1 does not issue the MPH-II(d) primitive. Finally, the connection of a TE of the non-automatic TEI assignment category, with or without a connection detector, may result in duplicate TEI assignment which is not recoverable without manual intervention. This is not prohibited by the TBR.

In accordance with an agreement of the steering group, the requirement was included in the TBR, this being the default situation in the absence of consensus on certain issues.

MPH-ERROR INDICATION

No requirements for action on receipt of these primitives exists. The primitives have therefore been excluded from the TBR.

Specific exchanges of primitives between Layers 2 and 3 are not generally essential. See the reference to ETS 300 102-1, subclauses 5.8.8. and 5.8.9 below for details.

F.1.8 Supplementary services

Although a large number of supplementary services have been included within the scope of this TBR, this has not resulted in the addition of any further essential requirements. The main issues considered when coming to this conclusion are as follows.

B-channels

The ability to successfully select a B-channel during the initiation of a basic call is essential, because failure to select a B-channel may result in a basic call failure.

The ability to communicate in the selected B-channel is not tested and is not an essential requirement within Articles 4(c) to 4(f). Therefore the manipulation of the B-channel by supplementary services, causing communication to be interrupted and resumed, are not essential.

For justified cases, such ability may be essential within Article 4 (g). Article 4 (g) however is outside the scope of this TBR.

Operation of Supplementary services

For many supplementary services, most of the extra requirements are implemented by the networks. There is often little or no extra requirement applicable to the user side.

Basic Call states

The supplementary services do not affect the Call State as defined in ETS 300 102-1 by any methods other than those described in the requirements for Basic Call. No new requirements therefore need to be defined in this respect.

Auxiliary states and supplementary service states

Often the supplementary services define "auxiliary states" and "supplementary service states" which can be entered independently or semi-independantly of the Call State.

Supplementary services which do not affect the Call State are considered by definition not to be processing calls within the meaning of Article 4 (f).

Messages used in supplementary services

Messages (such as FACILITY or NOTIFY) and information elements (such as Facility or Notification indicator) do not affect the Basic Call. There are therefore no essential requirements which specify the circumstances in which such messages are sent by the TE. The TBR and test suites are intended to provide complete freedom for the use by the terminal of these messages.

Exceptional procedures

Several of the supplementary services modify the requirements of ETS 300 102-1, subclause 5.8, in respect of exceptional procedures. As far as possible, the requirements for operation in response to exceptional procedures included and tested in the TBR are consistent with the terminal's implementation of any one or more supplementary services.

F.1.9 Article 4(e) of the Directive

There are no requirements in the TBR justified under Article 4(e) because the access does not make use of the radio spectrum. However, Article 4(e) is included within the scope of the TBR, to make it clear that no other TBRs or other standards exist containing additional requirements under Article 4(e) applicable to TEs within the scope of this TBR.

F.2 Changes with respect to ETS 300 012

F.2.1 Layer 1 general principles

The following general principles are followed in these requirements:

- all TEs powered from PS1 operate during normal power conditions;

- designated TEs powered from PS1 operate during normal and restricted power conditions;

- non-designated TEs powered from PS1 do not disturb the operation of designated TEs during restricted power conditions;

- locally powered TEs operate during normal and restricted power conditions.

F.2.2 Layer 1 tests

Some tests in ETS 300 012 require either the availability of a loopback 4, or a 64 kbit/s clear data path between each B-channel and an auxiliary port, in order to monitor the ability of the TE to operate without errors. The tests which use this feature include:

- binary organisation of frame;

- pulse amplitude;

- receiver sensitivity - noise and distortion immunity;

- TE transmitter output impedance.

There was some discussion concerning whether these test methods were appropriate to an access TBR for the following reasons:

- they measured the ability of the TE to interwork with the network in the B-channels, which is not an essential requirement in principle (see above);

- they required, for some types of TE, the provision of modifications to the TE solely to enable the test to be completed. Examples of such TEs include voice-only ISDN telephones, and TEs only having access to one of the B-channels.

The majority opinion was that tests should be retained unchanged because:

a) the relevant requirements are essential;

b) test equipment already exists for the tests in the ETS;

c) test equipment might not be available in the short term for modified tests;

d) existing standard chipsets already support loopback 4;

e) TE manufacturers are already accustomed to providing the test facility because it is already required by NET 3.

The tests have therefore been included within the TBR largely unmodified, except that the tests should not be carried out until the TE has reached a stable state in which no frame slips occur between the input and output connections for the test. This is because the existence of slips was agreed to be acceptable in principle, and the test equipment is not capable of distinguishing between a slip and a bit error.

F.2.3 Protection requirements

The requirements of clause 8 limit the common mode and transverse mode voltages at the TE output to the levels to which the network interface presentation is protected from electrical damage. Any voltages in excess of those specified could cause harm to the network (Article 4 (d)). Other requirements from ETS 300 047-3 [3] are concerned with protection of the terminal and are therefore outside the scope of this TBR.

F.2.4 Detailed list of changes with respect to ETS 300 012

Table F.1: Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
Foreword		X	The TBR contains its own foreword.
1 Scope		X	The TBR contains its own scope.
2 Normative references		X	The TBR contains its own list of Normative references.
3 Definitions	3.1	D	Appropriate definitions are included as necessary within the TBR.
4 Abbreviations and symbols	3.2 & 3.3	D	Appropriate abbreviations and symbols are included as necessary within the TBR.
5 Conformance		X	Subject addressed within the TBR-RT.
6 Requirements		X	Dealt with in more detail under annex A of the ETS.
7 Additional requirements		X	Informative only with respect to the TBR.
7.1 Limitations on power source and sink during transient conditions		H	
7.1.1 Current/time limitations for TEs	9.5.5.1	4f & 4d	All TEs should conform to this requirement in order that the current/time characteristic of a TE on connected to the bus is controlled sufficiently to allow a group of TEs to co-operate with each other on the bus and interwork with the network. Extreme current consumption may damage the NT1.
7.1.2 Power source switch-over		H	
7.1.2.1 Power source switch-over time		X	Applicable to the NT1. Reference to the 5 ms worst case switch-over time is included within subclause B.5.4.6.1.
7.1.2.2 Restricted mode power source requirements under overload conditions		X	Applicable to the NT1.
7.1.3 Other TE requirements		H	

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
7.1.3.1 Minimum TE start up current	9.5.5.2.1	4f	It is necessary ensure that the TE will actually reach operational condition in which it can make and receive calls when fed with the minimum power which can be guaranteed in a worst-case multipoint configuration, in normal and/or restricted power conditions as appropriate. In ETS 300 012, figure 3 the short-circuit between the terminals of the TE IUT is deleted.
7.1.3.2 Protection against short term interruptions	9.5.5.2.2	4f	A short duration interruption may occur for example as a result of attaching another terminal to the bus, as it powers up, and it is essential that the operation of the TE is not disturbed under such conditions.
7.1.3.3 Behaviour at the switch-over	9.5.5.2.3	4f	Essential that a designated TE be able to operate during a switchover to restricted power and back.
7.1.4 Other power source requirements		H	
7.1.4.1 PS1 restricted		X	Applicable to the NT1.
7.1.4.2 PS1 normal		X	Applicable to the NT1.
7.1.4.3 Requirements for type (a) sources		X	Applicable to the NT1.
7.1.4.4 Requirements for both types of sources		X	Applicable to the NT1.
7.2 Current unbalance		H	
7.2.1 Direct current unbalance		X	Informative only.
7.2.1.1 dc unbalance of PS1		X	Applicable to the NT1.
7.2.1.2 dc unbalance of power sink 1	9.5.5.3.1	4d & 4f	A significant dc unbalance of the power sink may affect the ability of this and other TEs to operate correctly, by taking the dc unbalance outside the range of characteristics tolerated by subclause 7.2.2.
7.2.1.3 Differential resistance in a pair of the installation wiring		X	Applicable to the bus wiring.
7.2.2 Current unbalance in a pair	9.5.5.3.2	4d & 4f	Necessary to tolerate a degree of dc unbalance generated by the NT, other TEs and asymmetries in the bus wiring. Final paragraph not included, as it applies to the NT.
7.3 Additional requirements for an Auxiliary Power Supply (APS)		X	APS is not within the scope of the TBR.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
7.4 Additional requirements for NT1 restricted mode source for compatibility with an APS		X	Applicable to the NT1.
Annex A (normative)		X	The text of the requirements is included directly within the TBR.
A.2 Service characteristics		H	
A.2.1 Services required from the physical medium		X	Informative only.
A.2.2 Service provided to Layer 2		X	Informative only.
A.2.2.1 Transmission capability		X	Informative only.
A.2.2.2 Activation/deactivation		X	Informative only.
A.2.2.3 D-channel access		X	Informative only.
A.2.2.4 Maintenance		X	Informative only.
A.2.2.5 Status indication		X	Informative only.
A.2.3 Primitives between Layer 1 and the other entities		X	Informative only.
A.3 Modes of operation		X	Informative only.
A.3.1 Point-to-point operation		X	Informative only.
A.3.2 Point-to-multipoint operation		X	Informative only.
A.4 Types of wiring configuration		X	Informative only.
A.4.1 Point-to-point configuration		X	Informative only.
A.4.2 Point-to-multipoint configuration		X	Informative only.
A.4.3 Wiring polarity integrity		X	The ability to operate in the presence of a wiring polarity reversal is not considered essential, because correction of the wiring installation will permit the TE to interwork with the network.
A.4.4 Location of the interfaces		X	Addressed by subclause 9.1 of the TBR.
A.4.5 NT and TE associated wiring		X	Addressed by subclause 9.1 of the TBR.
A.5 Functional characteristics		X	Informative only.
A.5.1 Interface functions		H	
A.5.1.1 B-Channel		X	
A.5.1.2 Bit timing		X	Addressed in more detail elsewhere.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.5.1.3 Octet timing		X	Addressed in more detail elsewhere.
A.5.1.4 Frame alignment		X	Addressed in more detail elsewhere.
A.5.1.5 D-Channel		X	Addressed in more detail elsewhere.
A.5.1.6 D-Channel access procedure		X	Addressed in more detail elsewhere.
A.5.1.7 Power feeding		X	Addressed in more detail elsewhere.
A.5.1.8 Deactivation		X	Addressed in more detail elsewhere.
A.5.1.9 Activation		X	Addressed in more detail elsewhere.
A.5.2 Interchange circuits		X	Addressed in more detail elsewhere.
A.5.3 Connected/disconnected indication		X	Addressed in more detail elsewhere.
A.5.3.1 TEs powered across the interface	9.4.2.3.1	D	Needed to explain the operation of the state matrix tables.
A.5.3.2 TEs not powered across the interface	9.4.2.3.1	D	Needed to explain the operation of the state matrix tables.
A.5.3.3 Indication of connection status		D	Needed to explain the operation of the state matrix tables.
A.5.4 Frame structure		X	Addressed in more detail elsewhere.
A.5.4.1 Bit rate		X	Addressed in more detail elsewhere.
A.5.4.2 Binary organisation of the frame	9.3.1	4f	It is necessary for the Layer 1 frames to be correctly organised, otherwise no higher layer functions for the support of call handling are possible.
A.5.4.2.1 TE to NT	9.3.1.1	4f	It is necessary for the Layer 1 frames to be correctly organised, otherwise no higher layer functions for the support of call handling are possible.
A.5.4.2.2 NT to TE	9.3.1.2	D	
A.5.4.2.3 Relative bit positions	9.3.1.3	4f	It is necessary for the Layer 1 frames to be correctly organised, otherwise no higher layer functions for the support of call handling is possible.
A.5.5 Line code	9.3.2	4f	It is necessary for the Layer 1 frames to be correctly organised, otherwise no higher layer functions for the support of call handling is possible.
A.5.6 Timing considerations		X	Addressed in more detail elsewhere.
A.6 Interface procedures		H	
A.6.1 D-Channel access procedure		H	
A.6.1.1 Interframe (Layer 2) time fill	9.4.1.1	4d	Failure to send binary ONEs in the D-channel will prevent other TEs from accessing the D-channel to make calls.
A.6.1.2 D-echo-channel		X	Applicable to the NT.
A.6.1.3 D-Channel monitoring	9.4.1.2	4d	Included within subclause 9.4.1.2

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.6.1.4 Priority mechanism	9.4.1.2	4d	Necessary to enable a number of TEs to share the D-channel in a multipoint configuration.
A.6.1.5 Collision detection	9.4.1.3	4d	Necessary to enable a number of TEs to share the D-channel in a multipoint configuration.
A.6.1.6 Priority system		X	Informative only.
A.6.2 Activation/deactivation		H	
A.6.2.1 Definitions		H	
A.6.2.1.1 TE states		H	
A.6.2.1.1.1 State F1	9.4.2.1.1	D	
A.6.2.1.1.2 State F2	9.4.2.1.2	D	
A.6.2.1.1.3 State F3	9.4.2.1.3	D	
A.6.2.1.1.4 State F4	9.4.2.1.4	D	
A.6.2.1.1.5 State F5	9.4.2.1.5	D	
A.6.2.1.1.6 State F6	9.4.2.1.6	D	
A.6.2.1.1.7 State F7	9.4.2.1.7	D	
A.6.2.1.1.8 State F8	9.4.2.1.8	D	
A.6.2.1.2 NT states		X	Applicable to the NT.
A.6.2.1.3 Activate primitives		X	Using definitions from ETS 300 125.
A.6.2.1.4 Deactivate primitives		X	Using definitions from ETS 300 125.
A.6.2.1.5 Management primitives		X	Using definitions from ETS 300 125.
A.6.2.1.6 Valid primitive sequences		X	Informative only.
A.6.2.2 Signals	9.4.2.2	D	
A.6.2.3 Activation/deactivation procedure for TEs		H	
A.6.2.3.1 General TE procedures		X	Addressed in more detail in subclause A.6.2.3.2. (as stated in subclause A.6.2.3.1 itself).
A.6.2.3.2 Specification of the procedure	9.4.2.3.1	4f	Necessary to be able to activate and deactivate correctly in response to internal and external stimuli, in order to carry higher layer services. Edited to make clear which state matrix tables are applicable under which circumstances.
A.6.2.4 Activation/deactivation for NTs		X	
A.6.2.4.1 Activating/deactivating NTs		X	Applicable to the NT.
A.6.2.4.2 Non-activating/non-deactivating NTs		X	Applicable to the NT.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.6.2.5 Timer values	9.4.2.3.2	4f	Worst case value of T3 is included. Necessary as part of deactivation procedures to signal a persistent Layer 1 deactivation to Layer 2. NT timers not included.
A.6.2.6 Activation times		H	
A.6.2.6.1 TE activation times	9.4.2.4	4f	An integral part of the Layer 1 activation/deactivation procedures necessary to support the higher layer services.
A.6.2.6.2 NT activation times		D	Applicable to the NT.
A.6.2.7 Deactivation times	9.4.2.5	4f	It is an integral part of the Layer 1 Activation/deactivation procedures necessary to support the higher layer services. Second paragraph not included, applicable to the NT.
A.6.3 Frame alignment procedure	9.3.1.2	D	14 bit criterion included with description of NT to TE frame structure.
A.6.3.1 Frame alignment procedure in the direction NT to TE		X	Addressed in more detail in subclause A.6.2.6.1.
A.6.3.1.1 Loss of frame alignment	9.4.3	4d, 4f	Higher layer functions cannot be carried across the interface in the absence of frame alignment. Also, if a TE loses frame alignment, it may transmit frames with an incorrect offset from the received frames, disturbing the operation of other TEs on the bus.
A.6.3.1.2 Frame alignment	9.4.3	4f	Higher layer functions cannot be carried across the interface unless frame alignment is re-acquired.
A.6.3.2 Frame alignment procedure in the direction TE to NT		X	Applicable to the NT.
A.6.3.2.1 Loss of frame alignment		X	Applicable to the NT.
A.6.3.2.2 Frame alignment		X	Applicable to the NT.
A.6.3.3 Multiframing	9.4.4	4f	Requirement on the TE to echo the F_A bits included. Failure to do so may confuse the NT and cause loss of service through loss of frame alignment. Remainder of text not included as it is applicable to the NT. In Euro-ISDN, the NT1 does not implement multiframing, therefore the F_A bit will always be binary ZERO. In theory, the TE need only be tested with a stimulus of F_A = ZERO. However, the requirement to echo both values of F_A has been included avoid compatibility problems in the event of multiframing being implemented on the Euro-ISDN at some time in the future.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.6.3.3.1 General mechanism		X	Multiframing not implemented.
A.6.3.3.2 Q-bit position identification algorithm		X	Multiframing not implemented.
A.6.3.3.3 TE multi-frame identification A.6.3.4 S-bit channel structuring algorithm		X X	Multiframing not implemented. S-channel not implemented.
A.6.4 Idle channel code on the B-channels	9.4.5	4d	Necessary in order to avoid interference with other terminals on a multipoint configuration.
A.7 Layer 1 maintenance		X	Informative only.
A.8 Electrical characteristics		H	
A.8.1 Bit rate		H	
A.8.1.1 Nominal bit rate	9.2.1	4f	Subclauses A.8.1.1 and A.8.1.2 are necessary so that the NT can guarantee detection of INFO 1 in order to activate the link.
A.8.1.2 Tolerance	9.2.1	4f	See subclause A.8.1.1.
A.8.2 Jitter and bit phase relationship between TE input and output		H	
A.8.2.1 Test configurations	9.2.2.1	D	Necessary in order to make sense of subsequent requirements.
A.8.2.2 Timing extraction jitter	9.2.2.2	4f	Necessary to ensure that jitter is limited to guarantee that the NT can maintain frame alignment.
A.8.2.3 Total phase deviation input to output	9.2.2.3	4d, 4f	Necessary to guarantee that the NT can maintain frame alignment, and to prevent phase deviations sufficient to interfere with the operation of other terminals. The text concerning the simplified test method is not included, since it is not reflected in the test method used. Input clock range reduced to ± 1 ppm from ± 100 ppm, to reflect the actual clock accuracy of the network at the T and S/T reference points.
A.8.3 NT jitter characteristics		X	Maximum NT jitter is included as part of the test conditions for TE total phase deviation input to output (see above).
A.8.4 Termination of the line		X	Applicable to the NT and wiring.
A.8.5 Transmitter output characteristics		H	
A.8.5.1 Transmitter output impedance		X	Merely contains mention of the measurement point. Addressed in more detail elsewhere.
A.8.5.1.1 NT transmitter output impedance		X	Applicable to the NT.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.8.5.1.2 TE transmitter output impedance	9.2.3	4d	(a) is necessary to ensure that the transmit pair does not load the line so much as to distort the binary ZEROs from other TEs, Article 4 (d). (b) is necessary to limit multiple reflections at the TE output. The two test load impedances apply as follows. 50 ohms is used to simulate the normal case of a single TE transmitting a binary ZERO onto the bus. 400 ohms is used to simulate the case of a TE transmitting a binary zero at the same time as one or more other TEs are also transmitting binary ZEROs of the same polarity onto the bus.
A.8.5.2 Test load impedance		X	The test load impedance is referred to elsewhere.
A.8.5.3 Pulse shape and amplitude (binary ZERO)		H	
A.8.5.3.1 Pulse shape	9.2.4	4f	Necessary in order to ensure that the NT can correctly receive pulses.
A.8.5.3.2 Nominal pulse amplitude	9.2.4	4f	Necessary in order to ensure that the NT can correctly receive pulses.
A.8.5.4 Pulse unbalance		X	Informative only.
A.8.5.4.1 Pulse amplitude when transmitting a high density pattern	9.2.5.1	4f	Necessary in order to ensure that the NT can correctly receive pulses.
A.8.5.4.2 "Pulse unbalance of an isolated couple of pulses	9.2.5.2	4f	Necessary in order to ensure that the NT can correctly receive pulses.
A.8.5.5 Voltage on other test loads (TE only)	9.2.6	H	The following requirements are intended to assure compatibility with the condition where multiple TEs are simultaneously transmitting pulses on a passive bus.
A.8.5.5.1 400 Ohm load	9.2.6.1	4d	Necessary to ensure that multiple terminals can work off the same bus.
A.8.5.5.2 5.6 Ohm load	9.2.6.2	4d	Necessary to ensure that multiple terminals can work off the same bus. The requirement limits the current flow if two terminals simultaneously transmit a binary ZERO of opposite polarities.
A.8.5.6 Unbalance about earth		X	Informative only.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.8.5.6.1 Longitudinal conversion loss	9.2.7	4f	Necessary to limit the longitudinal voltages transmitted by the TE to values below those which the NT is required to receive without causing bit errors. The requirement is essential for transmission aspects - assymetrical line signal, coupling by crosstalk to the receivers, eye opening of the received signal, but for frequencies higher than 300 kHz up to 1 MHz the requirement is deleted as EMC requirements cover the LCL requirements implicitly. For transmission aspects the parts of the frequency spectrum containing most signal power are the most important.
A.8.5.6.2 Output signal balance		X	Not required in ETS 300 012. Any requirements are within the scope of the EMC directive.
A.8.6 Receiver input characteristics		H	
A.8.6.1 Receiver input impedance		H	
A.8.6.1.1 TE receiver input impedance	9.2.8	4f	Same reasons as for subclause A.8.5.1.2 a).
A.8.6.1.2 NT receiver input impedance		X	Applicable to the NT.
A.8.6.2 Receiver sensitivity - Noise and distortion immunity		X	Covered in more detail in subclause A.8.6.2.1
A.8.6.2.1 TEs	9.2.9	4f	In principle the input signal of the IUT has to be specified but the problem is that the test is performed with a cable simulator between the network simulator and the IUT. The test signal at the output of the cable simulator is attenuated and distorted according to the different test configurations (1) to (4) used. Therefore the requirement has been re-phrased so that the signal received at the TE, instead of having its waveform specified directly, depends on descriptions of the NT output signal and test configurations used, and on the TEs input characteristics (e.g. impedance).
A.8.6.2.2 NTs for short passive bus (fixed timing)		X	Applicable to the NT.
A.8.6.2.3 NTs for both point-to-point and short passive bus configurations (adaptive timing)		X	Applicable to the NT.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.8.6.2.4 NTs for extended passive bus wiring configurations		X	Applicable to the NT.
A.8.6.2.5 NTs for point-to-point configurations only		X	Applicable to the NT.
A.8.6.3 NT receiver input delay characteristics		X	Applicable to the NT.
A.8.6.3.1 NT for short passive bus		X	Applicable to the NT.
A.8.6.3.2 NT for both point-to-point and passive bus		X	Applicable to the NT.
A.8.6.3.3 NT for extended passive bus		X	Applicable to the NT.
A.8.6.3.4 NT for point-to-point only		X	Applicable to the NT.
A.8.6.4 Unbalance about earth	9.2.10	4f	Necessary to ensure that the signal balance about earth remains sufficiently good to prevent longitudinal voltages being induced onto the bus. The requirement is essential for transmission aspects - assymetrical line signal, coupling by crosstalk to the receivers, eye opening of the received signal, but for frequencies higher than 300 kHz up to 1 MHz the requirement is deleted as EMC requirements cover the LCL requirements implicitly. For transmission aspects the parts of the frequency spectrum containing most signal power are the most important.
A.8.7 Isolation from external voltages		X	Safety requirements addressed under the LVD.
A.8.8 Interconnecting media characteristics		X	Applicable to the cable, not the TE.
A.8.9 Standard ISDN basic access TE cord	9.1.4	D	Included as a definition for test purposes.
A.9 Power feeding		X	First paragraph repeats text in clause B.5. Remainder of text informative only.
A.9.1 Reference configuration	9.1	D	Figure 20/CCITT Recommendation I.430 [1] retained to indicate the PS1 configuration, including the fact that restricted power condition is signalled by a polarity reversal. Remainder of text informative only.
A.9.1.1 Functions specified at the access leads	9.5.1	D	Some text retained to explain the pin assignments of figure 20/CCITT Recommendation I.430 [1].
A.9.1.2 Provision of power sources and sinks		X	No requirement on the TE.

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.9.2 Power available from NT		X	Applicable to the NT.
A.9.2.1 PS1 normal and restricted power conditions		X	Applicable to the NT.
A.9.2.2 Minimum voltage at NT from PS1		X	Applicable to the NT.
A.9.2.2.1 Normal power conditions		X	Applicable to the NT.
A.9.2.2.2 Restricted power conditions		X	Applicable to the NT.
A.9.2.3 Minimum voltage of PS2		X	Applicable to the NT.
A.9.3 Power available at TE		H	
A.9.3.1 PS1 - phantom mode		H	
A.9.3.1.1 Normal power conditions	9.5.1	D	
A.9.3.1.2 Restricted power conditions	9.5.1	D	
A.9.3.2 Power source 2 - optional third pair		X	PS2 outside the scope of the TBR.
A.9.3.2.1 Normal power conditions		X	PS2 outside the scope of the TBR.
A.9.3.2.2 Restricted power conditions		X	PS2 outside the scope of the TBR.
A.9.4 Current transient	9.5.2	4d	Necessary to minimise power disturbances which would disturb other TEs or the NT.
A.9.5 PS1 consumption		X	Informative only.
A.9.5.1 Normal power conditions	9.5.3.1	4d	Necessary to ensure that the TE power consumption is such as to permit a number of TEs to be powered from the bus. Text modified to make normative reference to table 8/CCITT Recommendation I.430 [1].
A.9.5.2 Restricted power conditions		H	

Table F.1 (continued): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
A.9.5.2.1 Power available to the TE "designated" for restricted power operation	9.5.3.2.1	4f	Necessary to restrict power usage in restricted power mode so that interworking of a designated terminal with the NT can continue. Text modified to make normative reference to table 8/CCITT Recommendation I.430 [1].
A.9.5.2.2 Power available to "non-designated" TEs	9.5.3.2.2	4d	Necessary to ensure that non-designated TEs do not consume sufficient power to disturb the operation of a designated TE in restricted power conditions. Text modified to make normative reference to table 8/CCITT Recommendation I.430 [1].
A.9.6 Galvanic isolation	9.5.4	4d, 4f	Necessary to prevent earth loops that would cause dc imbalances that would affect operation of the TE or other TEs. Requirement written in terms of earth current leakage limit of 100 µA. New test written.
A.10 Interface connector contact assignments	9.1	4f	Essential to provide a means of connection. Alternative connection methods also offered.
Annex A Wiring configurations and round trip delay considerations used as a basis for electrical characteristics		X	Informative only.
Annex B SDL representation of a possible implementation of the D-channel access		X	Informative only.
Annex C SDL representation of activation/deactivation procedures for TEs which can detect PS1 or power source 2		4f	Tables C.1 and C.2 have been included. The remainder of the annex is informative only.
Annex D Test configurations		X	See subclause A.8.2.1.
Annex E Vocabulary of terms used in connection with CCITT Recommendations I.430 [1], I.431, G.960 and G.961		X	Informative only.
Appendix I test loopbacks for the basic user-network interface		X	Informative only.
Annex B (normative): Additional requirements applicable to the (explicit) S reference point		X	Outside the scope of the TBR, which only addresses the T and coincident S/T reference points.

Table F.1 (concluded): Changes with respect to ETS 300 012

Clause of ETS 300 012	Clause of TBR 3	Status	Justification
Annex C (informative): TE design to minimise power disturbance	9.5.5.1	4f	Alternative to the power feeding requirements of clause 7.
Annex D (normative): Conformance test principles to Interface Point I_a	Annex B		Tests included as far as requirements are essential.

F.3 Changes with respect to ETS 300 125

F.3.1 General

The September 1991 edition of ETS 300 125 has been used as the basis for the Layer 2 requirements in this TBR. The changes made in the draft revision were taken into account wherever appropriate. It is intended that apparatus conforming to either version of ETS 300 125 will conform to this TBR.

F.3.2 Layer 2 response time

ETS 300 125 contains several clauses where a response is required "as soon as possible". ETS 300 125 does not specify how soon "as soon as possible" is. ETS 300 153, subclause 9.4 specifies "Layer 2 response time", consisting of a number of elements including "Layer 2 processing time" which is specified to be no more that 200 ms.

If the Layer 2 response time is some unreasonably long time, such as 15 s, then the network, on attempting to establish multiple frame operation, will:

- send an SABME and start T200;
- retransmit the SABME N200 times on expiry of T200;
- enter the TEI assigned state.

Multiple frame operation is therefore impossible to achieve. This prevents the processing of calls in accordance with Article 4 (f). Some limit to Layer 2 processing time is therefore essential.

An appropriate limit would be one which provides a reasonable guarantee of avoiding any retransmissions when there no contention for use of the D-channel, and a reasonable guarantee of only one network retransmission when there is worst-case contention for use of the D-channel.

Selection of the appropriate value is somewhat arbitrary, but the following values have been chosen:

500 ms for TEs operating in a point-to-point configuration as described in subclause 10.3;

200 ms for other TEs.

F.3.3 Detailed list of changes with respect to ETS 300 125

Table F.2: Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
Foreword		X	The TBR has its own foreword.
Scope		X	The TBR has its own scope.
PART 1: Application of CCITT Recommendation Q.920(I.440)		X	The whole of Part 1 is not included in the TBR as it is largely "modelling" material. The actual requirements are contained in Part 2 (Q.921).
PART 2: Application of CCITT Recommendation Q.921(I.441) ISDN user-network interface - Data link layer specification		H	
1 General		X	No requirement is added by this clause.
2 Frame structure for peer-to-peer communication		H	
2.1 General	10.1.1	I	Included as a note. The notes to figure 1/Q.921 have been taken from the second edition.
2.2 Flag sequence	10.1.2	D	The requirement is not included, addressed elsewhere.
2.3 Address field	10.1.3	D	The information concerning reservation of a single octet address for LAPB operation is not included, because the paragraph contains no requirements and support of LAPB operation is not within the scope of TBR 3 or TBR 4 as it is not applicable to European networks. The note is not included for same reasons.
2.4 Control field	10.1.4	D	
2.5 Information field	10.1.5	D	
2.6 Transparency	10.1.6	D	
2.7 FCS field	10.1.7	D	
2.8 Format convention		H	
2.8.1 Numbering Convention	10.1.8.1	D	
2.8.2 Order of bit transmission	10.1.8.2	D	
2.8.3 Field mapping convention	10.1.8.3	D	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
2.9 Invalid frames	10.1.9	D	Item a) may occur in case of a bit error in the flag. Item b) is not included, will not occur in an error free network. Item c) is not included, will not occur in an error free network. Item d) will occur in case of a bit error in the frame. Item e) may occur if the network transmits a frame for LAPB operation. Item f) may occur if e.g. the network transmits a frame for packet communication (SAPI = 16). The requirement concerning action upon receipt of an invalid frame is not included, because it is covered by subclause 5.8.4. The definition of an invalid frame has been extended to include frames with a TEI not currently supported by the TE.
2.10 Frame abort		X	It is not possible to determine whether a requirement to respond correctly to a Frame abort is essential, because the ETS does not state under what circumstances a network is permitted to issue a frame abort. It is therefore not possible to determine whether the receipt of Frame Abort is a normal operating condition for the TE. However, the clause has been not included for the following reasons. 1) It was considered impracticable to devise an explicit test using existing commercially available test tools. 2) If a TE does not recognise a Frame abort, then it is likely that the frame will still be rejected as invalid for one of the reasons given in subclause 2.9 (probably because of receipt of an invalid FCS). 3) ETS 300 153 includes no test of Frame Abort.
3 Elements of procedures and formats of fields for data link Layer peer-to-peer communication		H	
3.1 General	10.2.1	I	Included as a note.
3.2 Address field format	10.2.2	D	
3.3 Address field variables	10.2.3	H	
3.3.1 Address field extension bit (EA)	10.2.3.1	D	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
3.3.2 Command/Response field bit (C/R)	10.2.3.2	D	
3.3.3 Service Access Point Identifier (SAPI)	10.2.3.3	D	The note concerning further study of reservation of other values for SAPI is not included, because it has been deleted from the draft revision of the ETS.
3.3.4 Terminal Endpoint Identifier (TEI)	10.2.3.4	D	
3.3.4.1 TEI for broadcast data link connection	10.2.3.4.1	D	
3.3.4.2 TEI for point-to-point data link connection	10.2.3.4.2	D	
3.4 Control field formats	10.2.4	D	
3.4.1 Information transfer (I) format	10.2.4.1	D	
3.4.2 Supervisory (S) format	10.2.4.2	D	
3.4.3 Unnumbered (U) format	10.2.4.3	D	
3.5 Control field parameters and associated state variables		X	It only contains introductory text, and the text is repeated in subclause 2.8.
3.5.1 Poll/Final bit	10.2.5.1	D	
3.5.2 Multiple frame operation - variables and sequence numbers		H	
3.5.2.1 Modulus	10.2.5.2.1	D	
3.5.2.2 Send state variable V(S)	10.2.5.2.2	D	
3.5.2.3 Acknowledge state variable V(A)	10.2.5.2.3	D	
3.5.2.4 Send sequence number N(S)	10.2.5.2.4	D	
3.5.2.5 Receive state variable V(R)	10.2.5.2.5	D	
3.5.2.6 Receive sequence number N(R)	10.2.5.2.6	D	
3.5.3 Unacknowledged operation - variables and parameters		X	Only contains a cross-reference to subclause 5.9.
3.6 Frame types		H	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
3.6.1 Commands and responses	10.2.6.1	D	Some text is not included as it contains requirements which are repeated in more detail in subclauses 5.8.4 and 5.8.5. In table 5/Q.921 (Commands and responses - modulo 128) the rows defining FRMR and XID frames and the note concerning XID frames are not included, because these frames are not supported by European networks.
3.6.2 Information (I) command	10.2.6.2	D	
3.6.3 Set asynchronous balanced mode extended (SABME) command	10.2.6.3	D	Text containing requirements of the protocol surrounding the use of the SABME frame is not included, because it is duplicated in the Layer 2 requirements.
3.6.4 DISConnect (DISC) command	10.2.6.4	D	Text containing requirements of the protocol surrounding the use of the DISC frame is not included, because it is duplicated in the Layer 2 requirements.
3.6.5 Unnumbered Information (UI) command	10.2.6.5	D	
3.6.6 Receive Ready (RR) command/response	10.2.6.6	D	
3.6.7 REJect (REJ) command/response	10.2.6.7	D	Text containing requirements of the protocol surrounding the use of the REJ frame is not included, because it is duplicated in the Layer 2 requirements.
3.6.8 Receive Not Ready (RNR) command/response	10.2.6.8	D	
3.6.9 Unnumbered Acknowledgement (UA) response	10.2.6.9	D	
3.6.10 Disconnected Mode (DM) response	10.2.6.10	D	
3.6.11 Frame reject (FRMR) response		X	See arguments with respect to subclause 5.8.6.
3.6.12 Exchange identification (XID) command/response		X	Not supported in European networks.
4 Elements for layer-to-layer communication		H	
4.1 General		H	
4.1.1 Generic names	5.1	D	
4.1.1.1 DL-ESTABLISH	5.1.1	D	
4.1.1.2 DL-RELEASE	5.1.2	D	
4.1.1.3 DL-DATA	5.1.3	D	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
4.1.1.4 DL-UNIT DATA	5.1.4	D	
4.1.1.5 MDL-ASSIGN	5.1.5	D	
4.1.1.6 MDL-REMOVE	5.1.6	D	
4.1.1.7 MDL-ERROR		D	
4.1.1.8 MDL-UNIT DATA	5.1.7	D	
4.1.1.9 MDL-XID		X	Not used in European networks.
4.1.1.10 PH-DATA	5.1.8	D	
4.1.1.11 PH-ACTIVATE	5.1.9	D	
4.1.1.12 PH-DEACTIVATE	5.1.10	D	
4.1.1.13 MPH-ACTIVATE (See Appendix III)		X	Not applicable to the user side.
4.1.1.14 MPH-DEACTIVATE (See Appendix III)		X	Not applicable to the user side.
4.1.1.15 MPH-INFORMATION		X	Not used in the TBR.
4.1.2 Primitive types	5.2	D	
4.1.2.1 REQUEST	5.2.1	D	
4.1.2.2 INDICATION	5.2.2	D	
4.1.2.3 RESPONSE	5.2.3	D	
4.1.2.4 CONFIRM	5.2.4	D	
4.1.3 Parameter definition		D	
4.1.3.1 Priority indicator	5.3.1	D	
4.1.3.2 Message unit	5.3.2	D	
4.2 Primitive procedures		X	Only definitions of primitive types are included within the TBR.
4.2.1 General		X	Only definitions of primitive types are included within the TBR.
4.2.2 Layer 3 - data link layer interactions		X	Only definitions of primitive types are included within the TBR.
5 Definition of the peer-to-peer procedures of the data link layer		X	The selection of requirements applicable to individual TEs will be handled by the TBR-RT.
5.1 Procedure for the use of the P/F bit		H	
5.1.1 Unacknowledged information transfer		X	Addressed in more detail in subclause 5.2.2.
5.1.2 Acknowledged multiple frame information transfer		X	The requirement is fully addressed and tested in the following subclauses: - 5.5.1.2 for SABME, DISC & DM frames; - 5.6.2 for I, RR and RNR frames; - 5.6.4 and 5.8.1 for REJ frames.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.2 Procedures for unacknowledged information transfer		H	
5.2.1 General		X	It is introductory and adds no requirement.
5.2.2 Transmission of unacknowledged information	10.4.1	4f	An inherent part of the Layer 2 protocol. Persistent deactivation is defined in terms of receipt of PH-DEACTIVATE INDICATION, since this, according to the Layer 1 requirements, is issued on persistent deactivation. The sentence describing the passing of information via the primitives is not included, because it is described in the definition part. The sentence concerning the conditions of use of PH-DEACTIVATE-INDICATION is not included, because it is not a requirement.
5.2.3 Receipt of unacknowledged information	10.4.2	4f	An inherent part of the Layer 2 protocol.
5.3 Terminal Endpoint Identifier (TEI) management procedures		H	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.3.1 General	10.5.1	I	The requirement in the fourth paragraph concerning TEI removal when it is notified that the terminal is disconnected at the interface is addressed in more detail in subclause 5.3.4. The requirement in the fifth paragraph concerning TEI removal for internal reasons is not essential and furthermore not testable. The requirement is not included. The reference in the sixth paragraph to subclause 5.3.4.1 is not included. It contains no requirement. In the seventh paragraph, the sentence concerning possibility of the use of one or more TEI values is for information only and defines no requirements except that it is the responsibility of the user to maintain the association between TEI and SAPI values. This is implicitly expressed elsewhere. The paragraph is not included. The eighth paragraph (just before the note) is not included because the first sentence describes when initiation of TEI assignment occurs. This is not a requirement for Layer 2. The second sentence describes internal information transfer via a primitive. The third sentence states that TEI assignment procedure may be initiated by the terminal for its own reasons. None of them contains a requirement. The note is not included. It is in contradiction with the statement that a terminal may initiate TEI assignment for its own reasons.
5.3.2 TEI assignment procedure	10.5.2	4f	The TEI assignment procedure is an inherent part of the Layer 2 protocol. Untestable requirements such as for Ri to be "randomly generated" are rephrased in more appropriate terms. The paragraph following the first note is not included. The content is repeated in the clause just following. The subclause concerning comparison of the Ai in a received ID assign frame with already assigned TEI(s) (if any) is not included.
5.3.2.1 Expiry of timer T202	10.5.2.1	4f	The TEI assignment procedure is an inherent part of the Layer 2 protocol. The reference to subclause 5.9 is not included. It contains no requirement or essential information. Figure 9/Q.921 is not included. It does not define any requirements not stated in the text. It is for information only.
5.3.3 TEI check procedure		H	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.3.3.1 Use of the TEI check procedure	10.5.3.1	I	The sentence indicating that TEI check procedure may optionally be invoked by a ID verify request by a terminal is not included. This is stated in the clause describing ID verify procedure.
5.3.3.2 Operation of the TEI check procedure	10.5.3.2	4f	Normal operating condition on the network side. Failure to respond will result in TEI removal. Figure 10/Q.921 is not included. It does not define any requirements not stated in the text. It is for information only.
5.3.4 TEI removal procedure		X	The first two paragraphs are applicable to the network side. The third paragraph is not included, as it largely repeats text already stated in subclause 5.3.4.2. The reference to the MDL-REMOVE REQUEST primitive is included within subclause 5.3.4.2. The final paragraph, describing further action after TEI removal for terminals using automatic TEI values is not essential, since immediate TEI assignment will occur on command from Layer 3, if necessary, according to the Layer 3 state, and deferred TEI assignment will also occur on command from Layer 3 when there is some Layer 3 activity requiring it. The entire TEI removal procedure is not applied to non-automatic TEIs in the TBR, because there is no effective requirement for a TE with a non-automatic TEI to be capable of removing it. This is because, following TEI removal, there is nothing which prevents the same TEI being immediately re-assigned. This is recognised in the draft second edition of ETS 300 125, which places no requirement for TEI removal on TEs with non-automatic TEIs. This is because, following TEI removal there is nothing which prevents the same TEI being immediately re-assigned. This is recognised in the draft second edition of ETS 300 125, which places no requirement for TEI removal on TEs with non-automatic TEIs.
5.3.4.1 Action taken by the data link layer entity receiving the MDL-REMOVE-REQUEST primitive	10.5.4.1	4f	The requirement to respond to DL-RELEASE REQUEST is not included, as requirements for issuing the primitive are not specified in Layer 3. The requirement to discard the UI queue is not included, because there is unlikely to be a UI queue to discard. The TE only sends UI-frames as part of the TEI management procedures.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.3.4.2 Conditions for TEI removal	10.5.4.2	4f	The requirement that for non-automatic TEI values, "an appropriate indication shall be made to the user" is not included, because it requires the availability of a second monitoring point (see subclause F.1.1 above). The subclause is therefore not applied to TEs with non-automatic TEIs, because there is no requirement remaining. The requirement for TEI removal on receipt of a MPH-INFORMATION (disconnected) primitive is included. The majority opinion was that, where the TE with an automatic TEI does implement a connection detector, the TE should be required to discard its TEI on disconnection, because of the increased risk that a TE, when reconnected will have a TEI duplicating one already in use. There was a minority opinion that any disturbance was unlikely, temporary and correctable without human intervention by the existing procedures for recovery from duplicate TEI assignment. The optional condition in bullet four is not included. An optional requirement cannot be an essential requirement. If the requirement is not met, then duplicate TEI assignment may occur. The TEI check and TEI removal procedures will be invoked when the network detects this.
5.3.5 TEI identity verify procedure		H	
5.3.5.1 General	10.5.5.1	I	The fact that the requirement is optional is not included. This is adequately addressed in the TBR-RT.
5.3.5.2 Operation of the TEI identity verify procedure	10.5.5.2	4f	The TEI ID Verify procedure is listed as optional both in the network and the user side. In case it is implemented, it is essential that it is implemented correctly, so that TEI removal will occur if necessary to recover from duplicate TEI assignment.
5.3.5.3 Expiry of timer T202	10.5.5.3	4f	See above.
5.3.6 Formats and codes		H	
5.3.6.1 General	10.5.6.1	D	
5.3.6.2 Layer management entity identifier	10.5.6.2	D	
5.3.6.3 Reference number (Ri)	10.5.6.3	D	Some informative text added here based on subclause 5.3.2 concerning the random generation of Ri.
5.3.6.4 Message type	10.5.6.4	D	
5.3.6.5 Action indicator (Ai)	10.5.6.5	D	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.4 Automatic negotiation of data link layer parameters		X	Parameter negotiation is not implemented in European networks.
5.5 Procedures for establishment and release of multiple frame operation		H	
5.5.1 Establishment of multiple frame operation		X	No alternative to "extended multiple frame operation (modulo 128 sequencing)" is offered on the Euro-ISDN.
5.5.1.1 General	10.6.1.1	4f	An inherent part of the Layer 2 protocol. The requirement to ignore all frames other than unnumbered frames during establishment is essential. This situation can occur during re-establishment where unnumbered frames cross with the SABME.
5.5.1.2 Establishment procedures	10.6.1.2	4f	An inherent part of the Layer 2 protocol. The paragraph concerning discard of I queues and outstanding DL-DATA-REQUEST primitives in case of Layer 3 initiated establishment is changed to a note. It is not possible to test it. The requirement in last sentence in second last paragraph concerning to ignore a DM F=0 is not included. It is a requirement always to use P=1 in mode setting commands (5.5.1.2). The F bit in the response from an errorfree network will always have the value 1. The receipt of DM F=0 is therefore not possible in an error free network. The last paragraph stating that a DL-RELEASE-REQUEST shall be serviced after data link layer initiated re-establishment is completed is not included, as requirements for issuing the primitive are not specified in Layer 3.
5.5.1.3 Procedure on expiry of timer T200	10.6.1.3	4f	Necessary to advise Layer 3 of failure to establish. The use of the primitive MDL-ERROR-INDICATION is not included. The action upon receipt of the primitive is not defined.
5.5.2 Information transfer		X	The subclause merely makes cross-references to other requirements.
5.5.3 Termination of multiple frame operation		H	
5.5.3.1 General		X	The subclause applies to a TE in the Disconnect request state. This state is only entered after the TE sends a DISC message to the network. The requirement to send a DISC is not included (see below).

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.5.3.2 Release procedure	10.6.2	4f	Requirement to initiate a release (i.e. send DISC) on receipt of a DL-RELEASE-REQUEST is not included, since Layer 3 includes no circumstances in which that primitive is to be issued. A network initiated DISC is considered a normal operating condition and therefore the TE needs to respond appropriately.
5.5.3.3 Procedure on expiry of timer T200		X	The requirements only apply to the originator of the DISC command (see above).
5.5.4 TEI-assigned state		X	First bullet is not included. The requirement to transmit a DM as a response to a DISC command when in state 4 is not essential. An errorfree network will transmit the DISC in case of duplicate TEI assignment only. Second bullet is not included. The requirement is covered by subclause 5.5.1. Third bullet is not included. It is a requirement always to use P=1 in mode setting commands (see subclause 5.5.1.2). The F bit in the response from an errorfree network will always have the value 1. Fourth bullet is not included. The requirement is covered by subclause 5.2. Fifth bullet is not included. The requirement is covered by subclause 5.8.8 Sixth bullet is not included. An errorfree network will not transmit frames others than the ones mentioned. Therefore "other frame types" will never be received in an errorfree network.
5.5.5 Collision of unnumbered commands and responses		H	
5.5.5.1 Identical transmitted and received commands	10.6.3.1	4f	The procedure for collision of SABME frames is essential. If it is not implemented the network will not receive a response to the SABME which it transmitted. This can result in a situation where the TEI value is lost. The procedure for collision of DISC is not included, as there is no requirement for the TE to be capable of sending a DISC.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.5.5.2 Different transmitted and received commands		X	There are two situations: 1) Network transmits SABME, TE transmits DISC This is not essential, as the requirement for a TE to transmit a DISC is not essential. 2) Network transmits DISC, TE transmits SABME The network will transmit a DM and expect a DM. If the DM is not received within timeout of T200 the network will retransmit the DISC. At this point the TE is in state 4 and will respond by transmitting a DM, which will cause the network to enter state 4. In this case it is not an essential requirement.
5.5.6 Unsolicited DM response and SABME or DISC command		X	First paragraph is not included. It contains information which may be useful. However it contains no requirements. Second paragraph is not included. The requirement always to set the P bit to 1 in a SABME or DISC frame is stated in subclause 5.5.1.2. Third paragraph with the requirement to ignore an incoming DM F=0 colliding with a SABME is essential. In case it is not ignored the DM is interpreted as a response to the SABME and the TE enters state 4. The network which transmitted the DM F=0 to start the establishment procedure receives the expected SABME and responds with a UA. The TE which is in state 4 receives the UA and either initiates ID verify procedure or removes TEI value. Hence the attempt from the network to establish the data link may result in loss of TEI value.
5.6 Procedures for information transfer in multiple frame operation	10.7	X	Only makes reference to its subclauses.
5.6.1 Transmitting I-frames	10.7.1	4f	Inherent part of the Layer 2 protocol. The requirement has been clarified to the effect that I-frames transmitted in accordance with this clause are always transmitted with the P bit set to 0. This is clearly stated in the SDLs in ETS 300 125 but is not clear in the text of this clause. I-frames are only transmitted with P=1 when re-transmitted in accordance with ETS 300 125 subclause 5.6.7.
5.6.2 Receiving I-frames	10.7.2	4f	Inherent part of the Layer 2 protocol.
5.6.2.1 P bit set to 1	10.7.2.1	4f	Inherent part of the Layer 2 protocol. The requirement concerning own receiver busy condition has been not included as not essential (see subclause 5.6.6).

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.6.2.2 P bit set to 0	10.7.2.2	4f	Inherent part of the Layer 2 protocol. The requirement concerning own receiver busy condition has been not included as not essential (see subclause 5.6.6).
5.6.3 Sending and receiving acknowledgements		H	
5.6.3.1 Sending acknowledgements	10.7.3.1	4f	Inherent part of the Layer 2 protocol.
5.6.3.2 Receiving acknowledgements	10.7.3.2	4f	Inherent part of the Layer 2 protocol. The last requirement is not included. It is covered by subclause 5.6.4.
5.6.4 Receiving REJ frames	10.7.4	4f	Inherent part of the Layer 2 protocol. The requirement in last bullet concerning notification of protocol violation is not included. The action taken is implementation dependent and is therefore not an essential requirement. The requirement in item 1) is not included, because it is implicit in other requirements. To do anything else would require the TE to issue a Frame Abort and immediately transmit the I-frame. Last sentence indicating that queued I-frames may be transmitted after retransmission of a requested I-frame is not included. It is not an essential requirement.
5.6.5 Receiving RNR frames	10.7.5	4f	Inherent part of the Layer 2 protocol. Note 1 is not included as it is already addressed by the definitions of the variables. The last sentence in the third bullet below subparagraph b) is not included. The requirement stated is that during the enquiry procedure, if a frame indicating clearance of the peer receiver busy condition is received, not to start retransmission of I-frames until expiry of T200 or receipt of the explicit response to the enquiry. This is not essential, since the peer entity will be ready to receive I-frames even before it transmits the enquiry response. The requirement concerning clearance of peer receiver busy condition in case of receipt of a SABME frame is not included. The requirement is stated in subclause 5.5.1.2. The requirements concerning operation in the own receiver busy condition have been not included (see subclause 5.6.6).

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.6.6 Data link layer own receiver busy condition		X	If a TE enters an own receiver busy condition, and does not implement the requirements of the ETS to advise the network side using an RNR frame, some I-frames may be lost. The procedures concerning the receipt of I-frames with N(S) sequence errors have been retained in the TBR as essential requirements, and would ensure the retransmission of any frames lost. No lasting failure to interwork with the network would therefore occur. In addition, the requirements are not testable. It is quite possible (and in many cases likely) that a TE will be designed in such a way that its capacity for processing incoming I-frames is greater than the capacity of the D-channel to transport them. In such a case, the TE will never enter the own receiver busy condition. For those TE which could enter the own receiver busy condition, the circumstances under which this occurs will vary significantly from TE to TE, according to implementations of frame handling rates and queue sizes. It is not practicable to devise tests which will be capable of exercising the own receiver busy condition under all possible circumstances under which it might occur.
5.6.7 Waiting acknowledgement	10.7.6	4f	Inherent part of the Layer 2 protocol.
5.7 Re-establishment of multiple frame operation		H	

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.7.1 Criteria for re-establishment		X	First bullet is not included. It is covered by subclause 5.5.1.2 Second bullet not included, since no requirements are specified at Layer 3 for the issuing of DL-ESTABLISH REQUEST when Layer 2 is already established. The third bullet is not included. It is covered by subclause 5.6.7. The fourth bullet is not included. It is covered by subclause 5.8.5. The fifth bullet is not included. The requirement concerning re-establishment in case of receipt of FRMR is not included. An error free network will not send a FRMR frame. The sixth bullet is not included. A DM response frame with the F bit set to 0 will never occur in an errorfree network. The seventh bullet concerning the receipt of a DM response with F bit set to 1 is kept. This may occur in case of multiple TEI assignment of non-automatic terminals.
5.7.2 Procedures	10.8.1	4f	In the first bullet, the issue of a MDL-ERROR-INDICATION primitive leads to an implementation dependent action at the user side. This is not an essential requirement and has not been included.
5.8 Exception condition reporting and recovery.		X	The two first paragraphs are not included. They contain no requirements. Alternatively they may be kept as notes. The last paragraph referring to appendix II defining action to be taken on receipt of MDL-ERROR-INDICATION primitives is not included. All the actions referred to are covered elsewhere in the TBR.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.8.1 N(S) sequence error	10.9.1	4f	Inherent part of the Layer 2 protocol. An N(S) sequence error may occur when a bit error occurs in a previous transmitted I-frame. The bit error causes an FCS error resulting in an invalid frame being received and discarded. The next I-frame transmitted will then contain a N(S) sequence error. The N(S) error will only occur in case of a window size larger than 1. The requirement concerning establishment of only one exception condition is not included. It is adequately addressed by the definitions of the REJ frame. It is not possible, by definition, for Layer 2 to signal to its peer, acknowledgement of two different numbers of I-frames at the same time. The requirement concerning action upon receipt of a REJ frame is not included. It is covered by subclause 5.6.4. The requirements concerning action upon receipt of a SABME or DISC when in reject recovery state is not included. They are covered by subclauses 5.5.1.2 and 5.5.3.2 respectively. The last paragraph with a reference to appendix I is not included. Appendix I is not applicable to European networks.
5.8.2 N(R) sequence error		X	Addressed by subclause 5.8.5.
5.8.3 Timer recovery condition		X	Contains no requirements not already in subclause 5.6.7.
5.8.4 Invalid frame condition	10.9.2	4f	Layer 2 recovery procedures depend on invalid frames being discarded. Also, the Layer 3 procedures depend on Layer 2 not providing frames to Layer 3 with errors in the contents.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.8.5 Frame rejection condition	10.9.3	4f	The receipt of an undefined frame is not possible in an errorfree network. Requirement not included. The receipt of a supervisory or unnumbered frame with incorrect length is not possible in an errorfree network. Requirement not included. The receipt of an invalid N(R) may occur due to transmission error. Essential requirement . The receipt of a frame with an I field exceeding N201 is possible as a result of a transmission error in a flag. However, such an error would result in an invalid FCS in the "frame" that would result. Requirement not included. The requirement concerning the issue of a MDL-ERROR-INDICATION is not included. The ETS includes no requirement for consequent action as a result of the primitive being issued. The note is not included. It contains no requirements.
5.8.6 Receipt of an FRMR response frame		X	The note to clause 5 indicates that a FRMR response shall never be generated by a data link layer entity. Also there is no provision within Appendix II for the network side data link layer management entity to send FRMR. Therefore it would require a network misoperation for a FRMR to be received by the user side (see F.1.1 above).
5.8.7 Unsolicited response frames		X	It contains either requirements defined elsewhere in the standard (subclause 5.8.8) or implementation dependent requirements.
5.8.8 Multiple-assignment of TEI value	10.9.4	4f	There are a number of circumstances in which duplicate TEI assignment can occur, e.g. when a TE without a connection detector (and therefore possibly in the TEI assigned state) is connected to a multipoint configuration. Recovery procedures are essential to permit continued support of Layer 3.
5.9 List of system parameters	10.10	I	Procedures for automatic negotiation of data link layer parameters are not supported in European networks. Therefore the two paragraphs concerning this are not included. In European networks there are no alternatives to the default values defined. Therefore "The default value of " is replaced by "The value of" in the subclauses of subclause 5.9. table 10 "System parameters" is not included. All relevant parameters are covered in the text.

Table F.2 (continued): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.9.1 Timer T200	10.10.1	D	Notes 1 and 2 do not include any requirements and are therefore not included. A range of acceptable values of the timer (0,95 s to 3 s) has been defined for the following reasons. 1) A single value of the timer without tolerances is not appropriate to a standard. 2) The minimum value of 0,95 s was chosen to ensure that no TE which passed ETS 300 153 requirements (1 s ± 5 %) would fail the TBR. 3) The maximum value of 3 s was selected on the basis that longer values than 1 s should be permitted, since they do no harm to the network and may be necessary in order to support TE where the local loop includes a satellite connection (as described in ETS 300 125).
5.9.2 Maximum number of retransmissions (N200)	10.10.2	D	
5.9.3 Maximum number of octets in an information field (N201)	10.10.3	D	The bullet concerning packet information is not included. It is outside the scope of TBR 3.
5.9.4 Maximum number of transmission of the TEI identity request message (N202)	10.10.4	D	
5.9.5 Maximum number of outstanding I-frames (k)	10.10.5	D	The bullets concerning packet information are not included. They are outside the scope of TBR 3.
5.9.6 Timer T201		X	Not a user side timer.
5.9.7 Timer T202	10.10.6	D	A range of acceptable values of the timer (1,9 s to 5 s) has been defined for the following reasons. 1) A single value of the timer without tolerances is not appropriate to a standard 2) The minimum value of 1,9 s was chosen to ensure that no TE which passed ETS 300 153 requirements (2 s ± 5 %) would fail the TBR. 3) The maximum value of 5 s was selected on the basis that longer values than 2 s should be permitted, since they do no harm to the network and may be necessary in order to support TE where the local loop includes a satellite connection.
5.9.8 Timer T203		X	Only used for the data link layer monitor function, which is considered not essential (see subclause 5.10 below).

Table F.2 (concluded): Changes with respect to ETS 300 125

Clause of ETS 300 125	Clause of TBR 3	Status	Justification
5.10 Data link layer monitor function		X	Not essential to call processing.
Annex A (to Recommendation Q.921): Provision of point-to-point signalling connections	10.3	4f	The TBR-RT includes a question on the point-to-point data link configuration, which affects requirement and test case selection. The text is taken from the draft second edition, as this is more clearly stated.
Annex B (to Recommendation Q.921): SDL for point-to-point procedures		X	The SDLs include no additional requirements, but are complementary to the text.
Annex C (to Recommendation Q.921): An SDL representation of the broadcast procedures of the data link layer		X	The SDLs include no additional requirements, but are complementary to the text.
Annex D (to Recommendation Q.921): State transition table of the point-to-point procedures of the data link layer		X	The state transition tables include no additional requirements, but are complementary to the text.
Appendix I (to Recommendation Q.921): Retransmission of REJ response frames		X	The Appendix is not applicable to European networks.
Appendix II (to Recommendation Q.921): Occurrence of MDL-ERROR-INDICATION within the basic states and actions to be taken by the management entity		X	For error codes C, D, G and H, the requirements are already stated in the text. The other error codes specify no specific action on the user side. Informative only in ETS 300 125.
Appendix III (to Recommendation Q.921): Optional basic access deactivation procedures		X	Applicable only to the network side.
Appendix IV (to Recommendation Q.921): Automatic negotiation of data link layer parameters		X	Not applicable to European networks.
Abbreviations and acronyms used in Recommendation Q.921 (I.441)		D	Those which are referred to in the text of the TBR are included.
References (used in Q.921)		X	The TBR has its own list of Normative and informative references.

F.4 Changes with respect to ETS 300 102-1

F.4.1 General

The December 1990 version of ETS 300 102-1 (including Amendments 1 and 2) was used as the basis for this TBR. The changes made in the draft revision were taken into account wherever appropriate. It is intended that apparatus conforming to either version of ETS 300 102-1 will conform to this TBR.

F.4.2 Messages and information elements

Only those messages which are referred to in the requirements are included within the TBR.

The only information elements which are included within the TBR are those which are either:

- mandatory within one or more messages included within the TBR; or

- optional, and referred to directly by the requirements in the TBR.

Those information elements which do not come within either category are not included in the list of information elements, and their optional presence is not mentioned within the descriptions of the messages in the TBR.

A statement permitting the TE to implement in Layer 3 messages any optional information element not mentioned in the TBR is included in subclause 11.2 and 11.3.1. The Layer 3 test suite does not give a FAIL verdict if a message is received by the tester which includes an optional information element not mentioned in the TBR.

F.4.3 Layer 3 response time

The time period within which Layer 3 responds to an incoming message is not specified in ETS 300 102-1. However, if the TE takes an unreasonably long time to respond to a message, the network, on expiry of various network side timers, may believe that a fault has occurred, and take the affected B-channel out of service (possibly after attempting the Restart procedure, see below).

Also, if no limit to the maximum response time is specified, there is fundamentally no means of testing the requirements, because no final conclusion can be reached to a test case in the absence of a response from the TE.

No requirement has been included within ETS 300 104 (NET 3, part 2). However, the CTS 2 test suite includes a maximum Layer 3 response time of 30 s. This has been adopted in the TBR. It is most unlikely that, under test conditions, this value would be exceeded by any TE.

F.4.4 B-channels

Requirements to connect and disconnect the B-channel have not been included in the TBR. This is because the TE does not interwork with the network in the B-channel for the purpose of processing calls (see clause F.1).

Assignment and release of B-channels remains a requirement, since it is essential under Article 4 (f) for the TE to keep an accurate record of which B-channels are in use. If this is not done, then the TE may cease to be capable of interworking with the network, for example because it incorrectly believes that no B-channels are available.

F.4.5 Cause values

In some cases in ETS 300 102-1, the cause value does not determine the subsequent action of the network. The requirements (scattered over many clauses) for the TE to generate correct cause values in a DISCONNECT, RELEASE or RELEASE COMPLETE message are therefore not included in the TBR as being not essential. Requirements to generate the correct cause value in a STATUS message are retained, as network actions affecting call processing depend on the cause value in a STATUS message sent by the TE.

F.4.6 Receipt of RESTART

No consensus was reached on this subject.

The minority opinion was that the ability to respond to receipt of a RESTART message is not essential because:

1) The circumstances under which the network sends RESTART are not defined, but the informative text in ETS 300 102-1 indicates that it is usually a last resort procedure prior to taking a channel or interface out of service when all other means of clearing a call have failed to obtain a response from the TE. Therefore, failure to respond to a RESTART results in the network taking the same action that it would have taken if the RESTART not been sent at all.

2) There are requirements for the TE to respond to call control messages at Layer 3 within a certain time (see subclause F.4.3).

3) It is permitted for a network to send RESTART even in a multipoint configuration, where the procedure is optional in ETS 300 102-1. Since it is optional on both sides of the interface, there is no guarantee that the TE(s) conforming to ETS 300 102-1 are also implementing the procedure. Under these circumstances the network needs to have some sort of recovery procedures.

4) The requirement to return B-channels to the idle condition in response to the RESTART message is not essential because of the conclusions of subclause F.4.4.

The majority opinion expressed the view that the requirement is essential in some circumstances because:

1) Some networks implement the sending of RESTART in a primary rate or point-to-point configuration, expecting the TE to be capable of responding, because support of the procedure is mandatory in ETS 300 102-1 in these circumstances.

2) If the TE does not respond, then the affected B-channels are taken out of service, with the result that there is a reduction in the ability of the interface to process calls. The requirement is therefore applicable to those cases where a point-to-point configuration is known to exist, i.e. Primary rate, and Basic rate with a point-to-point data link operating according to ETS 300 125, annex A.

3) Some networks send a RESTART message on occasions, such as on recovery following a data link layer failure, which are sufficiently frequent to be regarded as normal operating conditions.

The requirements have been included in the TBR for point-to-point and primary rate configurations.

F.4.7 Layer 3 timers

All the Layer 3 user side timers are considered not to be essential. The reasons in each case are included in the table below.

Table F.3: Considerations of Layer 3 timers

Timer	Justification
T301	It is optional on the user side in ETS 300 102.
T302	This timer is used in the Overlap Receiving state, as a maximum time between INFORMATION messages containing the called number. If T302 is not implemented, then, expiry of the network side T304 will cause the network to initiate clearing.
T303	This timer is optional on the user side in ETS 300 102.
T304	This timer is used in the Overlap Sending state, as a maximum time between INFORMATION messages containing the called number. If T304 is not implemented, then expiry of the network side T302 will cause the network to initiate clearing if the address information is incomplete.
T305	ETS 300 102 has the timer set to 30s. The network side timer T305 or T306 will also expire after 30 s and cause a RELEASE to be sent, achieving the same effect.
T308	ETS 300 102 first edition has the timer set to 4s. The second edition sets the timer to (N200+1)*T200. An error-free network will never permit the timer to expire, because the network will respond to a RELEASE with a RELEASE COMPLETE.
T309	The timer is optional on the user side in ETS 300 102-1.
T310	The timer is optional on the user side in ETS 300 102-1.
T313	An error-free network will never permit T313 to expire, because the network will respond to a CONNECT with a CONNECT ACKNOWLEDGE.
T314	T314 is a timer concerned with the possible loss of segments of messages segmented according to annex K. Message segmentation has not been included within the TBR.
T316	This timer is used in the procedures for sending RESTART. These have not been included in the TBR.
T317	This timer is used in the procedures for receiving RESTART. The maximum value of the timer is included within subclause 11.4.8.

F.4.8 Detailed list of changes with respect to ETS 300 102-1

Table F.4: Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
Foreword		X	The TBR has its own foreword.
1 General		X	The TBR has its own scope.
1.1 Scope		X	The TBR has its own scope.
1.2 Application to interface structures		X	The TBR has its own scope.
2 Overview of call control		X	Introductory only.
2.1 Circuit switched calls		X	Introductory only.
2.1.1 Call states at the user side of the interface		X	Introductory only.
2.1.1.1 Null state (U0)	11.1.1.1	D	
2.1.1.2 Call initiated (U1)	11.1.1.2	D	

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
2.1.1.3 Overlap sending (U2)	11.1.1.3	D	
2.1.1.4 Outgoing call proceeding (U3)	11.1.1.4	D	
2.1.1.5 Call delivered (U4)	11.1.1.5	D	
2.1.1.6 Call present (U6)	11.1.1.6	D	
2.1.1.7 Call received (U7)	11.1.1.7	D	
2.1.1.8 Connect request (U8)	11.1.1.8	D	
2.1.1.9 Incoming call proceeding (U9)	11.1.1.9	D	
2.1.1.10 Active (U10)	11.1.1.10	D	
2.1.1.11 Disconnect request (U11)	11.1.1.11	D	
2.1.1.12 Disconnect indication (U12)	11.1.1.12	D	
2.1.1.13 Suspend request (U15)	11.1.1.13	D	
2.1.1.14 Resume request (U17)	11.1.1.14	D	
2.1.1.15 Release request (U19)	11.1.1.15	D	
2.1.1.16 Overlap receiving (U25)	11.1.1.16	D	
2.1.2 Network call states		H	Although the network call states are applicable to the network, not to the user side, there are occasions when they are relevant to the user side, e.g. on receipt by the user side of a STATUS message. They have therefore been included within the TBR.
2.1.2.1 Null state (N0)	11.1.2.1	D	
2.1.2.2 Call initiated (N1)	11.1.2.2	D	
2.1.2.3 Overlap sending (N2)	11.1.2.3	D	
2.1.2.4 Outgoing call proceeding (N3)	11.1.2.4	D	
2.1.2.5 Call delivered (N4)	11.1.2.5	D	
2.1.2.6 Call present (N6)	11.1.2.6	D	
2.1.2.7 Call received (N7)	11.1.2.7	D	
2.1.2.8 Connect request (N8)	11.1.2.8	D	
2.1.2.9 Incoming call proceeding (N9)	11.1.2.9	D	
2.1.2.10 Active (N10)	11.1.2.10	D	

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
2.1.2.11 Disconnect request (N11)	11.1.2.11	D	
2.1.2.12 Disconnect indication (N12)	11.1.2.12	D	
2.1.2.13 Suspend request (N15)	11.1.2.13	D	
2.1.2.14 Resume request (N17)	11.1.2.14	D	
2.1.2.15 Release request (N19)	11.1.2.15	D	
2.1.2.16 Call abort (N22)	11.1.2.16	D	
2.1.2.17 Overlap receiving (N25)	11.1.2.17	D	
2.2 Packet mode access connections			Text not included. Outside the scope of the TBR.
2.3 Temporary signalling connections			Text not included. Outside the scope of the TBR.
2.4 States associated with the global call reference	11.1.3	I	Included as a note.
2.4.1 Call states at the user side of the interface	11.1.3.1	H	Note deleted as it duplicates other text.
2.4.1.1 Null (Rest 0)	11.1.3.1.1	D	
2.4.1.2 Restart request (Rest 1)		X	Not included. The ability to send a RESTART message is not essential (subclause see 5.5).
2.4.1.3 Restart (Rest 2)	11.1.3.1.2	D	
2.4.2 Call states at the network side of the interface	11.1.3.2	H	
2.4.2.1 Null (Rest 0)	11.1.3.2.1	D	
2.4.2.2 Restart request (Rest 1)	11.1.3.2.2	D	
2.4.2.3 Restart (Rest 2)		X	Not included because the TE is not required to send a RESTART.
3 Message functional definitions and content	11.2	D	Relevant text included as a general introductory text to the definitions following.
3.1 Messages for circuit mode connection control		I	Included as a note.
3.1.1 Alerting	11.2.1	D	
3.1.2 Call proceeding	11.2.2	D	
3.1.3 Congestion control		X	Not included. Applicable only to the User-User Signalling supplementary service.
3.1.4 Connect	11.2.3	D	
3.1.5 Connect acknowledge	11.2.4	D	
3.1.6 Disconnect	11.2.5	D	
3.1.7 Facility		X	Not included. Not applicable to Basic Call.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
3.1.8 Information	11.2.6	D	
3.1.9 Notify	11.2.7	D	
3.1.10 Progress	11.2.8	D	
3.1.11 Release	11.2.9	D	
3.1.12 Release complete	11.2.10	D	The mandatory requirement to respond to a Release complete message with a release of the call reference is not included. It is stated as a requirement in subclause 5.3.4.3.
3.1.13 Resume	11.2.11	D	
3.1.14 Resume acknowledge	11.2.12	D	
3.1.15 Resume reject	11.2.13	D	
3.1.16 Setup	11.2.14	D	
3.1.17 Setup acknowledge	11.2.15	D	
3.1.18 Status	11.2.16	D	
3.1.19 Status enquiry	11.2.17	D	The mandatory requirement to respond to a STATUS ENQUIRY with a STATUS message is not included. It is stated as a requirement in subclause 5.8.10.
3.1.20 Suspend	11.2.18	D	
3.1.21 Suspend acknowledge	11.2.19	D	
3.1.22 Suspend reject	11.2.20	D	
3.1.23 User information		X	Not included. Outside the scope of the TBR, (User-User Signalling).
3.2 Messages for packet mode connection control		X	Not included. Outside the scope of the TBR.
3.3 Messages for user to user signalling not associated with circuit switched calls		X	Not included. Outside the scope of the TBR.
3.4 Messages used with the global call reference	11.2.21	D	Included as a note.
3.4.1 Restart	11.2.21.1	D	
3.4.2 Restart acknowledge	11.2.21.2	D	
3.4.3 Status		X	
4 General message format and information elements coding	11.3	I	Included as introductory text to the definitions following.
4.1 Overview	11.3.1	D	Included as introductory text to the definitions following.
4.2 Protocol discriminator	11.3.2	D	

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
4.3 Call reference	11.3.3	D	References to call references with other length than 1 and 2 octets are not included. The requirement concerning the dummy call reference is not included. It is stated in subclause 5.1.1.
4.4 Message type	11.3.4	D	
4.5 Other information elements	11.3.5	H	
4.5.1 Coding Rules	11.3.5.1	D	The mandatory requirement about receiving additional octets is not included. Last sentence not included.
4.5.1.1 Codeset 0	11.3.5.1.1	D	
4.5.1.2 Codeset 5	11.3.5.1.2	D	
4.5.2 Extensions of codesets	11.3.5.2	D	The mandatory requirement about recognizing the shift information and handling of the codesets are not included and moved to subclause 11.4.6.
4.5.3 Locking shift procedure	11.3.5.3	D	
4.5.4 Non-locking shift procedure	11.3.5.4	D	
4.5.5 Bearer capability	11.3.5.5	D	Note with reference to future extension not included. References to non ETSI coding of the information element are not included.
4.5.6 Call Identity	11.3.5.6	D	
4.5.7 Call State	11.3.5.7	D	
4.5.8 Called party number	11.3.5.8	D	
4.5.9 Called party subaddress	11.3.5.9	D	
4.5.10 Calling Party Number		X	
4.5.11 Calling party subaddress		X	
4.5.12 Cause	11.3.5.10	D	ETSI cause values needs clarification.
4.5.13 Channel identification	11.3.5.11	D	Changes made according to ETSI requirements.
4.5.14 Congestion level		X	
4.5.15 Display		X	2nd and 3rd sentences of 3rd paragraph included as a note.
4.5.16 High layer compatibility	11.3.5.12	D	
4.5.17 Keypad facility		X	
4.5.18 Low layer compatibility	11.3.5.13	D	
4.5.19 More data		X	Not included. Applicable only to the User-User Information supplementary service.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
4.5.20 Network-specific facilities		X	
4.5.21 Notification indicator	11.3.5.14	D	Reference to non-ETSI coding of the information element is not included.
4.5.22 Progress indicator	11.3.5.15	D	
4.5.23 Repeat indicator		X	Not included. Outside the scope of the TBR.
4.5.24 Restart indicator	11.3.5.16	D	
4.5.25 Segmented message		X	
4.5.26 Sending complete	11.3.5.17	D	
4.5.27 Signal		X	
4.5.28 Transit network selection		X	
4.5.29 User-user		X	2nd sentence of 3rd paragraph included as a note.
4.6 Supplementary services information elements		X	
4.6.1 Date/time		X	
4.6.2 Facility		X	
4.6.2.1 Invoke component		X	
4.6.2.1.1 Operation-specific field for user-user information supplementary service		X	
4.6.2.2 Return result component		X	
4.6.2.3 Return error component		X	
4.6.3 Feature activation		X	Not included. Outside the scope of the TBR.
4.6.4 Feature indication		X	Not included. Outside the scope of the TBR.
4.6.5 Switchhook		X	Not included. Outside the scope of the TBR.
4.7 Information elements for packet communications		X	Not included. Outside the scope of the TBR.
5 Circuit switched call control procedures	11.4	X	Text is not included because the subject is addressed in more detail in the subsequent subclauses.
5.1 Call establishment at the originating interface	11.4.1	4f	It is inherently necessary for Layer 2 to be established in order for Layer 3 call control messages to be exchanged across the interface.
5.1.1 Call request	11.4.1.1	4f	Fundamental part of the signalling system for setting up an outgoing call.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.1.2 B-channel selection - originating	11.4.1.2, 11.4.1.3.1, 11.4.1.3.2, 11.4.1.4, 11.4.1.5	X	Requirements included to attach the B-channel on entering the Active state and permission to attach earlier during call setup if progress indicator #8 received.
5.1.3 Overlap sending	11.4.1.2	4f	Optional Essential. Perfectly acceptable for a TE not to support Overlap sending. Needs to be correct if implemented so that outgoing calls can be set up.
5.1.4 Invalid call information		X	Applicable to the network.
5.1.5 Call proceeding		H	
5.1.5.1 Call proceeding, en-bloc sending	11.4.1.3.1	4f	Fundamental part of the signalling system for setting up an outgoing call.
5.1.5.2 Call proceeding, overlap sending	11.4.1.3.2	4f	Optional Essential. Perfectly acceptable for a TE not to support Overlap sending. Needs to be correct if implemented so that calls can be set up.
5.1.6 Notification of interworking at the originating interface		X	The progress indicator is already defined as an optional field in various call control messages. There is therefore no need for a special requirement to address the use of Progress in messages sent by the TE. In messages received by the TE, the second edition of ETS 300 102-1 provides helpful clarification to the effect that only network side timers are stopped when Progress is issued. The only change too user side requirements concerns attachment of the B-channel, which is outside the scope of the TBR (see subclause F.4.4).
5.1.7 Call confirmation indication	11.4.1.4	4f	Fundamental part of the signalling system for setting up an outgoing call.
5.1.8 Call connected	11.4.1.5	4f	Fundamental part of the signalling system for setting up an outgoing call.
5.1.9 Call rejection		X	Applicable to the network side.
5.1.10 Transit network selection		X	The requirement in the ETS on the TE is to use the transit network selection information element in the relevant call control messages. This is already permitted by subclause 11.3.1. There is no additional requirement.
5.2 Call establishment at the destination interface	11.4.2	4f	It is inherently necessary for Layer 2 to be established in order for Layer 3 call control messages to be exchanged across the interface.
5.2.1 Incoming call	11.4.2.1	4f	Fundamental part of the signalling system for setting up an incoming call.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.2.2 Compatibility checking	11.4.2.2	4f	Included as a requirement in modified form. It is essential that the TE responds correctly with call acceptance or rejection depending upon whether it considers itself to be compatible with the call. What is not tested (because the operation of the B-channels is outside the scope of the TBR, see clause F.1) is whether the TE sends information in the B-channels compatible with the coding of bearer capability, high layer compatibility and low layer compatibility information elements in the call control messages.
5.2.3 B-channel selection-destination		H	
5.2.3.1 SETUP message delivered by point-to-point data link	11.4.2.3.1	4f	Fundamental part of the signalling system for setting up an incoming call.
5.2.3.2 SETUP message delivered by broadcast data link	11.4.2.3.2	4f	Fundamental part of the signalling system for setting up an incoming call.
5.2.4 Overlap receiving	11.4.2.4	4f	Optional Essential. Perfectly acceptable for a TE not to support Overlap receiving. Needs to be correct if implemented so that incoming calls using Overlap receiving can be set up. (Necessary in some countries for compatibility with the DDI Supplementary Service, which may be implemented using Overlap Receiving.) A note has been added indicating the circumstances under which Overlap Receiving might be implemented in the network.
5.2.5 Call confirmation		H	
5.2.5.1 Response to en-bloc SETUP or completion of overlap receiving	11.4.2.5.1	4f	Fundamental part of the signalling system for setting up an incoming call.
5.2.5.2 Receipt of CALL PROCEEDING and ALERTING		X	Applicable to the network.
5.2.5.3 Called user clearing during incoming call establishment		X	Applicable to the network.
5.2.5.4 Call failure		X	Applicable to the network.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.2.6 Notification of interworking at the terminating interface		X	The progress indicator is already defined as an optional field in various call control messages. There is therefore no need for a special requirement to address the use of Progress in messages sent by the TE. In messages received by the TE, the second edition of ETS 300 102-1 provides helpful clarification to the effect that only network side timers are stopped when Progress is issued. The only change to user side requirements concerns attachment of the B-channel, which is outside the scope of the TBR (see clause F.1).
5.2.7 Call accept	11.4.2.6	4f	Fundamental part of the signalling system for setting up an incoming call.
5.2.8 Active indication	11.4.2.7	4f	Fundamental part of the signalling system for setting up an incoming call.
5.2.9 Non-selected user clearing	11.4.2.8	4f	Applicable only to multipoint configurations at Basic Rate. Essential to permit the undisturbed operation of the network with the selected terminal.
5.3 Call clearing		H	
5.3.1 Terminology	11.4.3.1	D	B-channel connection and disconnection not included (see clause F.1).
5.3.2 Exception conditions	11.4.3.2	4f	Fundamental part of the signalling system for clearing a call. Subparagraphs b) and c) not included as they are addressed in more detail in subclauses 5.2.9 and 5.3.3. Subparagraphs e1 & e2 not included as being applicable only to the network.
5.3.3 Clearing initiated by the user	11.4.3.3	4f	Fundamental part of the signalling system for clearing a call.
5.3.4 Clearing initiated by the network		X	Applicable to the network.
5.3.4.1 Clearing when tones/announcements provided	11.4.3.4	4f	The option of entering the Disconnect Indication state is retained for when the DISCONNECT message includes progress indicator #8. Normal clearing according to subclause 5.3.4.2 is also permitted.
5.3.4.2 Clearing when tones/announcements not provided	11.4.3.4.2	4f	Fundamental part of the signalling system for clearing a call.
5.3.4.3 Completion of clearing	11.4.3.4.3	4f	Fundamental part of the signalling system for clearing a call.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.3.5 Clear collision	11.4.3.5	4f	Fundamental part of the signalling system for clearing a call. Clear collision occurs when both the TE and the network simultaneously transfer DISCONNECT messages specifying the same call. Clear collision can also occur when both sides simultaneously transfer RELEASE messages related to the same call. Clear collisions are regarded as a normal occurrence in ISDN.
5.4 In-band tones and announcements		X	Applicable to the network.
5.5 Restart procedure		H	See subclause F.4.6
5.5.1 Sending RESTART		X	There are no defined circumstances under which the TE is required to send RESTART to the network. The clause is therefore not essential.
5.5.2 Receipt of RESTART		4f	See subclause F.4.6
5.6 Call rearrangements	11.4.4	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.1 Call suspension	11.4.4.1	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.2 Call suspended	11.4.4.2	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.3 Call suspend error	11.4.4.3	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.4 Call re-establishment	11.4.4.4	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.5 Call resume errors	11.4.4.5	4f	"Optional Essential" for Basic Rate to enable TP, where implemented by the terminal to operate without the loss of the call.
5.6.6 Double suspension	11.4.4.6	I	Included for information. No requirement exists.
5.6.7 Call re-arrangement notification controlled by an NT2		X	No requirements can be essential within this TBR applying to an NT2 at the S reference point. The sending of NOTIFY to the network at the T-reference is not necessary for interworking with the network, since, according to subclause 5.6 the procedures "have only local significance", and there is no consequent action or state change by the network upon receipt of a NOTIFY message.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.7 Call collisions	11.4.5	I	Included for information. No requirement exists.
5.8 Handling of error conditions	11.4.6	I	Text not included, except for an introductory sentence, as subsequent subclauses address the matter in more detail.
5.8.1 Protocol discrimination error	11.4.6.1	4f	It was intended that the requirement should be modified (and a TBR-RT question added) to address the possibility that a TE may be simultaneously capable of supporting Euro-ISDN and a national ISDN protocol with a different protocol discriminator. Time has not permitted the inclusion of suitable text.
5.8.2 Message too short		X	Would require network misoperation in order to occur.
5.8.3 Call reference error		H	
5.8.3.1 Invalid call reference format		X	First two paragraphs are not included because they would require a network misoperation to occur. The third paragraph is not included because the dummy call reference is not used in association with the basic call.
5.8.3.2 Call reference procedural errors	11.4.6.2.1	4f	Item a) could result from the implementation of Supplementary Services on the network side. Item b) could result from the implementation of Supplementary Services on the network side. Item c) could result from the implementation of Supplementary Services on the network side. Item d) is not included, as a network error would be necessary for this to occur. Item e) could result from the collision of a SETUP ACKNOWLEDGE with the resending of a SETUP. Item f) is not included, as a network error would be necessary for this to occur Item g) is not included, as the case is dealt with in more detail in subclause 5.8.11. Item h) (from the second edition) is not included as a network error would be necessary for this to occur.
5.8.4 Message type or message sequence errors	11.4.6.3	4f	Could result from the implementation of Supplementary Services on the network side. Third exception from the second edition is included for the same reason.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.8.5 General information element errors	11.4.6.4	I	Included as introductory text to the subsequent paragraphs.
5.8.5.1 Information element out of sequence		X	Would require network misoperation in order to occur.
5.8.5.2 Duplicated information elements	11.4.6.4.1		Could result from the implementation of Supplementary Services on the network side.
5.8.6 Mandatory information element errors	11.4.6.5	H	
5.8.6.1 Mandatory information element missing	11.4.6.5.1	4f	Necessary to future proof the TE against additional features on the network.
5.8.6.2 Mandatory information element content error	11.4.6.5.2	4f	Necessary to future proof the TE against additional features on the network.
5.8.7 Non-mandatory information element errors	11.4.6.6	H	
5.8.7.1 Unrecognized information element	11.4.6.6.1	4f	Necessary to future proof the TE against additional features on the network. Text takes into account the second edition.
5.8.7.2 Non-mandatory information element content error	11.4.6.6.2	4f	Necessary to future proof the TE against additional features on the network. Text takes into account the second edition.
5.8.7.3 Unexpected recognised information element (draft 2nd edition)	11.4.6.6.3	4f	Necessary to future proof the TE against additional features on the network.
5.8.8 Data link reset	11.4.6.7	X	Even the actions specified are not taken, the network will perform the necessary action under ETS 300 102-1, including the clearance of calls in those states which require it, and the invocation of the Status or Status Enquiry procedures. The correct response to this is included within the TBR, and therefore an incompatible call state cannot persist.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
5.8.9 Data link failure	11.4.6.8	4f	Even the actions specified are not taken, the network will perform the necessary action under ETS 300 102-1, including the clearance of calls in those states which require it, and the invocation of the Status or Status Enquiry procedures. The correct response to this is included within the TBR, and therefore an incompatible call state cannot persist. In State U10, when timer T309 is not implemented, a liaison to SPS5 requesting clarification of whether, in ETS 300 102-1 the requirement is to clear immediately or never to clear, met with differences of opinion as to the meaning of the ETS. It was therefore agreed that, for the purposes of the TBR, given the optional nature of T309, the TE may clear immediately, clear never, or clear after a delay. In effect there is no requirement.
5.8.10 Status enquiry procedure	11.4.6.9	4f	Text modified to not include dependence on timers. STATUS enquiry is one of the permitted responses to such events as data link reset. Call processing does not depend on the precise timing of the procedure.
5.8.11 Receiving a STATUS message	11.4.6.10	4f	Included as a requirement. Optional Essential for receiving a STATUS (i.e. applicable only if sending STATUS ENQUIRY is implemented. Essential for sending STATUS in response to receiving STATUS ENQUIRY, otherwise the network may place the B-channel in a maintenance condition.
5.9 User notification procedure	11.4.7	4f	Generation of NOTIFY is a normal operating condition of the network. There is no requirement for the TE to generate NOTIFY (see subclause 5.6.7).
6 Packet communication procedures		X	Outside the scope of the TBR.
7 User-to user signalling procedures		X	Outside the scope of the TBR.
8 Application of circuit-switched supplementary services to terminals using stimulus procedures		X	Not an essential requirement.
9 List of system parameters		H	
9.1 Timers in the Network Side		X	Applicable to the network side.
9.2 Timers in the User side		X	All Layer 3 timers except T317 relating to requirements included in the TBR would require a network misoperation in order to occur. See subclause F.4.7 for more detail.

Table F.4 (continued): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
Annex A (Informative): User side and network side SDL diagrams		X	Informative only in ETS 300 102-1.
Annex B (Normative): Compatibility checking		X	See that subclause 5.2.2 for more detail on the justification.
B.1 Introduction		X	
B.2 Calling side compatibility checking		X	
B.3 Called side compatibility checking		X	
B.3.1 Compatibility checking with addressing information		X	
B.3.2 Network-to user compatibility checking		X	
B.3.3 User-to-user compatibility checking		X	
B.3.4 User action tables		X	
B.4 Interworking with existing networks		X	
Annex C (Normative): Transit network selection		X	See subclause 5.1.10 for information concerning transit network selection.
C.1 Selection not supported		X	
C.2 Selection supported		X	
Annex D (Informative): Extension for symmetric call operation		X	Not applicable to the user-network interface.
Annex E (Normative): Network specific facility selection		X	Applicable to the network.
Annex F (Informative): D-Channel backup procedures		X	Not applicable to Euro-ISDN.
Annex G (Informative): Cause definitions		X	The annex is informative, and mainly repeats in extended form the information in subclause 4.5.12.
Annex H (Informative): Examples of information elements coding		X	Contains no requirements. Informative only.
Annex I (Normative): Use of progress indicators		X	No new requirements added to the user side.
Annex J (Normative): Examples of cause value and location for busy condition		X	Informative examples only.

Table F.4 (concluded): Changes with respect to ETS 300 102-1

Clause of ETS 300 102-1	Clause of TBR	Status	Justification
Annex K (Normative): Message segmentation procedures		X	For Basic call there are no messages that are long enough to require segmentation. Not all networks actually implement message segmentation.
Annex L (Normative): Low layer information coding principles		X	Addresses interworking via the network.
Annex M (Normative): Low layer compatibility negotiation		X	Addresses interworking via the network.
Annex N (Normative): Procedures for establishment of bearer connection prior to call acceptance		X	Applicable to network only.
Annex O (Informative): Optional procedures for bearer service change		X	Informative only.
Annex P (Informative): Formal Definitions for the Facility information element		X	Informative only.
Appendix I (Informative) (to ETS 300 102-1): Usage of cause values		X	Informative only.
Appendix II (Informative): (to ETS 300 102-1): Example message flow diagrams and example conditions for cause mapping		X	Informative only.
Appendix III (Informative) (to ETS 300 102-1): Summary of assigned information element identifier and message type code points for the T/S 46-XX series of ETSs		X	Informative only.

F.5 Changes with respect to I-ETS 300 313

This document summarizes the changes of the TBR 3 and TBR 4 Layer 2 ATS with respect to I-ETS 300 313.

F.5.1 Change of use of timer TAC (Layer 2 response time)

The Layer 2 response time value, which is tested by timer TAC, to be tested depends on the configuration (point-to-point or point-to-multipoint). The original test suite used a constant value (200 ms) and is therefore not able to test different values as necessary. To solve the problem a variable (TAC_VAL) is used to pass the value of timer TAC to the test cases. This value is initialised at the start of PR31401 for BA and PR34001 for PA, as these two preambles are used by all test cases.

In the constants declaration two new constants are declared (TAC_PTP and TAC_PTMP). In the test suite variables declaration a new variable is declared (TAC_VAL).

F.5.2 Change of timer tolerances

The declaration of the constants T200MAX and T202MAX are changed to 5 000 (5 s) in order to reflect the changes of tolerances used in the TBRs.

F.5.3 Change of timer TWL3 (Layer 3 response time)

The value TWL3 is changed from a PIXIT value to the Layer 3 response time defined in the TBRs for Layer 3.

F.5.4 Detailed list of changes with respect to I-ETS 300 313

Table F.5: Changes with respect to I-ETS 300 313

Test case identifier	Problem in I-ETS 300 313	Changes with respect to I-ETS 300 313
TC13010	The purpose of the test case is to test that the IUT transmits an ID-request frame only N202 (3) times. However an IUT may initiate TEI assignment procedure for its own reasons (subclause 5.3.1 of ETS 300 125) and therefore an IUT may retransmit ID-request endlessly and still be implemented according to the standard. Therefore it can only be tested that the IUT transmits ID-request **at least** N202 times.	It is tested that the IUT transmits ID-request at least N202 times. The test case is not awaiting a timeout of a test timer in order to pass. After retransmission of (N202-1) ID-requests the test case proceeds to PO44004 with verdict pass.
TC14019	The test case is using the non-essential requirement, that an IUT shall initiate TEI assignment procedure after TEI removal.	The modified version of CS51001 does take into account not using non-essential requirements when checking state 1. Therefore the expected receipt of an ID request can be replaced by the modified version of CS51001.
TC14022	Same as for TC14019	Same as for TC14019
TC24004	**Problem 1** The Basic Access part of the test case is not able to test a point-to-point configured IUT, as the Basic Access part provides that the IUT is able to receive Layer 3 messages in UI-frames. **Problem 2** For point-to-multipoint a UI-frame containing a compatible SETUP (UI1) with the mandatory information element Channel Identification missing is sent to the IUT. This causes the IUT to respond with a RELEASE COMPLETE. In order to code UI1 it necessary to provide information giving the coding of a compatible SETUP with the mandatory information element Channel Identification missing. This information is provided from the PIXIT filled by the test apparatus supplier.	**Problem 1** The problem can be solved by using the Primary Rate Access part for Basic Access IUTs configured for point-to-point. The I-frame used (IN5) in the PA part is an I-frame which is declared for BA as well. Therefore when using the test case for BA the declarations will be correct. A new selection mechanism is introduced using a new PICS parameter PC_PTMP. **Problem 2** Instead of using a compatible SETUP with no Channel ID, a SETUP (UI3) with no information elements is used. The response from the IUT is the same in both cases, and using UI3 does not require information from the PIXIT.
TC24007	Same as for TC14019.	Same as for TC14019.
TC25005	In case of retransmitting SABME N200 times, the behaviour of the IUT is not clear. Therefore it only possible to test whether an IUT retransmits SABME *at least* N200 times.	Test is changed in order to test that the IUT retransmits SABME at least N200 times.
TC27027	The postamble PO44001 is used. It leaves the IUT into state 4, in which may not be stable.	"+PO44001" is replaced by "+PO44004". PO44004 will leave the IUT in state 1, 4 or 7, depending on which state is stable for the IUT.
TC27031	Same as for TC14019.	Same as for TC14019.

Table F.5 (continued): Changes with respect to I-ETS 300 313

Test case identifier	Problem in I-ETS 300 313	Changes with respect to I-ETS 300 313
TC27040	The IUT is left in state 4 which often is unstable state.	The IUT is left in state 7.
TC27058	The purpose of the test case is to test whether the IUT ignores a frame containing an FCS error. The IUT is brought to state 7.0 and an I-frame (Release) with a FCS error is sent to the IUT and no frames are expected from the IUT for TNOAC (3 s). However, the IUT may not be stable in state 7.0 and therefore it may send a DISC, which will cause the verdict fail.	A DISC from the IUT is accepted. In case a DISC is received verdict inconclusive is assigned. It is not possible to determine whether the IUT is not be stable in state 7.0, and initiates disconnection of the datalink or whether the DISC is sent as a result of the I-frame with a FCS error.
TC27074	The IUT may be left in an unstable state at the end of the test.	PO44001 is replaced by PO44004.
TC27075	The IUT may be left in an unstable state at the end of the test.	PO44001 is replaced by PO44004.
TC27417	The IUT may be left in an unstable state at the end of the test.	PO44001 is replaced by PO44004.
TC28019	Same as for TC14019.	Same as for TC14019.
PR31001	The basic access ATS is not able to test point-to-point configured IUTs.	A selection mechanism selecting the primary rate access preambles for basic access point-to-point IUTs is introduced.
PR31401	The ATS uses a fixed value for the Layer 2 response time. The TBRs requires two different values depending on the configuration.	A selection mechanism of the appropriate value of Layer 2 response time is added.
PR33001	Same as for PR31001.	Same as for PR31001.
PR34001	Same as for PR31001 and PR31401.	Same as for PR31001 and PR31401.
PR34003	For an IUT unstable in state 4 the IUT may end in a infinite loop.	If the IUT sends a SABME a DM is sent to it, which leaves it in state 4.
PR35001	The preamble is using a non-essential requirement. It expects that the IUT when in state 4 and receiving a DM F=0 initiates establishment of the data link.	It is an essential requirement that the IUT initiates re-establishment in case of N(R) sequence error (ETS 300 125 subclause 5.8.5, Frame rejection condition). Therefore sending a RR command frame with a N(R) sequence error when the IUT is in state 7.0 will force the IUT to transmit a SABME and enter state 5.1. There is no difference for the purpose of the test entering state 5.0 or 5.1.
PR37002	Same as for PR31001.	Same as for PR31001.

Table F.5 (concluded): Changes with respect to I-ETS 300 313

Test case identifier	Problem in I-ETS 300 313	Changes with respect to I-ETS 300 313
PR37004	A empty SETUP is sent to the IUT in state 1 or state 4. The empty SETUP will initiate that the IUT will respond with a RELEASE COMPLETE, but before that it shall establish a datalink. It is expected to receive a ID-request or SABME within TWAIT (30 sec) which is assumed to be initiated because Layer 2 has an I-frame to send. After receiving the first frame the following frames are expected to be received within timer TAC (Layer 2 response time). However, the assumption is not necessarily correct. Therefore it cannot be required that the IUT sends most of the frames within expiry of timer TAC.	When sending the empty SETUP to the IUT TWL3 (Layer 3 response time) is started, and it is not cancelled before the response in an I-frame is received. All use of timer TAC is deleted.
PO44004		The postamble has been modified.
CS51001	The purpose of the check state is to test whether the IUT is in state 1. It is expected that the IUT does not initiate TEI assignment procedure. However an IUT may initiate TEI assignment procedure of its own reasons (subclause 5.3.1 of ETS 300 125) and therefore it cannot be assumed that the terminal is stable in state 1.	The new Check state allows that the IUT sends a ID-request. In that case it is proven that the IUT just left state 1 and therefore the verdict pass is assigned. In case no frames are received within TNOAC (3 s) an ID-check request is sent to the IUT and no response is expected.
CS53001	When calling CS53001 there may be an I-frame in the I queue of the IUT as a result of the preambles and test cases performed prior to the call of the postamble. This is not taken into account in the old version.	CS53001 has been modified so that the only requirement is that the IUT transmits an ID-request within expiry of TW202. CS will accept an establishment of the data link and a possible transmission of any I-frame from the IUT.
CS54001	The postamble is using the non-essential requirement to respond to a DISC with DM when in state 4.	There are no means to check whether the IUT is in state 4 without using non-essential requirements. Therefore the non-essential requirement is used. However, if the IUT does not respond to a DISC when in state 4 (non-essential) the verdict inconclusive is assigned.
CS57001	An IUT in state 7.0, may send a DISC for its own reasons. This gives the verdict fail in the ATS.	In case the IUT sends a DISC, the verdict inconclusive is assigned, as it is not possible to determine whether the IUT was in state 7 or 6.
CS57101	The IUT is left in a unstable state at the end of the test.	PO44001 is replaced by PO44004.
CS57401	The IUT is left in a unstable state at the end of the test.	PO44001 is replaced by PO44004.

F.6 Changes with respect to I-ETS 300 322

F.6.1 Basic Access, point-to-point configurations

In order to enable the Layer 3 ATS to test point-to-point configured terminals for basic access some changes are introduced.

The only difference between point-to-point and point-to-multipoint from a Layer 3 point of view is that a SETUP from the tester shall be delivered in a UI broadcast frame for point-to-multipoint and in an I-frame for point-to-point.

A parameter BDL indicates which configuration is relevant. A selection mechanism is introduced, which selects whether SETUPs and SETUPs with errors sent from the tester are to be sent in I-frames or UI-frames.

F.6.2 Change of test case identifiers

In I-ETS 300 322, TC10008 and TC10009 existed in two different versions. One version for testing basic access and one version for testing primary rate access. The versions for testing primary rate access are assigned new identifiers:

TC10008 for BA is assigned the identifier TC10008;

TC10008 for PA is assigned the identifier TC10037;

TC10009 for BA is assigned the identifier TC10009;

TC10009 for PA is assigned the identifier TC10038.

F.6.3 Changes of constraints

In I-ETS 300 322; the constraints does not allow for the inclusion of all supplementary service elements and tests could fail if such elements were included in messages sent from the IUT.

The ATS has been modified such that these elements are no longer constrained and are therefore ignored when present.

F.6.4 Changes to required Cause values

The cause values of DISCONNECT, RELEASE and RELEASE COMPLETE messages are constrained in I-ETS 300 322.

This is not an essential requirement and the test cases no longer require specific cause values in these messages.

F.6.5 Inclusion of testing RESTART procedures for basic access

The ATS has been changed to enable testing of RESTART procedures for basic access.

Annex G (normative): List of supported telecommunication services

G.1 Basic telecommunication services

This TBR is applicable to TE supporting basic telecommunication services based on the following bearer capabilities:

- circuit-mode 3,1 kHz audio (ETS 300 084);
- circuit-mode 64 kbit/s unrestricted (ETS 300 108);

  NOTE: This also includes circuit-mode access to a PSPDN (X.31 case A).

- circuit-mode 64 kbit/s unrestricted with tones/announcements (ETS 300 267-1);
- circuit-mode speech (ETS 300 083);
- circuit-mode multirate (ETS 300 389).

G.2 Supplementary services

This TBR is applicable to TE that supports:

a) any supplementary service invoked by stimulus signalling (ETS 300 122-1); or

b) any supplementary service invoked by functional signalling where the call state is not altered other than by the procedure defined for basic call. This includes the following:

   - Multiple Subscriber Number (MSN) supplementary service (ETS 300 052-1);
   - Direct Dialling In (DDI) supplementary service (ETS 300 064-1);
   - Subaddressing (SUB) supplementary service (ETS 300 061-1);
   - Calling Line Identification Presentation (CLIP) supplementary service (ETS 300 092-1);
   - Calling Line Identification Restriction supplementary (CLIR) service (ETS 300 093-1);
   - Terminal Portability (TP) supplementary service (ETS 300 055-1);
   - Connected Line Identification Presentation (COLP) supplementary service (ETS 300 097-1);
   - Connected Line Identification Restriction (COLR) supplementary service (ETS 300 098-1);
   - Call Waiting (CW) supplementary service (ETS 300 058-1);
   - Advice Of Charge (AOC) supplementary service (ETS 300 182-1);
   - Malicious Call Identification (MCID) supplementary service (ETS 300 130-1);
   - Call Hold (HOLD) supplementary service (ETS 300 141-1);
   - Three-Party (3PTY) supplementary service (ETS 300 188-1);
   - Conference call add-on (CONF) supplementary service (ETS 300 185-1);
   - Closed User Group (CUG) supplementary service (ETS 300 138-1);
   - Freephone (FPH) supplementary service (ETS 300 210-1);
   - User-to-User Signalling (UUS) supplementary service (ETS 300 286-1);
   - Diversion supplementary services (CFU, CFB, CFNR and CD) (ETS 300 207-1)
   - Explicit Call Transfer (ECT) supplementary service (ETS 300 369-1);
   - Completion of Calls to Busy Subscriber (CCBS) supplementary service (ETS 300 359-1).

   Other supplementary services that may be defined in the future may be included in this category.

Annex H (informative): Bibliography

For the purposes of this TBR, the following informative references have been given.

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