

Australian/New Zealand Standard™

**Information technology—
Telecommunications and information
exchange between systems—X.25 DTE
conformance testing**

**Part 2: Data link layer conformance test
suite**

AS/NZS 4157.2:2000

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Australian/New Zealand Standard™

Information technology— Telecommunications and information exchange between systems—X.25 DTE conformance testing

Part 2: Data link layer conformance test suite

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT/1, Information Systems—Interconnection to supersede AS/NZS 4152.2:1994. This Standard is identical with and has been reproduced from ISO/IEC 8882-2:1995, *Information technology—Telecommunications and information exchange between systems—X.25 DTE conformance testing, Part 2: Data link layer conformance test suite, and Technical Corrigendum 1:1997*, which is bound at the back of this Standard.

The objective of this Standard is to provide designers of X.25 networks with a definition for testing data terminal equipment (DTE) connected to data circuit terminating or with another DTE equipment conforming with X.25 protocols.

This Standard is Part 3 of AS/NZS 4157, *Information technology—Telecommunications and information exchange between systems—X.25 DTE conformance testing*, which is published in Parts as follows:

- Part 1: General principles
- Part 2: Data link layer conformance test suite (this Standard)
- Part 3: Packet layer conformance test suite

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References to International Standards should be replaced by reference to equivalent Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian or Australian/New Zealand Standard</i>	
ISO/IEC		AS/NZS	
7498	Information technology—Open Systems Interconnection—Basic Reference Model	2777	Information technology—Open Systems Interconnection—Basic reference model
7498-1	Part 1: The Basic Model	2777.1	Part 1: The basic model
7776	Information technology—Telecommunications and information exchange between systems—High-level data link control procedures—Description of the X.25 LAPB-compatible DTE data link procedures.	3512	Information technology—Telecommunications and information exchange between systems—High-level data link control procedures—Description of the X.25 LAPB-compatible DTE data link procedures
8824	Information technology—Open Systems Interconnection—Specification of Abstract Syntax Notation One (ASN.1)	—	
8882	Information technology—Telecommunications and information exchange between systems—X.25 DTE conformance testing	4157	Information technology—Telecommunications and information exchange between systems X.25 DTE conformance testing
8882-1	Part 1: General principles	4157.1	Part 1: General principles

ISO/IEC		AS/NZS	
9646	Information technology—Open Systems Interconnection—Conformance testing methodology and framework	4103	Information technology—Open Systems Interconnection—Conformance testing methodology and framework
9646-1	Part 1: General concepts	4103.1	Part 1: General concepts
9646-2	Part 2: Abstract Test Suite specification	4103.2	Part 2: Abstract test suite specification
9646-3	Part 3: The Tree and Tabular Combined Notation (TTCN)	4103.3	Part 3: The tree and tabular combined notation
9646-4	Part 4: Test realization	4103.4	Part 4: Test realization
9646-5	Part 5: Requirements on test laboratories and clients for the conformance assessment process	4103.5	Part 5: Requirements on test laboratories and clients for the conformance assessment process
CCITT			
Rec. X.25	Interface Between Data Terminating Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode on the Public Data Networks	—	
Rec. X.25	Interface Between Data Terminating Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode and Connected to Public Data Networks by Dedicated Circuit	—	

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NOTES

AUSTRALIAN/NEW ZEALAND STANDARD

Information technology — Telecommunications and information exchange between systems — X.25 DTE conformance testing —

Part 2:

Data link layer conformance test suite

1 Scope

This part of ISO/IEC 8882 defines an abstract test suite for testing the conformance of the Data Link Layer of an IUT with respect to ISO/IEC 7776 or the CCITT Recommendation X.25 (1980, 1984).

Conformance of a Data Terminal Equipment (DTE) to the above ISO International Standard or CCITT Recommendations is tested using a dedicated circuit between the tester and the DTE. It is noted that CCITT Recommendations X.25 (1980) and X.25 (1984) are written from the perspective of a DCE and therefore do not always explicitly specify the DTE's operation. In such cases it is assumed that recommended

operation of a DTE is included by implication because of the need to communicate with X.25 DCEs. This part of ISO/IEC 8882 excludes the testing of the LAP procedures given in the CCITT Recommendations.

NOTE Test cases for extended mode operation (Modulo 128), multilink procedure and DTE-DTE operation as per ISO/IEC 7776 are for further study.

The tests in this part of ISO/IEC 8882 are designed for three possible interworking situations, shown in Figure 1. This part specifies tests for all three cases shown in Figure 1, but recognizes that not every test may apply to a particular DTE. A test selection procedure has to be performed to determine the applicability of a test to a particular DTE. Such selection will be based on the PICS and the PIXIT.

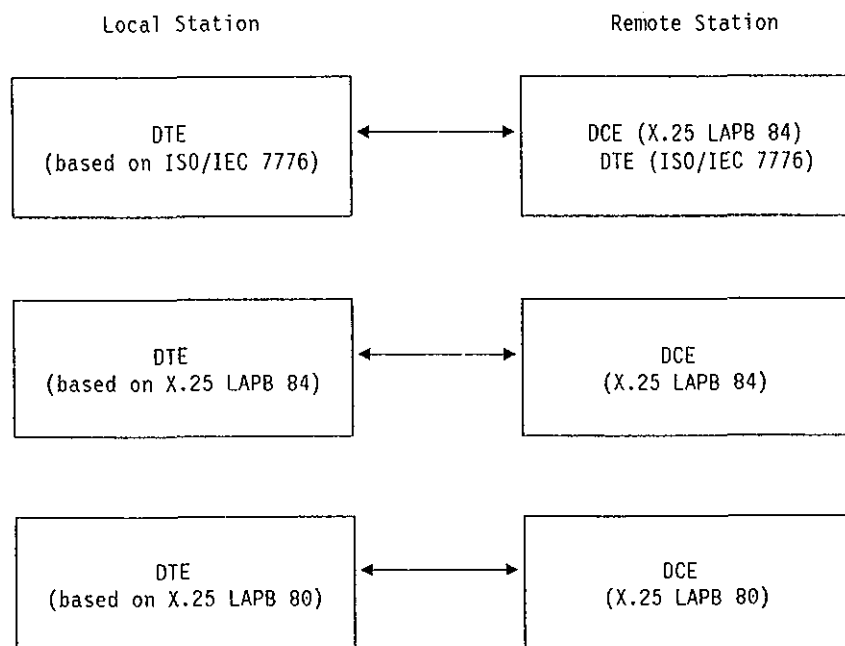


Figure 1 - Testing X.25-DTE/DCE and X.25-DTE/DTE Interworking

In the rest of this part of ISO/IEC 8882, the term "X.25 standards" means all three of CCITT Recommendation X.25 (1980), CCITT Recommendation X.25 (1984), and

International Standard ISO/IEC 7776, unless stated otherwise.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 8882. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 8882 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 7498-1: 1994, *Information technology -- Open Systems Interconnection -- Basic Reference Model: The Basic Model* (See also CCITT Recommendation X.200).

ISO/IEC 7776: 1995, *Information technology -- Telecommunications and information exchange between systems -- High-level data link control procedures -- Description of the X.25 LAPB-compatible DTE data link procedures*.

ISO/IEC 8824: 1990, *Information technology -- Open Systems Interconnection -- Specification of Abstract Syntax Notation One (ASN.1)* (See also CCITT Recommendation X.680).

ISO/IEC 8882-1:1993, *Information technology -- Telecommunications and information exchange between systems -- X.25-DTE conformance testing -- Part 1, General principles*.

ISO/IEC 9646-1: 1991, *Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts*. (See also CCITT Recommendation X.290).

ISO/IEC 9646-2: 1994, *Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 2: Abstract Test Suite specification*. (See also CCITT Recommendation X.291).

ISO/IEC 9646-3: 1992, *Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 3: The Tree and Tabular Combined Notation (TTCN)*.

ISO/IEC 9646-4: 1994, *Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 4: Test realization*. (See also CCITT Recommendation X.293).

ISO/IEC 9646-5: 1994, *Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 5: Requirements on test laboratories and clients for the conformance assessment process*. (See also CCITT Recommendation X.294).

CCITT Recommendation X.25 (1980), *Interface Between Data Terminating Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode on the Public Data Networks*.

CCITT Recommendation X.25 (1984), *Interface Between Data Terminating Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for terminals operating in the Packet Mode on the Public Data Networks by Dedicated Circuit*.

3 Definitions and abbreviations

For the purposes of this part of ISO/IEC 8882, the definitions given in 3.4 and in the following International Standards apply:

- a) ISO/IEC 7498-1;
- b) ISO/IEC 9646;
- c) ISO/IEC 8882-1.

3.1 Reference model definitions

The following terms defined in ISO/IEC 7498-1 are used:

- a) (N)-protocol data unit (N-PDU). In the context of this part of ISO/IEC 8882 (N) is layer 2 and so N-PDU is abbreviated to PDU. A PDU in the Data Link Layer is also referred to as a "frame".
- b) Data Link Layer

3.2 Conformance testing terms

The following terms are used from the Conformance Testing Methodology and Framework International Standard (ISO/IEC 9646):

- a) Conformance Testing
- b) Conformance Test Suite
- c) Implementation Under Test (IUT)
- d) Protocol Implementation Conformance Statement (PICS)
- e) Protocol Implementation Extra Information for Testing (PIXIT)
- f) Static Conformance Requirements (SCR)
- g) Behavior Testing
- h) Test Purpose
- i) Tree and Tabular Combined Notation (TTCN)
- j) Preamble

- k) Test Body
- l) Test Step
- m) Test Event
- n) Abstract Service Primitive (ASP)
- o) Test Group
- p) Abstract Test Suite (ATS)
- q) Executable Test Suite (ETS)
- r) Test Verdicts
- s) Lower Tester
- t) Upper Tester
- u) Test Methods
- v) Remote Single (layer) Test Method (RS method)
- w) Valid Test Event
- x) Invalid Test Event
- y) Inopportune Test Event
- z) Point of Control and Observation (PCO)

3.3 X.25-DTE conformance testing terms

This part of ISO/IEC 8882 makes use of the following terms defined in ISO/IEC 8882-1:

- a) Improper PDU
- b) Proper PDU
- c) Test Case
- d) Test Subgroup
- e) Tester

3.4 Additional definitions

This test suite uses test subgroups for proper, improper and inopportune frames to test the IUT behavior. These terms are defined below.

3.4.1 improper frame : A frame that satisfies one or more of the following conditions:

- a) it is not properly bounded by two flags;
- b) it contains fewer than 32 bits between flags;
- c) it contains a Frame Check Sequence (FCS) error;
- d) it contains an invalid address field encoding;
- e) it contains a command or response control field encoding that is undefined or not implemented in X.25-DTE LAPB Data Link Layer protocol as specified in ISO/IEC 7776;
- f) it is an I frame exceeding the maximum established frame length;
- g) it is an unnumbered or supervisory frame with an information field which is not permitted;
- h) it is a frame with an invalid N(R).

3.4.2 inopportune frame : A syntactically valid frame arriving at a time (DTE's state) when it should be considered irrelevant by the DTE. Syntactically valid frames are those that are allowed by the X.25 standards for a DTE using the LAPB procedure and are not covered by 3.4.1.

3.4.3 proper frame : A valid frame arriving at the correct DTE's state or phase and not covered by 3.4.1 or 3.4.2.

3.5 Abbreviations

The abbreviation IUT is used in this part of ISO/IEC 8882 to refer to an X.25-DTE under test.

4 Test suite information

4.1 Test suite structure

The X.25-DTE Data Link Layer Conformance Test Suite structure is outlined in Table 1.

Table 1. Data link layer test suite structure

Data Link Layer Test Groups	Test State Abbreviation	Test Group Name	Current State of IUT
DL1	DP	Disconnect phase	DISC received and UA or DM transmitted (see clause 4.10)
DL2	LD	Link Disconnection phase	DISC transmitted from any phase (see clause 4.11)
DL3	LS	Link Set-up phase	SABM transmitted from DP (see clause 4.11)
DL4	IT	Information Transfer phase	SABM received and UA transmitted, or SABM transmitted and UA received, while in DP or IT phase
DL5	FR	Frame Reject condition	FRMR transmitted from IT phase (see clause 4.10)
DL6	BY	IUT Busy condition	RNR transmitted from IT phase (see clause 4.10 and 4.11)
DL7	SR	Sent Reject condition	REJ transmitted from IT phase
DL8	SP	System Parameters and Error Recovery	See note below
Note: Test Group DL8 tests the setting of the system parameters: T1 - Retransmission timer; N2 - Maximum number of attempts by IUT to complete a transmission. The setting of maximum established length and k (window size) are tested under test group DL4.			

4.2 Data link layer test groups and subgroups

The first seven test groups shown in Table 1, called Data Link Layer Test Groups DL1 to DL7, are provided to test the interactive capability of the IUT in every phase. The test groups are further divided into three subgroups according to the definitions in clause 3.4. These are as follows:

- Subgroup 1 involves those test cases where the tester transmits a proper frame.
- Subgroup 2 involves those test cases where the tester transmits an improper frame.
- Subgroup 3 involves those test cases where the tester transmits an inopportune frame.

The eighth test group (DL8) is designed to test the operational correctness of the IUT system parameters listed in Table 1.

4.3 Method for conformance testing

The method for conformance testing shall be as defined in ISO/IEC 8882-1.

4.4 Test case notation

Clause 5 describes the abstract test suite using the Tree and Tabular Combined Notation (TTCN). This abstract test suite complies with ISO/IEC 9646-3 for TTCN.GR. The test realizer shall comply with the requirements of ISO/IEC 9646-4. In particular, these concern the realization of an Executable Test Suite (ETS) based on the Abstract Test Suite (ATS). Test laboratories running conformance test services for this abstract test suite shall comply with ISO/IEC 9646-5.

The tests described in this test suite may be performed in any order. Test cases are independent of one another. Most of the test cases consist of a preamble followed by a test body and ending with a verification sequence. The preamble consists of the initialization test steps described in clause "Preambles." The verification sequences consists of the final test step described in clause "Verification sequences." In some instances in the test steps, all the possible parameter alternatives for PDUs are not verified, as they do not directly relate to the test purpose.

The preambles shown in this part of ISO/IEC 8882 are examples of how, for different situations, the tester can get the IUT into the desired phase or state. These preambles are not meant to be either a mandatory or exhaustive set of acceptable initialization sequences for the IUT. Other possible preambles may be negotiated between the test laboratory and the client. Table 2 illustrates an abstract test case written in TTCN:

Table 2. Test Step Dynamic Behavior					
Test Step Name : TTCN_EXAMPLE Group : Example Test Case Objective : An example test step illustrating an abstract test case in TTCN. Default : Comments :					
Nr	Label	Behavior Description	Constraints Ref	Verdict	Comments
1		+ preamble_1 [IUT_TYPE = option_1]			1
2		+ preamble_n [IUT_TYPE = option_n]			2
3		+ test_body_part_1			
4		+ verification_1			
5		! PDU_X			5
6		? PDU_Y [IUT_TYPE = option_2]			6
7		(VARIABLE := 1)			7
8		+ verification_2			
9		+ test_body_part_n			
10		+ verification_n			
Detailed Comments: 1 The '+' symbol indicates the attachment of a TTCN tree. 2 Trees attached at the same level of indentation are alternatives. 5 Event line starting with '!' is a send event in TTCN. 6 Event line starting with '?' is a receive event in TTCN. 7 The operation ':=' is an assignment in TTCN.					

4.5 Preamble

The Preamble of a test case consists of the steps required to bring the IUT to the appropriate initial state or phase. There may be various alternative sequences of test steps which can be performed in order to initialize the IUT. The preamble may depend on the test method as well as specific IUT behavior that can be controlled or observed using that method. Therefore, preambles may be different for different IUTs. In order to properly initialize a test case an appropriate preamble has to be used for testing a particular IUT. An inconclusive verdict in the preamble may be the result either of protocol violation or of the fact that the preamble is unsuitable for that particular IUT. Clause "Preambles" gives examples of preambles to be used as a test initialization sequence. Other valid preambles that may be used are a matter of agreement between the test laboratory and its client.

4.6 Verification sequence

The conclusion of a test case is conducted in the test sequence called a verification sequence. In most cases the verification sequence depends on the final state in which the IUT is expected to be as a result of a test stimulus. A single test case may have more than one possible verification sequence depending on the actual IUT behavior. Also, like the preamble, the verification sequence may depend on the testing method used or may depend on the IUT. Clause "Verification sequences" gives examples of verifica-

tion sequences to be used as a test conclusion sequence. Other valid verification sequences that may be used are a matter of agreement between the test laboratory and its clients.

4.7 IUT initiated actions

The general principles, with respect to IUT initiated actions required by this test suite, are in accordance with ISO/IEC 8882-1. The ability of the IUT to perform these actions, and its ability to initiate the tests containing the actions, are determined by the information provided in the PIXIT.

4.8 Acceptable unexpected IUT frames

The test cases in this test suite indicate the frames from the IUT required to satisfy the test purpose. In some cases, particularly in the Information Transfer phase, unexpected frames may be received from the IUT which do not affect the final test verdict.

Acceptable unexpected frames are accepted by the tester without affecting the final test verdict. In the case of RNR, the tester shall suspend the test until the busy condition is cleared (see Table 3, item 7b).

In a controlled environment, DISC and SABM commands and DM responses sent by the IUT are not considered to be acceptable unexpected frames during information transfer tests.

4.9 Transient states

A transient state is an unstable state that may preclude satisfactory conduct of tests contained in clauses "Verification of the disconnected phase," "Verification of frame reject condition" and "Verification of IUT busy condition." To conduct tests in these clauses the IUT must be capable of:

- Being forced to establish a particular data link condition or phase as part of the test preamble, by using the LAPB procedures as defined in X.25 standards.
- Maintaining the established condition for a period of time sufficient for the tester to initiate and conduct the required test steps in an orderly and observable manner.
- Arriving at a prescribed, predictable condition or phase for the verification of the test, and maintaining that condition for a time sufficient to record the results from the verification sequence.

4.10 Unreachable states

An unreachable state is a state never entered by some IUTs. This may preclude satisfactory conduct of tests contained in clauses "Verification of the IUT link disconnection phase," "Verification of link setup phase" and "Verification of IUT busy condition."

4.11 Declarations

The purpose of TTCN declarations is to describe the set of test events and all other attributes to be used in the test suite. For further information on TTCN declarations see ISO/IEC 9646-3.

For the X.25 Data Link Layer test suite, the declarations are based on Protocol Data Units (PDUs) defined in OSI Basic Reference Model [ISO/IEC 7498-1] are called "frames" in the X.25 standards. The PDUs are declared with a set of PDU parameters that may be assigned values for the purpose of testing. The PDU constraints (specified in clause "ASN.1 PDU constraint declarations") are the list of values that the PDU parameters must take in a particular test event.

The improper PDUs are declared only for the purpose of use within ISO/IEC 8882. It is recognized that many variations are possible in an improper PDU, all of which may cause the same reaction from the IUT. It is not practical to exhaustively list all these variations. To preserve the flexibility of improper PDU encoding, ISO/IEC 8882 shows some typical examples.

The FCS octets are not shown in the data type declarations in this test suite.

4.12 Order of bit transmission

The order of bit transmission for the PDUs in the declarations above shall be as defined in the X.25 standards. The order of bit transmission for PDUs in the declarations for ABORT, HEX and FCS_ERROR is illustrated in the example shown in Figure 2.

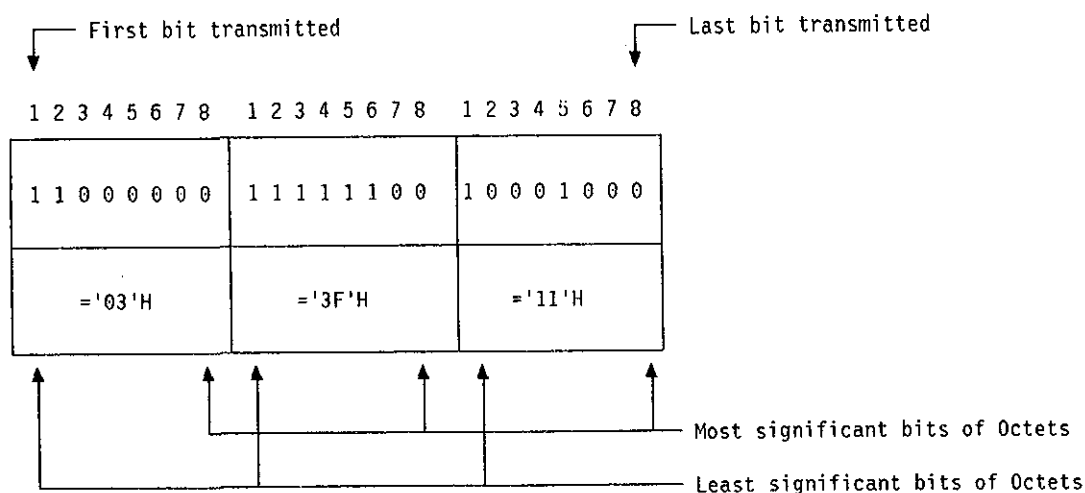


Figure 2 - Example - Hex (String='033F11'H)

4.13 PIXIT proforma

It is essential that the client provide the test laboratory with all the information (in addition to that given in the PICS) that will enable the appropriate test cases to be applied to the IUT. This information is provided in the Protocol Implementation eXtra Information for Testing (PIXIT). This PIXIT proforma is related to and dependent on the Protocol Implementa-

tion Conformance Statement (PICS) proforma which is being developed as an amendment to ISO/IEC 7776.

A mnemonic enclosed in parenthesis, e.g. (N2), indicates the test suite parameter that maps to this PIXIT question.

Table 3 (Page 1 of 2). Protocol Implementation eXtra Information for Testing (PIXIT)		
Item	General Information	Values
1	Classification of IUT, select one of ISO_7776, X25_1980, X25_1984, if conformance is claimed to ISO/IEC 7776, X.25 1980 or 1984 respectively. (IUT_TYPE)	Value:
2	The value of k used by IUT. (k)	Value:
3	The value of the maximum established length of the information field of the received I frames. (MEL)	Value:
4	The value of N2 for IUT. (N2)	Value:
5	The value of T1 parameter, in milli-seconds, used by the IUT. (T1_ONE)	Value:
Md	Which MODULO base is used for these tests? (Md)	Value:
Item	Procedural Information	Values
6	IUT will initiate transmission of I frames on entering information transfer tests.	☐ Yes ☐ No
6a	IUT acknowledges I frames immediately so that it can handle a full window of I frames within timer T1/2. (IUT_ACK)	☐ Yes ☐ No
7a	IUT can be made to enter the busy condition when required for testing. (IUT_SEND_RNR)	☐ Yes ☐ No
7a1	If yes to 7a, specify the time, in milli-seconds, the IUT will remain busy.	Value:
7b	Specify if IUT will send RNR after link set-up (e.g., this may correspond to a situation where RNR is used while higher level is being set up).	☐ Yes ☐ No
7b1	If yes to 7b, enter the MAXIMUM time, in milli-seconds, the IUT will be in busy condition. (Tb)	Value:
8	IUT can be made to initiate link disconnection when required for testing. (IUT_SEND_DISC)	☐ Yes ☐ No
8a	Is manual intervention required to initiate link disconnection when required for testing.	☐ Yes ☐ No
8a1	If yes to 8a, specify the time, in milli-seconds.	Value:
9	State the time in milli-seconds the tester must wait before determining that the IUT will not respond to a tester stimulus. This value will be tester parameter Td. Note: Td < T1. (Td)	Value:
10a	IUT can be made to set-up the link when required for testing. (IUT_SETUP_LINK)	☐ Yes ☐ No
10a1	If yes to 10a, specify PICS item under "Link set-up (reset) procedure" to be used.	PICS item:
10b	IUT can request the tester to set-up the link when required. (TEST_DM)	☐ Yes ☐ No
11	IUT can maintain the disconnected phase as a stable state for a period of time. (STABLE_DP)	☐ Yes ☐ No
11a	If yes to 11, specify the time, in milli-seconds, IUT will remain in disconnected phase. During this time period the IUT will not unilaterally send a SABM, DISC, or DM frame.	Value:
12	The IUT can maintain the frame reject condition as a stable state for a period of time. (STABLE_FRMR)	☐ Yes ☐ No
12a	If yes to 12, specify the time, in milli-seconds, IUT will remain in frame reject condition.	Value:
13a	Upon reaching the disconnected phase, will the IUT reply with DM response to all commands received, and not set up the data link until some operator action is taken. (DMRSP)	☐ Yes ☐ No

Table 3 (Page 2 of 2). Protocol Implementation eXtra Information for Testing (PIXIT)		
13b	Upon reaching the disconnected phase, will the IUT not respond to any stimulus, and not set up the data link until some operator action is taken. (UNRSP)	☐ Yes ☐ No
14	Where operator action is required (for implicit send events), specify the maximum time, in seconds, required for the operator to complete the requested action. (TOPERATOR)	Value:
Item	I Frame Information	Values
15	Specify in sequence contents of the information field that the tester is allowed to send to the IUT in information transfer phase. (UDAT) Note: Note that in some tests up to $k + 1$ frames are sent from the tester.	Frame 1:
15a		Frame 2:
15b		Frame 3:
15c		Frame 4:
15d		Frame 5:
15e		Frame 6:
15f		Frame 7:
15g		Frame 8:
16	Specify the i-field for an I frame that is to contain a too long information field. (ULON)	Value:

4.14 Classification of IUT

In this test suite the global variable "IUT_TYPE" is defined. This variable can assume values for ISO/IEC 7776, or X.25-1980, or X.25-1984. A Boolean expression is used to test this variable before a test event can apply to one specific standard. If this is not done, then that event applies to all three X.25 standards.

5 TTCN abstract test suite

5.1 Test suite overview

Table 4. Test Suite Structure			
Suite Name : ISO/IEC 8882-2 Standards Ref : ISO/IEC 7776 : 1986 PICS Ref : ISO/IEC 7776/DAM1 : 1991 PIXIT Ref : ISO/IEC 8882-2 Test Method(s) : Remote Embedded Single Layer Comments :			
Test Group Reference	Selection Ref	Test Group Objective	Page Nr
DL1/	DP_STABLE	Verification of the Disconnected Phase	
DL1/DL1_PROPER/		Proper frames	63
DL1/DL1_IMPROPER/		Improper frames	65
DL1/DL1_INOPPORTUNE/	SEND_DISC	Inopportune frames	70
DL2/		Verification of IUT Initiated Link Disconnection Phase	
DL2/DL2_PROPER/		Proper frames	77
DL2/DL2_IMPROPER/	NOT_CCITT_80	Improper frames	80
DL2/DL2_INOPPORTUNE/		Inopportune frames	85
DL3/		Verification of Link Set-up Phase	
DL3/DL3_PROPER/	SEND_SABM	Proper frames	90
DL3/DL3_IMPROPER/		Improper frames	92
DL3/DL3_INOPPORTUNE/		Inopportune frames	97
DL4/	NOT_CCITT_80	Verification of Information Transfer Phase	
DL4/DL4_PROPER/		Proper frames	102
DL4/DL4_IMPROPER/		Improper frames	110
DL4/DL4_INOPPORTUNE/	FRMR_STABLE	Inopportune frames	119
DL5/		Verification of Frame Reject Condition	
DL5/DL5_PROPER/		Proper frames	121
DL5/DL5_IMPROPER/	SEND_RNR	Improper frames	122
DL5/DL5_INOPPORTUNE/		Inopportune frames	128
DL6/		Verification of IUT Busy Condition	
DL6/DL6_PROPER/		Proper frames	134
DL6/DL6_IMPROPER/		Improper frames	138
DL6/DL6_INOPPORTUNE/		Inopportune frames	147
DL7/		Verification of Sent Reject Condition	
DL7/DL7_PROPER/		Proper frames	149
DL7/DL7_IMPROPER/		Improper frames	153
DL7/DL7_INOPPORTUNE/		Inopportune frames	162
DL8/		System Parameters and Error Recovery tests	163

5.2 Test case index

Table 5 (Page 1 of 17). Test Case Index				
Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL1/DL1_PROPER/	DL1_101		Verify that the IUT sends a DM/F = 1 in response to a DISC/P = 1 in the disconnected phase.	63
DL1/DL1_PROPER/	DL1_102		Verify that the IUT sends a DM/F = 0 in response to a DISC/P = 0 in the disconnected phase.	63
DL1/DL1_PROPER/	DL1_103		Verify that the IUT sends a UA/F = 1 or a DM/F = 1 in response to a SABM/P = 1 in the disconnected phase.	63
DL1/DL1_PROPER/	DL1_104		Verify that the IUT sends a UA/F = 0 or a DM/F = 0 in response to a SABM/P = 0 in the disconnected phase.	64
DL1/DL1_PROPER/	DL1_105		Verify that the IUT reacts properly in the disconnected phase on receiving a DM/F = 0.	64
DL1/DL1_IMPROPER/	DL1_201		Verify that, in the disconnected phase, the IUT upon receipt of a command frame with undefined or not implemented control field with P = 1, either discards the frame or sends a DM/F = 1 response frame.	65
DL1/DL1_IMPROPER/	DL1_202		Verify that the IUT discards a response frame with an undefined or not implemented control field with F = 1 in the disconnected phase.	65
DL1/DL1_IMPROPER/	DL1_203		Verify that the IUT discards a SABM/P = 1 with an address different from A,B,C or D in the disconnected phase.	65
DL1/DL1_IMPROPER/	DL1_204		Verify that the IUT discards a SABM/P = 1 with an FCS error in the disconnected phase.	66
DL1/DL1_IMPROPER/	DL1_205		Verify that the IUT discards a DM/F = 1 in the disconnected phase.	66
DL1/DL1_IMPROPER/	DL1_206		Verify that the IUT discards a DM/F = 0 with an information field in the disconnected phase.	66
DL1/DL1_IMPROPER/	DL1_207		Verify that, in the disconnected phase, the IUT upon receipt of a SABM/P = 1 with an information field, either discards the frame or sends a DM/F = 1 response frame.	67
DL1/DL1_IMPROPER/	DL1_208		Verify that, in the disconnected phase, the IUT upon receipt of a UA/F = 0 with an information field, while in the disconnected phase.	67
DL1/DL1_IMPROPER/	DL1_209		Verify that, in the disconnected phase, the IUT upon receipt of a RR/P = 1 with an information field, either discards the frame or sends a DM/F = 1 response frame.	67
DL1/DL1_IMPROPER/	DL1_210		Verify that, in the disconnected phase, the IUT upon receipt of a RNR/P = 1 with an information field, either discards the frame or sends a DM/F = 1 response frame.	68
DL1/DL1_IMPROPER/	DL1_211		Verify that, in the disconnected phase, the IUT upon receipt of a REJ/P = 1 with an information field, either discards the frame or sends a DM/F = 1 response frame.	68
DL1/DL1_IMPROPER/	DL1_212		Verify that the IUT discards an I/P = 0 frame containing an information field longer than the maximum established length in the disconnected phase.	68
DL1/DL1_IMPROPER/	DL1_213		Verify that the IUT discards a DISC/P = 0 with an information field in the disconnected phase.	69
DL1/DL1_IMPROPER/	DL1_214		Verify that the IUT discards a DISC/P = 1 with an information field in the disconnected phase.	69
DL1/DL1_IMPROPER/	DL1_215		Verify that the IUT discards a SABM/P = 1 with an information field in the disconnected phase.	69

Table 5 (Page 2 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL1/DL1_INOPPORTUNE/	DL1_301		Verify that the IUT sends a DM/F = 1 in response to an I/P = 1 in the disconnected phase.	70
DL1/DL1_INOPPORTUNE/	DL1_302		Verify that the IUT sends a DM/F = 1 in response to an RR/P = 1 in the disconnected phase.	70
DL1/DL1_INOPPORTUNE/	DL1_303		Verify that the IUT sends a DM/F = 1 in response to an RNR/P = 1 in the disconnected phase.	70
DL1/DL1_INOPPORTUNE/	DL1_304		Verify that the IUT sends a DM/F = 1 in response to an REJ/P = 1 in the disconnected phase.	71
DL1/DL1_INOPPORTUNE/	DL1_305		Verify that the IUT discards a UA/F = 0 in the disconnected phase.	71
DL1/DL1_INOPPORTUNE/	DL1_306		Verify that the IUT discards a UA/F = 1 in the disconnected phase.	71
DL1/DL1_INOPPORTUNE/	DL1_307		Verify that the IUT discards an FRMR/F = 0 in the disconnected phase.	72
DL1/DL1_INOPPORTUNE/	DL1_308		Verify that the IUT discards an FRMR/F = 1 in the disconnected phase.	72
DL1/DL1_INOPPORTUNE/	DL1_309		Verify that the IUT discards an I/P = 0 in the disconnected phase.	72
DL1/DL1_INOPPORTUNE/	DL1_310		Verify that the IUT discards an RR/F = 0 in the disconnected phase.	73
DL1/DL1_INOPPORTUNE/	DL1_311		Verify that the IUT discards an RNR/F = 0 in the disconnected phase.	73
DL1/DL1_INOPPORTUNE/	DL1_312		Verify that the IUT discards an REJ/F = 0 in the disconnected phase.	73
DL1/DL1_INOPPORTUNE/	DL1_313		Verify that the IUT discards an RR/F = 1 in the disconnected phase.	74
DL1/DL1_INOPPORTUNE/	DL1_314		Verify that the IUT discards an RNR/F = 1 in the disconnected phase.	74
DL1/DL1_INOPPORTUNE/	DL1_315		Verify that the IUT discards an REJ/F = 1 in the disconnected phase.	74
DL1/DL1_INOPPORTUNE/	DL1_316		Verify that the IUT discards an RR/P = 0 in the disconnected phase.	75
DL1/DL1_INOPPORTUNE/	DL1_317		Verify that the IUT discards an RNR/P = 0 in the disconnected phase.	75
DL1/DL1_INOPPORTUNE/	DL1_318		Verify that the IUT discards an REJ/P = 0 in the disconnected phase.	75
DL1/DL1_INOPPORTUNE/	DL1_319		Verify that the IUT discards an I/P = 0 frame with no information field in the disconnected phase.	76
DL2/DL2_PROPER/	DL2_101	NOT_UNRESP	Verify that the IUT sends a UA/F = 0 in response to a DISC/P = 0 received in the link disconnection phase. This situation corresponds to a DISC and DISC collision.	77
DL2/DL2_PROPER/	DL2_102	NOT_UNRESP	Verify that the IUT sends a UA/F = 1 in response to a DISC/P = 1 received in the link disconnection phase. This situation corresponds to a DISC and DISC collision.	78
DL2/DL2_PROPER/	DL2_103		Verify that the IUT sends a DM/F = 0 in response to a SABM/P = 0 received in the link disconnection phase. This situation corresponds to a DISC and SABM collision. The IUT is expected to enter the disconnected phase.	78
DL2/DL2_PROPER/	DL2_104		Verify that the IUT sends a DM/F = 1 in response to a SABM/P = 1 received in the link disconnection phase. This situation corresponds to a DISC and SABM collision. The IUT is expected to enter the disconnected phase.	79
DL2/DL2_PROPER/	DL2_105	NOT_UNRESP	Verify proper IUT behavior in the link disconnection phase upon receiving a proper DM response.	79

Table 5 (Page 3 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL2/DL2_PROPER/	DL2_106	NOT_UNRESP	Verify that in the link disconnection phase, upon receiving a DM/F = 0 response, when the last DISC command from the IUT was with P = 1, the IUT shall consider the DM response to represent a collision condition and shall remain in the link disconnection phase.	79
DL2/DL2_PROPER/	DL2_107		Verify proper IUT behaviour in the link disconnection phase upon receiving a proper UA response.	79
DL2/DL2_IMPROPER/	DL2_201		Verify that, in the link disconnection phase, the IUT discards a command frame with an undefined or not implemented control field with P = 1.	80
DL2/DL2_IMPROPER/	DL2_202		Verify that the IUT discards a response frame with an undefined or not implemented control field with F = 1 in the link disconnection phase.	80
DL2/DL2_IMPROPER/	DL2_203		Verify that the IUT discards a DISC/P = 0 with information field in the link disconnection phase.	80
DL2/DL2_IMPROPER/	DL2_204		Verify that the IUT discards a SABM/P = 1 with an information field in the link disconnection phase.	81
DL2/DL2_IMPROPER/	DL2_205		Verify that the IUT discards a UA with an appropriate F bit setting, but with an added information field in the link disconnection phase.	81
DL2/DL2_IMPROPER/	DL2_206		Verify that the IUT discards a DM with an appropriate F bit setting, but with an additional information field in the link disconnection phase.	82
DL2/DL2_IMPROPER/	DL2_207		Verify that the IUT discards an I/P = 1 frame containing an information field longer than the maximum established length in the link disconnection phase.	82
DL2/DL2_IMPROPER/	DL2_208		Verify that the IUT discards an RR/P = 1 with an information field in the link disconnection phase.	82
DL2/DL2_IMPROPER/	DL2_209	SEND_DISC	Verify that the IUT discards an RNR/P = 1 with an information field in the link disconnection phase.	83
DL2/DL2_IMPROPER/	DL2_210		Verify that the IUT discards an REJ/P = 1 with an information field in the link disconnection phase.	83
DL2/DL2_IMPROPER/	DL2_211		Verify that the IUT discards a DISC with an address different from A, B, C or D in the link disconnection phase.	83
DL2/DL2_IMPROPER/	DL2_212		Verify that the IUT discards a DISC/P = 0 with an FCS error, in the link disconnection phase.	84
DL2/DL2_IMPROPER/	DL2_213		Verify that in the case of X.25 1980, if the IUT is in the link disconnection phase and if the last DISC command from the IUT was with P = 0, then a DM/F = 1 shall be discarded and the IUT will remain in the link disconnection phase.	84
DL2/DL2_IMPROPER/	DL2_214		Verify that in the link disconnection phase, upon receiving an improper UA response (invalid F bit), the IUT shall discard the UA and remain in the link disconnection phase.	84
DL2/DL2_INOPPORTUNE/	DL2_301		Verify that the IUT discards an RR/P = 1 in the link disconnection phase.	85
DL2/DL2_INOPPORTUNE/	DL2_302		Verify that the IUT discards an RR/P = 0 in the link disconnection phase.	85
DL2/DL2_INOPPORTUNE/	DL2_303		Verify that the IUT discards an RNR/P = 1 in the link disconnection phase.	85
DL2/DL2_INOPPORTUNE/	DL2_304		Verify that the IUT discards an RNR/P = 0 in the link disconnection phase.	85
DL2/DL2_INOPPORTUNE/	DL2_305	CCITT_80	Verify that the IUT discards an REJ/P = 1 in the link disconnection phase.	86
DL2/DL2_INOPPORTUNE/	DL2_306		Verify that the IUT discards an REJ/P = 0 in the link disconnection phase.	86

Table 5 (Page 4 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL2/DL2_INOPPORTUNE/	DL2_307	NOT_UNRESP	Verify that the IUT discards an FRMR/F=0 in the link disconnection phase.	86
DL2/DL2_INOPPORTUNE/	DL2_308		Verify that the IUT discards an RR/F=1 in the link disconnection phase.	86
DL2/DL2_INOPPORTUNE/	DL2_309		Verify that the IUT discards an RR/F=0 in the link disconnection phase.	87
DL2/DL2_INOPPORTUNE/	DL2_310		Verify that the IUT discards an RNR/F=1 in the link disconnection phase.	87
DL2/DL2_INOPPORTUNE/	DL2_311		Verify that the IUT discards an RNR/F=0 in the link disconnection phase.	87
DL2/DL2_INOPPORTUNE/	DL2_312		Verify that the IUT discards an REJ/F=1 in the link disconnection phase.	87
DL2/DL2_INOPPORTUNE/	DL2_313		Verify that the IUT discards an REJ/F=0 in the link disconnection phase.	88
DL2/DL2_INOPPORTUNE/	DL2_314		Verify that the IUT discards an FRMR/F=1 in the link disconnection phase.	88
DL2/DL2_INOPPORTUNE/	DL2_315		Verify that the IUT discards an I/P=0 in the link disconnection phase.	88
DL2/DL2_INOPPORTUNE/	DL2_316		Verify that the IUT discards an I/P=1 received in the link disconnection phase.	88
DL2/DL2_INOPPORTUNE/	DL2_317		Verify that the IUT discards an I/P=0 frame with no information field in the link disconnection phase.	89
DL3/DL3_PROPER/	DL3_101		Verify that the IUT sends a UA/F=0 in response to a SABM/P=0 received in the link set-up phase.	90
DL3/DL3_PROPER/	DL3_102		Verify that the IUT sends a UA/F=1 in response to a SABM/P=1 received in the link set-up phase.	90
DL3/DL3_PROPER/	DL3_103		Verify that the IUT sends a DM/F=0 in response to a DISC/P=0 in the link set-up phase. This situation corresponds to a SABM and DISC collision.	91
DL3/DL3_PROPER/	DL3_104		Verify that the IUT sends a DM/F=1 in response to a DISC/P=1 in the link set-up phase. This situation corresponds to a SABM and DISC collision.	91
DL3/DL3_PROPER/	DL3_105		Verify that in the link set-up phase, upon receiving a proper UA response, the IUT shall enter the information transfer phase.	91
DL3/DL3_PROPER/	DL3_106		Verify that in the link set-up phase, the IUT shall ignore a DM/F=0, in case of a SABM and DM collision where SABM from IUT has P=1.	91
DL3/DL3_PROPER/	DL3_107		Verify that in the link set-up phase, if the last SABM command from the IUT was with P=1, then upon receiving a DM/F=1 response, the IUT either sends a DISC/P=1 or a SABM/P=1 or a DM/F=0 or does not respond.	92
DL3/DL3_IMPROPER/	DL3_201		Verify that the IUT discards a command frame with an undefined or not implemented control field with P=1 in the link set-up phase.	92
DL3/DL3_IMPROPER/	DL3_202		Verify that the IUT discards a response frame with an undefined or not implemented control field in the link set-up phase.	92
DL3/DL3_IMPROPER/	DL3_203		Verify that the IUT discards a UA with an appropriate F bit setting but with an additional information field in the link set-up phase.	93
DL3/DL3_IMPROPER/	DL3_204		Verify that the IUT discards a DISC/P=0 with information field in the link set-up phase.	93
DL3/DL3_IMPROPER/	DL3_205		Verify that the IUT discards a SABM/P=1 with information field in the link set-up phase.	93
DL3/DL3_IMPROPER/	DL3_206		Verify that the IUT discards a DM with an appropriate F bit but with an information field in the link set-up phase.	94

Table 5 (Page 5 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL3/DL3_IMPROPER/	DL3_207	CCITT_80	Verify that the IUT discards an I/P = 1 with an information field which is longer than the maximum established length in the link set-up phase.	94
DL3/DL3_IMPROPER/	DL3_208		Verify that the IUT discards an I/P = 0 with no information field while in the link set-up phase.	94
DL3/DL3_IMPROPER/	DL3_209		Verify that the IUT discards an RR/P = 1 with an information field in the link set-up phase.	95
DL3/DL3_IMPROPER/	DL3_210		Verify that the IUT discards an RNR/P = 1 with an information field in the link set-up phase.	95
DL3/DL3_IMPROPER/	DL3_211		Verify that the IUT discards an REJ/P = 1 with an information field in the link set-up phase.	95
DL3/DL3_IMPROPER/	DL3_212		Verify that the IUT discards a SABM/P = 1 with an address different from A, B, C or D while in the link set-up phase.	96
DL3/DL3_IMPROPER/	DL3_213		Verify that the IUT discards a SABM/P = 1 with an FCS error in the link set-up phase.	96
DL3/DL3_IMPROPER/	DL3_214		Verify that in the link set-up phase, if an IUT is of X.25 1980 type, then it would discard a DM/F = 1 if the last SABM from the IUT was P = 0.	96
DL3/DL3_IMPROPER/	DL3_215		Verify that the IUT discards a UA with an invalid F bit in the link set-up phase.	97
DL3/DL3_INOPPORTUNE/	DL3_301		Verify that the IUT discards an RR/P = 1 received in the link set-up phase.	97
DL3/DL3_INOPPORTUNE/	DL3_302		Verify that the IUT discards an RR/P = 0 received in the link set-up phase.	97
DL3/DL3_INOPPORTUNE/	DL3_303		Verify that the IUT discards an RR/F = 1 received in the link set-up phase.	98
DL3/DL3_INOPPORTUNE/	DL3_304		Verify that the IUT discards an RR/F = 0 received in the link set-up phase.	98
DL3/DL3_INOPPORTUNE/	DL3_305		Verify that the IUT discards an FRMR/F = 0 received in the link set-up phase.	98
DL3/DL3_INOPPORTUNE/	DL3_306		Verify that the IUT discards an FRMR/F = 1 received in the link set-up phase.	98
DL3/DL3_INOPPORTUNE/	DL3_307		Verify that the IUT discards an I/P = 0 received in the link set-up phase.	99
DL3/DL3_INOPPORTUNE/	DL3_308		Verify that the IUT discards an I/P = 1 received in the link set-up phase.	99
DL3/DL3_INOPPORTUNE/	DL3_309		Verify that the IUT discards an RNR/P = 0 received in the link set-up phase.	99
DL3/DL3_INOPPORTUNE/	DL3_310		Verify that the IUT discards an RNR/F = 0 received in the link set-up phase.	99
DL3/DL3_INOPPORTUNE/	DL3_311		Verify that the IUT discards an RNR/P = 1 received in the link set-up phase.	100
DL3/DL3_INOPPORTUNE/	DL3_312		Verify that the IUT discards an REJ/P = 0 received in the link set-up phase.	100
DL3/DL3_INOPPORTUNE/	DL3_313		Verify that the IUT discards an REJ/F = 0 received in the link set-up phase.	100
DL3/DL3_INOPPORTUNE/	DL3_314		Verify that the IUT discards an REJ/P = 1 received in the link set-up phase.	100
DL3/DL3_INOPPORTUNE/	DL3_315		Verify that the IUT discards an RNR/F = 1 received in the link set-up phase.	101
DL3/DL3_INOPPORTUNE/	DL3_316		Verify that the IUT discards an REJ/F = 1 received in the link set-up phase.	101
DL4/DL4_PROPER/	DL4_101		Verify that the IUT sends a UA/F = 1 in response to a DISC/P = 1 received in the information transfer phase.	102

Table 5 (Page 6 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL4/DL4_PROPER/	DL4_102		Verify that the IUT upon receiving a SABM/P = 1 in the information transfer phase either sends a UA/F = 1 or it sends a DM/F = 1.	102
DL4/DL4_PROPER/	DL4_103		Verify proper IUT behavior on receiving FRMR/F = 0 in the information transfer phase.	103
DL4/DL4_PROPER/	DL4_104		Verify that the IUT acknowledges a valid I/P = 0 frame.	103
DL4/DL4_PROPER/	DL4_105		Verify that the IUT acknowledges a valid I/P = 1 frame.	104
DL4/DL4_PROPER/	DL4_106		Verify that the IUT responds to a proper RR/P = 1 command in the information transfer phase.	104
DL4/DL4_PROPER/	DL4_107		Verify that in the information transfer phase if the IUT receives an REJ/P = 1 command frame, then the IUT shall set its send state variable V(S) to N(R) of the received REJ frame control field and shall retransmit the corresponding I frame. Prior to this transmission the IUT shall send an RR/F = 1 response to the received REJ/P = 1 command frame.	105
DL4/DL4_PROPER/	DL4_108		Verify that in the information transfer phase if the IUT receives an REJ/P = 0 command frame, then the IUT shall set its send state variable V(S) to N(R) of the received REJ frame control field and shall retransmit the corresponding I frame.	105
DL4/DL4_PROPER/	DL4_109		Verify that in the information transfer phase if the IUT receives an REJ/F = 0 response frame, then the IUT shall set its send state variable V(S) to N(R) of the received REJ frame control field and shall retransmit the corresponding I frame.	105
DL4/DL4_PROPER/	DL4_110		Verify proper IUT behavior in the information transfer when the IUT receives a DM/F = 0 response.	106
DL4/DL4_PROPER/	DL4_111		Verify that when the IUT receives, during the information transfer phase, an I frame with a N(S) greater than the IUT V(R) value, simulating (for example) a situation of one or more I frame(s) not received due to transmission error, it responds with an REJ command or response frame with a N(R) value equal to the value of the IUT receive state variable, V(R).	106
DL4/DL4_PROPER/	DL4_112		Verify that if the IUT receives a valid I/P = 0 frame with zero length information field, while it is in the information transfer phase, it shall increment by one the value of its receive state variable and respond with an I or RR or RNR frame with a N(R) equal to the updated value of the IUT receive state variable.	107
DL4/DL4_PROPER/	DL4_113		Verify that if the IUT receives a two valid I frames with a single flag in between, while it is in the information transfer state, it increments by two the value of its receive state variable and responds with an RR or RNR frame with an N(R) equal to the updated value of the IUT receive state variable. The P bit is set to "1" on the second frame from the tester.	107
DL4/DL4_PROPER/	DL4_114	IUT_WINDOW	Verify that the IUT in the information transfer phase, can manage its send window correctly. For this test, the IUT send window is the range of values for the IUT send state variable V(S), starting at the current value and going up to (V(S) + k), where k is the IUT parameter for maximum number of outstanding I frames. For the purpose of this test, the IUT shall transmit I frames that have a N(S) value within the send window.	108
DL4/DL4_PROPER/	DL4_115		Verify that the IUT sends a UA/F = 0 in response to a DISC/P = 0 received in the information transfer phase.	108

Table 5 (Page 7 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL4/DL4_PROPER/	DL4_116		Verify that the IUT upon receiving a SABM/P=0 in the information transfer phase either sends a UA/F=0 or it may send a DM/F=0 frame.	109
DL4/DL4_PROPER/	DL4_117		When the IUT is in the information transfer phase and receives a valid RR/P=0, the IUT shall consider the N(R) contained in this frame as an acknowledgement of all I frames it has transmitted with an N(S) up to and including the received N(R) -1.	109
DL4/DL4_PROPER/	DL4_118		When the IUT is in the information transfer phase and receives a valid RR/F=0, the IUT shall consider the N(R) contained in this frame as an acknowledgement of all I frames it has transmitted with an N(S) up to and including the received N(R) -1.	110
DL4/DL4_PROPER/	DL4_119		Verify that the IUT does not transmit information frames while the tester is in the busy condition and that after the tester exits the busy condition by transmitting an RR/P=0, the IUT sends an I frame.	110
DL4/DL4_IMPROPER/	DL4_201		Verify proper IUT behavior when the IUT receives, in the information transfer phase, a UA/F=0 response.	110
DL4/DL4_IMPROPER/	DL4_202		Verify proper IUT behavior when the IUT receives, in the information transfer phase, a UA/F=1 response.	111
DL4/DL4_IMPROPER/	DL4_203		Verify proper IUT behavior when the IUT receives, in the information transfer phase, an unsolicited FRMR/F=1 response.	111
DL4/DL4_IMPROPER/	DL4_204		Verify proper IUT behaviour when the IUT receives, in the information transfer phase, an unsolicited DM/F=1 response.	111
DL4/DL4_IMPROPER/	DL4_205		Verify that if the IUT, in the information transfer phase, receives an I/P=0 frame with an invalid N(R) value, then the IUT shall transmit an FRMR/F=0, with a properly encoded Z bit.	112
DL4/DL4_IMPROPER/	DL4_206		Verify that in the information transfer phase transmits an FRMR/F=0 with a properly encoded Y bit, on receiving an I/P=0 frame with an information length which exceeds the maximum established length.	112
DL4/DL4_IMPROPER/	DL4_207		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F=1 in response to a command frame with undefined or not implemented control field with P=1. Verify also that the C/R bit shall be set to "0" along with a properly encoded W bit.	113
DL4/DL4_IMPROPER/	DL4_208		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F=0 in response to a response frame with an undefined or not implemented control field with F=0. Verify also that the C/R bit shall be set to "1" along with a properly encoded W bit.	113
DL4/DL4_IMPROPER/	DL4_209		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F=0 in response to a DM/F=0 with an information field. Verify also that the C/R bit shall be set to "1" and the W and X bits shall be set properly.	114
DL4/DL4_IMPROPER/	DL4_210		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F=0 in response to a DISC/P=0 with an information field. Verify also that the C/R bit is set to "0" and the W and X bits shall be set properly.	114

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL4/DL4_IMPROPER/	DL4_211		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 1 in response to a SABM/P = 1 with an information field. Verify also that the C/R bit is set to "0" and the W and X bits shall be set properly.	115
DL4/DL4_IMPROPER/	DL4_212		Verify that in the information transfer phase, the IUT transmits an FRMR/F = 0 in response to a UA/F = 0 with an information field. Verify also the C/R bit is set to "1" and the W and X bits shall be set properly.	115
DL4/DL4_IMPROPER/	DL4_213		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 0 in response to an RR/F = 0 with an information field. Verify also that the C/R bit shall be set to "1" and the W and X bits shall be set properly.	116
DL4/DL4_IMPROPER/	DL4_214		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 0 in response to an RNR/F = 0 with an information field. Verify also that the C/R bit shall be set to "1" and the W and X bits shall be set properly.	116
DL4/DL4_IMPROPER/	DL4_215		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 0 in response to an REJ/F = 0 with an information field. Verify also that the C/R bit shall be set to "1" and the W and X bits shall be set properly.	116
DL4/DL4_IMPROPER/	DL4_216		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 1 in response to an RR/P = 1 with an information field. Verify also that the C/R bit shall be set to "0" and the W and X bits shall be set properly.	117
DL4/DL4_IMPROPER/	DL4_217		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 1 frame in response to an RNR/P = 1 with an information field. Verify also that the C/R bit shall be set to "0" and the W and X bits shall be set properly.	117
DL4/DL4_IMPROPER/	DL4_218		Verify that in the information transfer phase, the IUT shall transmit an FRMR/F = 1 in response to an REJ/P = 1 with an information field. Verify also that the C/R bit shall be set to "0" and the W and X bits shall be set properly.	117
DL4/DL4_IMPROPER/	DL4_219		Verify that the IUT discards an I frame with an FCS error in the information transfer phase.	118
DL4/DL4_IMPROPER/	DL4_220		Verify that the IUT discards an I/P = 1 frame with an incorrect address in information transfer phase.	118
DL4/DL4_IMPROPER/	DL4_221		Verify that the IUT discards a frame which is too short in the information transfer phase.	118
DL4/DL4_IMPROPER/	DL4_222		Verify that the IUT discards an I/P = 1 frame which is aborted before the closing flag in the information transfer phase.	119
DL4/DL4_INOPPORTUNE/	DL4_301		Verify proper IUT behavior when the IUT receives in the information transfer phase, an unsolicited RR/F = 1 response.	119
DL4/DL4_INOPPORTUNE/	DL4_302		Verify proper IUT behavior when the IUT receives in the information transfer phase, an unsolicited RNR/F = 1 response.	119
DL4/DL4_INOPPORTUNE/	DL4_303		Verify proper IUT behavior when the IUT receives in the information transfer phase, an unsolicited REJ/F = 1 response.	120
DL5/DL5_PROPER/	DL5_101		Verify that the IUT sends a UA/F = 1 in response to a DISC/P = 1 in the frame rejection condition.	121
DL5/DL5_PROPER/	DL5_102		Verify that the IUT, upon receiving a SABM/P = 1 in the frame rejection condition, either sends a UA/F = 1 or sends a DM/F = 1.	121

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL5/DL5_PROPER/	DL5_103		Verify proper IUT behaviour in the frame rejection condition when the IUT receives an FRMR/F = 0 response.	121
DL5/DL5_PROPER/	DL5_104		Verify proper IUT behavior in the frame rejection condition when the IUT receives a DM/F = 0 response.	121
DL5/DL5_PROPER/	DL5_105		Verify that the IUT sends a UA/F = 0 in response to a DISC/P = 0 received in the frame rejection condition.	122
DL5/DL5_PROPER/	DL5_106		Verify that the IUT upon receiving a SABM/P = 0 in the frame rejection condition either sends a UA/F = 0 or it sends a DM/F = 0.	122
DL5/DL5_IMPROPER/	DL5_201		Verify that if the IUT, while in the frame rejection condition, receives an I/P = 1 frame with an invalid N(R) value, then the IUT shall transmit an FRMR/F = 1 and with the FRMR information field encoding resulting from DL5_STATE.	122
DL5/DL5_IMPROPER/	DL5_202		Verify that in the frame rejection condition, the IUT shall transmit an FRMR/F = 1 in response to a command frame with undefined or not implemented control field with P = 1. Verify also that the information field of the FRMR frame is encoded as in DL5_STATE.	123
DL5/DL5_IMPROPER/	DL5_203		Verify that in the frame rejection condition, the IUT shall discard a response frame with an undefined or not implemented control field with F = 0.	123
DL5/DL5_IMPROPER/	DL5_204		Verify that in the frame rejection condition, the IUT shall transmit an FRMR in response to a SABM/P = 1 with an information field. Verify also that the information field of the FRMR is encoded as in DL5_STATE.	123
DL5/DL5_IMPROPER/	DL5_205		Verify that in the frame rejection condition, the IUT shall transmit an FRMR/F = 1 in response to a DISC/P = 1 with an information field. Verify also that the information field of the FRMR frame is encoded as in DL5_STATE.	124
DL5/DL5_IMPROPER/	DL5_206		Verify that in the frame rejection condition, the IUT shall transmit an FRMR/F = 1 in response to an RR/P = 1 with an information field. Verify also that the information field of the FRMR shall be encoded as in DL5_STATE.	124
DL5/DL5_IMPROPER/	DL5_207		Verify that in the frame rejection condition, the IUT shall transmit an FRMR/F = 1 in response to an RNR/P = 1 with an information field. Verify also that the information field of the FRMR frame shall be encoded as in DL5_STATE.	124
DL5/DL5_IMPROPER/	DL5_208		Verify that in the frame rejection condition, the IUT shall transmit an FRMR/P = 1 in response to an REJ/F = 1 with an information field. Verify also that the information field of the FRMR shall be encoded as in DL5_STATE.	125
DL5/DL5_IMPROPER/	DL5_209		Verify that in the frame rejection condition, the IUT shall discard a UA/F = 0 with an information field.	125
DL5/DL5_IMPROPER/	DL5_210		Verify that in the frame rejection condition, the IUT shall discard a DM/F = 0 with an information field.	125
DL5/DL5_IMPROPER/	DL5_211		Verify that in the frame rejection condition, the IUT shall discard an RR/F = 0 with an information field.	126
DL5/DL5_IMPROPER/	DL5_212		Verify that in the frame rejection condition, the IUT shall discard an RNR/F = 0 with an information field.	126
DL5/DL5_IMPROPER/	DL5_213		Verify that in the frame rejection condition, the IUT shall discard an REJ/F = 0 with an information field.	126

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL5/DL5_IMPROPER/	DL5_214		Verify that the IUT discards an unsolicited UA/F=0 response in the frame rejection condition.	126
DL5/DL5_IMPROPER/	DL5_215		Verify that the IUT discards an unsolicited UA/F=1 response in the frame rejection condition.	127
DL5/DL5_IMPROPER/	DL5_216		Verify that the IUT discards an unsolicited DM/F=1 response in the frame rejection condition.	127
DL5/DL5_IMPROPER/	DL5_217		Verify that the IUT discards an SABM/P=0 with an incorrect address in frame rejection condition.	127
DL5/DL5_IMPROPER/	DL5_218		Verify that the IUT discards a SABM/P=0 with an FCS error, in frame rejection condition.	128
DL5/DL5_IMPROPER/	DL5_219		Verify that the IUT, in the frame rejection condition on receiving an I/P=1 frame with an information field which exceeds the maximum established length, transmits an FRMR frame with F=1 and with the FRMR information field encoding resulting from DL5_STATE.	128
DL5/DL5_INOPPORTUNE/	DL5_301		Verify that the IUT in the frame rejection condition either discards an I/P=0 or transmits an FRMR/F=0 with the information field encoding resulting from DL5_STATE.	128
DL5/DL5_INOPPORTUNE/	DL5_302		Verify that the IUT in the frame reject condition sends an FRMR/F=1 with the FRMR information field encoding resulting from DL5_STATE, in response to an I/P=1.	129
DL5/DL5_INOPPORTUNE/	DL5_303		Verify that the IUT in the frame rejection condition sends an FRMR/F=1 with the FRMR information field encoding resulting from DL5_STATE, in response to an RR/P=1.	129
DL5/DL5_INOPPORTUNE/	DL5_304		Verify that the IUT in the frame rejection condition sends an FRMR/F=1 with the FRMR information field encoding resulting from DL5_STATE, in response to an RNR/P=1.	129
DL5/DL5_INOPPORTUNE/	DL5_305		Verify that the IUT in the frame rejection condition sends an FRMR/F=1 with the FRMR information field encoding resulting from DL5_STATE, in response to an REJ/P=1.	130
DL5/DL5_INOPPORTUNE/	DL5_306		Verify that the IUT in the frame rejection condition either discards an RR/P=0, or sends a FRMR/F=0 with the FRMR information field encoding resulting from DL5_STATE.	130
DL5/DL5_INOPPORTUNE/	DL5_307		Verify that the IUT in the frame rejection condition either discards an RNR/P=0, or sends a FRMR/F=0 with the FRMR information field encoding resulting from DL5_STATE.	130
DL5/DL5_INOPPORTUNE/	DL5_308		Verify that the IUT in the frame rejection condition either discards an REJ/P=0, or sends a FRMR/F=0 with the FRMR information field encoding resulting from DL5_STATE.	131
DL5/DL5_INOPPORTUNE/	DL5_309		Verify that the IUT in the frame rejection condition discards an RR/F=1.	131
DL5/DL5_INOPPORTUNE/	DL5_310		Verify that the IUT in the frame rejection condition discards an RNR/F=1.	131
DL5/DL5_INOPPORTUNE/	DL5_311		Verify that the IUT in the frame rejection condition discards an REJ/F=1.	131
DL5/DL5_INOPPORTUNE/	DL5_312		Verify that the IUT in the frame rejection condition discards an RR/F=0.	132
DL5/DL5_INOPPORTUNE/	DL5_313		Verify that the IUT in the frame rejection condition discards an RNR/F=0.	132
DL5/DL5_INOPPORTUNE/	DL5_314		Verify that the IUT in the frame rejection condition discards an REJ/F=0.	132

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL5/DL5_INOPPORTUNE/	DL5_315	NOT_ISO_7776	Verify that the IUT in the frame rejection condition on receiving an I/P=0 frame with no information field, either discards the I/P=0 or sends a FRMR/F=0 with the FRMR information field encoding resulting from DL5_STATE.	132
DL5/DL5_INOPPORTUNE/	DL5_316		Verify that if the IUT in the frame rejection condition receives an I/P=0 frame with an out of sequence N(S), either discards the I/P=0 or transmits an FRMR/F=0 with the FRMR information field encoding from DL5_STATE.	133
DL6/DL6_PROPER/	DL6_101		Verify that the IUT sends a UA/F=1 in response to a DISC/P=1 in the IUT busy condition.	134
DL6/DL6_PROPER/	DL6_102		Verify that the IUT upon receiving a SABM/P=1 in the IUT busy condition, either sends a UA/F=1 or it sends a DM/F=1.	134
DL6/DL6_PROPER/	DL6_103		Verify that, when a CCITT X.25 1980 or 1984 IUT is in the IUT busy condition, and receives a valid I/P=1 whose send sequence number equals the IUT receive state variable V(R), the IUT will accept and process the contents of the N(R) field and return an RNR/F=1 response. The received frame may or may not be acknowledged by the IUT.	134
DL6/DL6_PROPER/	DL6_104		Verify that, when the IUT is in the IUT busy condition, and receives a valid RR/P=0 whose receive sequence number equals the IUT send state variable V(S), the IUT shall consider the N(R) contained in this frame as an acknowledgement of all I frames it has transmitted with an N(S) up to and including the received N(R) -1. The IUT shall process this N(R) value and either return an RNR/F=0, or return nothing.	135
DL6/DL6_PROPER/	DL6_105		Verify that, when the IUT is in the IUT busy condition, and receives a valid RR/P=1 whose receive sequence number equals the IUT send state variable V(S), the IUT shall consider the N(R) contained in this frame as an acknowledgement of all I frames it has transmitted with an N(S) up to and including the received N(R) -1. The IUT shall return an RNR/F=1 response.	135
DL6/DL6_PROPER/	DL6_106		Verify that while in the IUT busy condition, if the IUT receives an RNR/P=0 command, then the IUT shall set its send state variable V(S) to N(R) of the received RNR control field and shall not transmit subsequent I frames, until the busy condition is cleared from the tester. The IUT may either send no response to this command frame, or may send an RNR/F=0 to confirm that IUT is still in the busy condition.	135
DL6/DL6_PROPER/	DL6_107		Verify that while in the IUT busy condition, if the IUT receives an RNR/P=1 command, then the IUT shall set its send state variable V(S) to N(R) of the received RNR frame control field and shall not transmit (or retransmit) the corresponding I frames until an RR or REJ frame is received from the tester. The IUT shall respond with an RNR/F=1 to confirm that the IUT is still in the busy condition.	136
DL6/DL6_PROPER/	DL6_108		Verify that when the IUT receives, during the IUT busy condition, a DM/F=0 response, it shall initiate link resetting procedure or return a DM/F=0 response to ask the tester to initiate link set-up procedure.	136
DL6/DL6_PROPER/	DL6_109		Verify that the IUT sends a UA/F=0 in response to a DISC/P=0 in the IUT busy condition.	136
DL6/DL6_PROPER/	DL6_110		Verify that the IUT upon receiving a SABM/P=0 in the IUT busy condition either sends a UA/F=0 or it sends a DM/F=0.	137

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL6/DL6_PROPER/	DL6_111		Verify that, when the IUT is in the IUT busy condition, and receives a valid RR/F=0 whose receive sequence number equals the IUT send state variable V(S), the IUT shall consider the N(R) contained in the frame as an acknowledgement of all I frames it has transmitted with an N(S) up to and including the received N(R) -1. Since at this point the IUT is still busy, it shall discard the RR frame after processing the N(R) field as described above.	137
DL6/DL6_PROPER/	DL6_112		Verify that in the IUT busy condition, if the IUT receives an RNR/F=0 response, then the IUT shall set its send state variable V(S) to N(R) of the received RNR control field and shall not transmit subsequent I frames, until the busy condition is cleared from the tester.	137
DL6/DL6_IMPROPER/	DL6_201		Verify proper IUT behavior when the IUT receives during the IUT busy condition, a UA/F=0 response.	138
DL6/DL6_IMPROPER/	DL6_202		Verify proper IUT behavior when the IUT receives during the IUT busy condition, a UA/F=1 response.	138
DL6/DL6_IMPROPER/	DL6_203		Verify proper IUT behavior when the IUT receives during the IUT busy condition, an FRMR/F=0 response.	138
DL6/DL6_IMPROPER/	DL6_204		Verify proper IUT behavior when the IUT receives during the IUT busy condition, an FRMR/F=1 response.	139
DL6/DL6_IMPROPER/	DL6_205		Verify proper IUT behavior when the IUT receives during the IUT busy condition, an unsolicited DM/F=1 response.	139
DL6/DL6_IMPROPER/	DL6_206		Verify that if the IUT, while in the IUT busy condition, receives an I/P=0 frame with an invalid N(R) value, then the IUT shall transmit an FRMR/F=0, with a properly encoded Z bit.	139
DL6/DL6_IMPROPER/	DL6_207		Verify that the IUT, while in the IUT busy condition, transmits an FRMR with proper Y bit setting, on receiving an I/P=0 frame with an information field which exceeds the maximum established length.	140
DL6/DL6_IMPROPER/	DL6_208		Verify that in the IUT busy condition, the IUT shall transmit an FRMR frame in response to a command frame with an undefined or not implemented control field with P=1. The C/R bit shall be set to "0" and the W bit shall be set properly.	140
DL6/DL6_IMPROPER/	DL6_209		Verify that in the IUT busy condition, the IUT shall transmit an FRMR frame in response to a response frame with an undefined or not implemented control field with F=0. The C/R bit shall be set to "1" and the W bit shall be set properly.	141
DL6/DL6_IMPROPER/	DL6_210		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to a DM/F=0 frame with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	141
DL6/DL6_IMPROPER/	DL6_211		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to a DISC/P=0 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	142
DL6/DL6_IMPROPER/	DL6_212		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=1 in response to a SABM/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bit shall be set properly.	142
DL6/DL6_IMPROPER/	DL6_213		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to a UA/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	143

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL6/DL6_IMPROPER/	DL6_214	NOT_CCITT	Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to an RR/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly .	143
DL6/DL6_IMPROPER/	DL6_215		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to an RNR/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly .	144
DL6/DL6_IMPROPER/	DL6_216		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=0 in response to an REJ/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly .	144
DL6/DL6_IMPROPER/	DL6_217		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=1 in response to an RR/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly .	144
DL6/DL6_IMPROPER/	DL6_218		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=1 in response to an RNR/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly .	145
DL6/DL6_IMPROPER/	DL6_219		Verify that in the IUT busy condition, the IUT shall transmit an FRMR/F=1 in response to an REJ/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly .	145
DL6/DL6_IMPROPER/	DL6_220		When the IUT is in the IUT busy condition, and receives a valid I/P=0 frame whose send sequence number is equal to the IUT receive state variable V(R), the IUT shall discard the information field of this frame, but process its N(R) receive sequence number and take one of the following actions: a) If the IUT is still in a busy state then, it may transmit an RNR/F=0, or b) the IUT may transmit nothing .	145
DL6/DL6_IMPROPER/	DL6_221		When an ISO 7776 IUT is in the IUT busy condition, and receives a valid I/P=1 whose send sequence number equals the IUT receive state variable V(R), the IUT will accept and process the contents of the N(R) field and shall return an RNR/F=1 response.	146
DL6/DL6_IMPROPER/	DL6_222		Verify that when the IUT receives, during the IUT busy condition, an I/P=0 frame with a N(S) greater than the IUT V(R) value, simulating (for example) a situation of one or more I frame(s) not received due to transmission error, the IUT shall respond with an RNR/F=0 response frame with a N(R) value equal to the value of the IUT receive state variable, V(R) or discard the I/P=0.	146
DL6/DL6_IMPROPER/	DL6_223		Verify that the IUT discards an RR/P=1 with an incorrect address in the IUT busy condition.	146
DL6/DL6_IMPROPER/	DL6_224		Verify that the IUT discards an RR/P=1 with an FCS error in the IUT busy condition.	147
DL6/DL6_IMPROPER/	DL6_225		Verify that if the IUT receives a valid I/P=0 frame with zero length information field in the IUT busy condition, it shall either send RNR or discard the received frame.	147
DL6/DL6_INOPPORTUNE/	DL6_301		Verify proper IUT behavior when the IUT receives, during the IUT busy condition, an unsolicited RR/F=1 response.	147
DL6/DL6_INOPPORTUNE/	DL6_302		Verify proper IUT behavior when the IUT receives, during the IUT busy condition, an unsolicited RNR/F=1 response.	148
DL6/DL6_INOPPORTUNE/	DL6_303		Verify proper IUT behavior when the IUT receives, during the IUT busy condition, an unsolicited REJ/F=1 response.	148

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Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL7/DL7_PROPER/	DL7_101		Verify that the IUT sends a UA/F=1 in response to a DISC/P=1 received in the sent reject condition.	149
DL7/DL7_PROPER/	DL7_102		Verify that the IUT upon receiving a SABM/P=1 in the sent reject condition, either sends a UA/F=1 or it sends a DM/F=1.	149
DL7/DL7_PROPER/	DL7_103		Verify that, when the IUT is in the sent reject condition, and receives a valid I/P=0 frame whose send sequence number is equal to the IUT receive state variable V(R), the IUT shall accept the information field of this frame, and process its N(R) receive sequence number and take one of the following actions : a) If the IUT is now in a busy state, it may transmit an RNR/F=0, or b) the IUT may transmit an RR/F=0 or an I frame, and clear the sent reject condition.	149
DL7/DL7_PROPER/	DL7_104		Verify that, when the IUT is in the sent reject condition, and receives a valid I/P=1 frame whose send sequence number is equal to the receive state variable V(R), the IUT shall accept the information field of this frame, and process its N(R) receive sequence number and the information field of this frame, and process its N(R) receive sequence number and take one of the following actions: a) If the IUT is now in a busy state, it may transmit an RNR/F=1, or b) the IUT may transmit an RR/F=1 and clear the sent reject condition.	150
DL7/DL7_PROPER/	DL7_105		Verify that in the sent reject condition, if the IUT receives an REJ/P=0 command, then the IUT shall set its send state variable V(S) to N(R) of the received REJ control field and shall retransmit the corresponding I frame(s).	150
DL7/DL7_PROPER/	DL7_106		Verify that in the sent reject condition, if the IUT receives an REJ/P=1 command, then the IUT shall set its send state variable V(S) to N(R) of the received REJ control field and shall retransmit the corresponding I frame(s).	151
DL7/DL7_PROPER/	DL7_107		Verify that when the IUT receives, during the sent reject condition, a DM/F=0 response, it shall either initiate link resetting procedure or return a DM/F=0 response to ask the tester IUT to initiate link set-up procedure.	151
DL7/DL7_PROPER/	DL7_108		Verify that if the IUT receives a valid I/P=0 frame with zero length information field in the sent reject condition, it shall increment by one the value of its receive state variable and respond with an I or RR or RNR with a N(R) equal to the updated value of the IUT receive state variable.	152
DL7/DL7_PROPER/	DL7_109		Verify that the IUT sends a UA/F=0 in response to a DISC/P=0 in the sent reject condition.	152
DL7/DL7_PROPER/	DL7_110		Verify that the IUT upon receiving a SABM/P=0 while in the sent reject condition either sends a UA/F=0 or a DM/F=0.	152
DL7/DL7_PROPER/	DL7_111		Verify that in the sent reject condition, if the IUT receives an REJ/F=0 response, then the IUT shall set its send state variable V(S) to N(R) of the received REJ control field and shall retransmit the corresponding I frame(s).	153
DL7/DL7_IMPROPER/	DL7_201		Verify proper IUT behavior when the IUT receives, during the sent reject condition, a UA/F=0 response.	153
DL7/DL7_IMPROPER/	DL7_202		Verify proper IUT behavior when the IUT receives, during the sent reject condition, a UA/F=1 response.	153

Table 5 (Page 15 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL7/DL7_IMPROPER/	DL7_203		Verify that when the IUT receives, during the sent reject condition, an FRMR/F=0 response, it may either initiate link resetting procedure or return a DM/F=0 response to ask the tester to initiate link set-up procedure.	154
DL7/DL7_IMPROPER/	DL7_204		Verify proper IUT behavior when the IUT receives, during the sent reject condition, an FRMR/F=1 response.	154
DL7/DL7_IMPROPER/	DL7_205		Verify proper IUT behavior when the IUT receives, during the sent reject condition, an unsolicited DM/F=1 response.	154
DL7/DL7_IMPROPER/	DL7_206		Verify that if the IUT, while in the sent reject condition, receives an I frame with a invalid N(R) value, then the IUT shall transmit an FRMR/F=0, with a properly encoded Z bit.	155
DL7/DL7_IMPROPER/	DL7_207		Verify that the IUT in the sent reject condition, transmits an FRMR/F=0 with proper Y bit setting, on receiving an I frame with an information field which exceeds the maximum established length.	155
DL7/DL7_IMPROPER/	DL7_208		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=1 in response to a command frame with undefined or not implemented control field with P=1. The C/R bit shall be set to "0" and the W bit shall be set properly.	156
DL7/DL7_IMPROPER/	DL7_209		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to a response frame with undefined or not implemented control field with F=0. The C/R bit shall be set to "1" and the W bit shall be set properly.	156
DL7/DL7_IMPROPER/	DL7_210		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to a DM/F=0 with information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	157
DL7/DL7_IMPROPER/	DL7_211		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to a DISC/P=0 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	157
DL7/DL7_IMPROPER/	DL7_212		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=1 in response to a SABM/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	158
DL7/DL7_IMPROPER/	DL7_213		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to a UA/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	158
DL7/DL7_IMPROPER/	DL7_214		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to an RR/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	159
DL7/DL7_IMPROPER/	DL7_215		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 in response to an RNR/F=0 with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	159
DL7/DL7_IMPROPER/	DL7_216		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=0 frame in response to an REJ/F=0 frame with an information field. The C/R bit shall be set to "1" and the W and X bits shall be set properly.	159
DL7/DL7_IMPROPER/	DL7_217		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F=1 in response to an RR/P=1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	160

Table 5 (Page 16 of 17). Test Case Index

Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL7/DL7_IMPROPER/	DL7_218		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F = 1 in response to an RNR/P = 1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	160
DL7/DL7_IMPROPER/	DL7_219		Verify that in the sent reject condition, the IUT shall transmit an FRMR/F = 1 in response to an REJ/P = 1 with an information field. The C/R bit shall be set to "0" and the W and X bits shall be set properly.	160
DL7/DL7_IMPROPER/	DL7_220		Verify that the IUT discards a frame with an incorrect address in sent reject condition.	161
DL7/DL7_IMPROPER/	DL7_221		Verify that the IUT discards a frame with an FCS error in the sent reject condition.	161
DL7/DL7_IMPROPER/	DL7_222		Verify that during the sent reject condition, the IUT discards an I frame with a N(S) greater than the IUT V(R) value.	161
DL7/DL7_INOPPORTUNE/	DL7_301		Verify proper IUT behavior when the IUT receives, during the sent reject condition, an unsolicited RR/F = 1 response.	162
DL7/DL7_INOPPORTUNE/	DL7_302		Verify proper IUT behavior when the IUT receives, during the sent reject condition, an unsolicited RNR/F = 1 response.	162
DL7/DL7_INOPPORTUNE/	DL7_303		Verify proper IUT behavior when the IUT receives, during the sent reject condition, an unsolicited REJ/F = 1 response.	162
DL8/	DL8_1_101	SEND_DM	Verify that an IUT, after transmitting DM/F = 0 as a link set-up request, would retransmit a DM/F = 0, if no response is received for a time duration of T1.	163
DL8/	DL8_1_102	SEND_DM	Verify that an IUT, after transmitting DM/F = 0 as a link set-up request, would make N2-1 attempts by retransmitting a DM/F = 0 frame and starting timer T1.	163
DL8/	DL8_2_101	SEND_SABM	Verify that an IUT in the link set-up phase, after transmitting a SABM, would retransmit the same SABM, if no response is received for a time duration of T1.	164
DL8/	DL8_2_102	SEND_SABM	Verify that an IUT in link set-up phase, after transmitting a SABM, would make N2-1 attempts by retransmitting a SABM and starting timer T1.	164
DL8/	DL8_3_101	SEND_DISC	Verify that starting from the information transfer phase, if an IUT initiates a DISC, then it would retransmit the DISC frame if no response is received for a time duration of T1.	164
DL8/	DL8_3_102	SEND_DISC	Verify that an IUT in link disconnection phase, after transmitting a DISC, would make N2-1 attempts by retransmitting a DISC and starting timer T1.	165
DL8/	DL8_4_101		Verify that starting from the information transfer phase, if an IUT initiates one I frame, it would start timer T1. Verify also that if no response is received for a time duration of T1, then the IUT shall send a supervisory frame with the P bit set to "1". CCITT X.25 1980 and X.25 1984 implementations, may also retransmit the unacknowledged I frame.	165
DL8/	DL8_4_102		Verify that starting from the information transfer phase, if an IUT initiates two I frames, it starts timer T1. Verify also that if no response is received for a time duration of T1_ONE, then the IUT sends a supervisory frame with the P bit set to "1". CCITT X.25 1980 and X.25 1984 implementations, may also retransmit the first unacknowledged I frame.	166
DL8/	DL8_4_103		Verify that the IUT correctly uses the N2 system parameter for the information transfer phase.	166

Table 5 (Page 17 of 17). Test Case Index				
Test Group Reference	Test Case Id	Selection Ref	Description	Page Nr
DL8/	DL8_5_101	SEND_REJ	Verify that an IUT supporting retransmission of REJ/P = 1 in sent reject condition, transmits an REJ/P = 1 command, if no response is received for a time duration of T1.	166
DL8/	DL8_5_102	SEND_REJ	Verify that an IUT supporting timer recovery for reject frames in the sent reject condition, makes N2-1 attempts to complete the transmission.	167
DL8/	DL8_6_101	SEND_FRMR	Verify that an IUT, after transmitting a FRMR and entering the frame rejection condition, retransmits the same FRMR if no response is received for a time duration of T1_ONE.	167
DL8/	DL8_6_102	SEND_FRMR	Verify that an IUT, after transmitting FRMR and entering the frame rejection condition, makes N2-1 attempts by retransmitting the same FRMR and starting timer T1. Verify also that after N2 attempts, the IUT either initiates link resetting procedure or requests the tester to initiate link set-up procedure.	167

5.3 Test step index

Table 6 (Page 1 of 2). Test Step Index			
Test Step Group Reference	Test Step Id	Description	Page Nr
PREAMBLE/	DL1_STATE	An initialization sequence such as this is executed before each test case in test group DL1, its purpose is to have the IUT in the disconnected phase at the beginning of a test case.	168
PREAMBLE/	DL2_STATE	An initialization sequence such as the one shown below is executed before each test in test group DL2. The purpose is to disconnect the link and then expect a IUT initiated DISC frame. The IUT may have any suitable means to transmit the DISC, in order to complete this preamble.	169
PREAMBLE/	DL2_DM_IUT	This sub-tree is used in DL2_STATE for IUTs that require operator action after entering the disconnected phase.	170
PREAMBLE/	HANDLE_IUT_DISC	This sub-tree will handle those situations where some IUTs transmit a DISC before a link set-up.	170
PREAMBLE/	RECV_DISC	This sub-tree handles situations where a DISC is received from IUT upon request from the tester.	171
PREAMBLE/	DL3_STATE	An initialization sequence such as the one below is executed before each test in test group DL3. The purpose is to cause the IUT to send a SABM frame.	172
PREAMBLE/	DL3_DM_IUT	This sub-tree is used in DL3_STATE for IUTs that require operator action after entering the disconnected phase.	173
PREAMBLE/	REQ_INIT	Sub-tree to request link set-up from the IUT.	174
PREAMBLE/	RESP_TO_DISC	Sub-tree will handle those situations where some IUTs transmit a DISC before a link set-up.	174
PREAMBLE/	TESTER_RESETS_LINK	Sub-tree to have the tester reset the link.	174
PREAMBLE/	DL4_STATE	A sequence such as the one below is executed before each test case in test group DL4. The purpose is to get the IUT into the information transfer phase.	175
PREAMBLE/	DL4_DM_IUT	This sub-tree is used in DL4_STATE for IUTs that require operator action after entering the disconnected phase.	176
PREAMBLE/	TESTER_SENDS_SABM	Sub-tree to send a SABM/P = 1 and expect a UA/F = 1.	176
PREAMBLE/	DL5_STATE	A sequence such as the one below is executed before each test case in test group DL5. The purpose is to get the IUT into the frame reject condition.	177
PREAMBLE/	DL6_STATE	A sequence such as the one below is executed before each test case in test group DL6. The purpose is to get the IUT into the busy condition. This preamble requires an IUT initiated action.	177
PREAMBLE/	DL6_STATE_1	A sequence such as the one below is executed before each test case in test group DL6. The purpose is to get the IUT into the busy condition. This preamble requires an IUT initiated action.	178
PREAMBLE/	DL7_STATE	A sequence such as the one below is executed before each test case in test group DL7. The purpose is to get the IUT into the sent reject condition.	179
POSTAMBLE/	DL1_CHK	To verify that the IUT is in the disconnected phase. This postamble applies only if the IUT has a stable disconnected phase.	180
POSTAMBLE/	DL2_CHK	To verify that IUT is in the link disconnection phase.	180
POSTAMBLE/	DL3_CHK	To verify that IUT is in the link set-up phase.	180
POSTAMBLE/	DL4_CHK1	To verify that IUT is in the normal information transfer phase by sending an RNR frame.	181
POSTAMBLE/	DL4_CHK2	To verify that IUT is in the normal information transfer phase by sending an I-frame.	181
POSTAMBLE/	DL5_CHK	To verify that IUT is in the frame reject condition.	181
POSTAMBLE/	DL6_CHK	To verify that IUT is in the busy condition.	182

Table 6 (Page 2 of 2). Test Step Index

Test Step Group Reference	Test Step Id	Description	Page Nr
POSTAMBLE/	DL7_CHK	To verify that IUT is in the sent reject condition.	182
COMMON_SUBTREE/	ACCEPTABLE_UNEXPECTED_DL4	In the information transfer phase an IUT may send valid I,RR,REJ or RNR frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	183
COMMON_SUBTREE/	ACCEPTABLE_UNEXPECTED_DL6	In the IUT busy condition the IUT may send valid I or RNR frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	183
COMMON_SUBTREE/	ACCEPTABLE_UNEXPECTED_DL7	In the sent reject condition the IUT may send valid I,RR, or REJ frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	184
COMMON_SUBTREE/	ACCEPTABLE_UNEXPECTED_DL8	In the sent reject timer recovery condition the IUT may send valid I or RR frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	184
COMMON_SUBTREE/	INIT_LINK	This sub-tree is used where an IUT may set up,reset or disconnect the data link.	185
COMMON_SUBTREE/	IUT_RETRANSMITS_I_FRAME	This sub-tree is to observe that the IUT retransmits an unacknowledged I frame.	185
COMMON_SUBTREE/	IUT_SENDS_I_FRAMES	This sub-tree is to observe that the IUT sends a number of I-frames.	185
COMMON_SUBTREE/	I_FRAME_EXCH	This is the sub-tree of test step IUT_SENDS_I_FRAME for sending an I-frame.	186
COMMON_SUBTREE/	NORMAL_INFORMATION_TRANSFER	In the information transfer phase an IUT may send valid I,RR, and RNR frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	186
COMMON_SUBTREE/	NORMAL_INFORMATION_TRANSFER_2	In the information transfer phase an IUT may send valid I,RR, and RNR frames. The purpose of this sub-tree is to allow such behavior without affecting the final test verdict.	187
COMMON_SUBTREE/	OTHER_RESPONSE	This sub-tree is used where an IUT may set up,reset or disconnect the link spontaneously, leading to an inconclusive verdict.	187
COMMON_SUBTREE/	RECEIVE_SOME_SUP_FRAME	This sub-tree is to receive from the IUT some supervisory response frame.	188
COMMON_SUBTREE/	RECV_CHK	To wait for time TBSY when IUT is busy in DL4 state.	188
COMMON_SUBTREE/	RECV_I_FRAME	This is a sub-tree of test step IUT_RETRANSMITS_I_FRAME for receiving an unacknowledged I frame.	188
COMMON_SUBTREE/	TESTER_BUSY	This is a local tree used in DL4_119 to verify that the IUT does not transmit an I frame while the Tester is in the Busy Condition.	189
LOCAL_SUBTREE/	ACK_ONE_FRAME	Tester sends an acknowledgement to one I frame and verifies the retransmission of the next I frame.	190
LOCAL_SUBTREE/	DISC_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends a DISC.	190
LOCAL_SUBTREE/	DM_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends a DM.	190
LOCAL_SUBTREE/	FRMR_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends a FRMR.	191
LOCAL_SUBTREE/	I_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends an I frame.	191
LOCAL_SUBTREE/	REJ_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends a REJ.	191
LOCAL_SUBTREE/	SABM_TMO_RECOVERY	Sub-tree to verify timer recover after the IUT sends a SABM.	192

5.4 ASN.1 type definitions

Table 7. ASN.1 Type Definition	
Type Name	: Frame_Address
Comments	:
Type Definition	
INTEGER (a (3) , b (1)) (0..255)	

Table 8. ASN.1 Type Definition	
Type Name	: I_Control
Comments	:
Type Definition	
CHOICE { mod8 I_Control_Mod8 , mod128 I_Control_Mod128 }	

Table 9. ASN.1 Type Definition	
Type Name	: I_Field
Comments	:
Type Definition	
CHOICE { unformatted OCTET STRING (SIZE (1..4100)) , packet PDU }	

Table 10. ASN.1 Type Definition	
Type Name	: S_Control
Comments	:
Type Definition	
CHOICE { mod8 S_Control_Mod8 , mod128 S_Control_Mod128 }	

Table 11. ASN.1 Type Definition	
Type Name	: Poll_Final
Comments	:
Type Definition	
ENUMERATED { on (1) , off (0) }	

Table 12. ASN.1 Type Definition

Type Name	: FRMR_I_Field
Comments	:
Type Definition	
CHOICE { mod8 mod128 }	FRMR_I_mod8 , FRMR_I_mod128

Table 13. ASN.1 Type Definition

Type Name	: I_Control_Mod8
Comments	:
Type Definition	
SEQUENCE { nr p ns control_1 }	INTEGER (0..7) , Poll_Final , INTEGER (0..7) , BIT STRING (SIZE {1})

Table 14. ASN.1 Type Definition

Type Name	: I_Control_Mod128
Comments	:
Type Definition	
SEQUENCE { ns control_1 nr p }	INTEGER (0..127) , BIT STRING (SIZE {1}) , INTEGER (0..127) , Poll_Final

Table 15. ASN.1 Type Definition

Type Name	: S_Control_Mod8
Comments	:
Type Definition	
SEQUENCE { nr p_f control_41 }	INTEGER (0..7) , Poll_Final , BIT STRING (SIZE {4})

Table 16. ASN.1 Type Definition

Type Name	: S_Control_Mod128
Comments	:
Type Definition	
SEQUENCE { control nr p_f }	OCTET STRING (SIZE {1}) , INTEGER (0..127) , Poll_Final

Table 17. ASN.1 Type Definition

Type Name	: FRMR_I_mod8
Comments	:
Type Definition	
<pre> SEQUENCE { control OCTET STRING (SIZE (1)) , vr INTEGER (0..7) , c_r Poll_Final , vs INTEGER (0..7) , bit_1 BIT STRING (SIZE (1)) , bit_85 BIT STRING (SIZE (4)) , zyxw BIT STRING (SIZE (4)) } </pre>	

Table 18. ASN.1 Type Definition

Type Name	: FRMR_I_mod128
Comments	:
Type Definition	
<pre> SEQUENCE { control OCTET STRING (SIZE (2)) , vr INTEGER (0..127) , c_r Poll_Final , vs INTEGER (0..127) , bit_1 BIT STRING (SIZE (1)) , bit_85 BIT STRING (SIZE (4)) , zyxw BIT STRING (SIZE (4)) } </pre>	

5.5 Test suite parameter declarations

Table 19. Test Suite Parameter Declarations			
Parameter Name	Type	PICS/PIXIT Ref	Comments
DMRSP	BOOLEAN	PIXIT 13a	Does the IUT reply with DM response to all commands received upon reaching the disconnected phase?
FR2	BOOLEAN	PICS FR2	Does the IUT start timer T1 after entering the Frame Rejection Condition?
IUT_ACK	BOOLEAN	PIXIT 6a	Does IUT acknowledge I frames immediately?
IUT_SEND_DISC	BOOLEAN	PIXIT 8	Can the IUT initiate link disconnection when required for testing?
IUT_SEND_RNR	BOOLEAN	PIXIT 7a	Can the IUT be made to enter the busy condition when required for testing?
IUT_SETUP_LINK	BOOLEAN	PIXIT 10a	Can the IUT be made to set-up the link when required for testing?
IUT_TYPE	IA5String	PIXIT 1	Classification of the IUT
K	INTEGER	PIXIT 2	The maximum number of outstanding I frames
K1	BOOLEAN	PICS LS1	Does the IUT support initialization of link setup?
K2	BOOLEAN	PICS LS6	Does the IUT send DM to request link setup?
K3	BOOLEAN	PICS T1e	Does the IUT support timer T1 recovery for REJ?
K4	BOOLEAN	PICS T1d	Does the IUT support timer T1 recovery for FRMR?
LCRa	BOOLEAN	PICS LCRa	IUT resolves collision of unnumbered commands after receiving a UA
LCRb	BOOLEAN	PICS LCRb	IUT resolves collision of unnumbered commands after sending a UA
LCRc	BOOLEAN	PICS LCRc	IUT resolves collision of unnumbered commands after timing out waiting for a UA
Md	INTEGER	PIXIT Md	Value of modulus
MEL	INTEGER	PIXIT 3	Maximum established length of an I frame (N1)
N2	INTEGER	PIXIT 4	Transmission counter of the IUT
STABLE_DP	BOOLEAN	PIXIT 11	Can the IUT maintain the disconnected phase as a stable state for a period of time?
STABLE_FRMR	BOOLEAN	PIXIT 12	Can the IUT maintain the frame reject condition for a period of time?
T1_ONE	INTEGER	PIXIT 5	Timer T1 value of the IUT
Tb	INTEGER	PIXIT 7b1	The maximum time the IUT will be in the busy condition after link set-up
Td	INTEGER	PIXIT 9	Timer to determine if the IUT will not respond to a tester stimulus
TEST_DM	BOOLEAN	PIXIT 10b	Can the IUT request the tester to set-up the link?
TOperator	INTEGER	PIXIT 14	Time required for the operator to complete the requested action
UDAT	HEXSTRING	PIXIT 15	I Frame information field
ULON	HEXSTRING	PIXIT 16	Contents of the information field that exceeds the MEL
UNRSP	BOOLEAN	PIXIT 13b	Does the IUT respond to any stimulus upon reaching the disconnected phase?

5.6 Test case selection expression definitions

Table 20. Test Case Selection Expression Definitions		
Expression Name	Selection Expression	Comments
CCITT_80	IUT_TYPE = "X25_1980"	CCITT X.25 (1980) IUTs
DP_STABLE	STABLE_DP AND NOT UNRSP	Stable Disconnected Phase
FRMR_STABLE	STABLE_FRMR	Stable Frame Rejection Condition
IUT_WINDOW	IUT_ACK	Select if IUT acknowledges I frames immediately
NOT_CCITT	NOT ((IUT_TYPE = "X25_1980") OR (IUT_TYPE = "X25_1984"))	ISO 7776 IUTs
NOT_CCITT_80	NOT (IUT_TYPE = "X25_1980")	ISO 7776 or CCITT X.25 (1984) IUTs
NOT_ISO_7776	NOT (IUT_TYPE = "ISO_7776")	CCITT X.25 IUTs
NOT_UNRESP	NOT UNRSP	IUTs which require operator intervention to setup the link
SEND_DISC	IUT_SEND_DISC	IUTs which can send a DISC upon request
SEND_DM	K2 AND TEST_DM	IUTs which can send a DM upon request
SEND_FRMR	K4 AND STABLE_FRMR	IUTs which send a FRMR after timer T1 expires
SEND_REJ	K3 AND NOT_CCITT	IUTs which send a REJ after timer T1 expires
SEND_RNR	IUT_SEND_RNR	IUT which can send a RNR upon request
SEND_SABM	K1 AND IUT_SETUP_LINK	IUTs which send a SABM

5.7 Test case variable declarations

Table 21. Test Case Variable Declarations			
Variable Name	Type	Value	Comments
ACK_VR	INTEGER	0	Used in I_FRAME_EXCH to keep count of V_R
FLAG	BOOLEAN		Used to indicate whether acknowledgement is to be sent
IR	INTEGER		Used to keep track of frames received by the IUT
IS	INTEGER		Used to keep track of frames sent by the IUT
P_F_BIT	Poll_Final		Used to keep track of P/F bit received
STEP	INTEGER	0	Counter for repeat statements
TOT_STEP	INTEGER	0	Used to keep track of window rotation
V_R	INTEGER	0	Receive state variable V(R)
V_S	INTEGER	0	Send state variable V(S)
Z_W	BITSTRING		Used to keep the previous value of ZYXW bits

5.8 PCO declarations

Table 22. PCO Declarations			
PCO Name	PCO Type	Role	Comments
L	PCO	LT	Service access point at lower tester for data link layer testing

5.9 Timer declarations

Table 23. Timer Declarations			
Timer Name	Duration	Unit	Comments
HALF_T1	T1_ONE	ms	HALF_T1 is a test parameter equal to half the duration of timer T1
SHORT_TIMER	1	ms	Used in the preambles
T1	T1_ONE	ms	T1_ONE is a test parameter equal to duration of timer T1
TBSY	Tb	ms	The time the IUT will remain in the busy immediately after entering the information transfer phase
TMO1	Td	ms	Tester timeout waiting for an IUT response
TOPR	TOPERATOR	sec	The time required for the operator action on the implicit send events
TWO_T1	T1_ONE	ms	TWO_T1 is a test parameter equal to twice the duration of timer T1

5.10 ASN.1 PDU type definitions

Table 24. ASN.1 PDU Type Definition	
PDU Name	: I_Frame
PCO Type	: PCO
Comments	:
Type Definition	
<pre> SEQUENCE { address Frame_Address , control I_Control , user_data I_Field } </pre>	

Table 25. ASN.1 PDU Type Definition	
PDU Name	: RR
PCO Type	: PCO
Comments	:
Type Definition	
<pre> SEQUENCE { address Frame_Address , control S_Control } </pre>	

Table 26. ASN.1 PDU Type Definition	
PDU Name	: RNR
PCO Type	: PCO
Comments	:
Type Definition	
<pre> SEQUENCE { address Frame_Address , control S_Control } </pre>	

Table 27. ASN.1 PDU Type Definition	
PDU Name	: REJ
PCO Type	: PCO
Comments	:
Type Definition	
<pre> SEQUENCE { address Frame_Address , control S_Control } </pre>	

Table 28. ASN.1 PDU Type Definition	
PDU Name	: SABM
PCO Type	: PCO
Comments	:
Type Definition	
<pre> SEQUENCE { address Frame_Address , control_86 BIT STRING (SIZE (3)) , p_f Poll_Final , control_41 BIT STRING (SIZE (4)) } </pre>	

Table 29. ASN.1 PDU Type Definition

PDU Name	: DISC
PCO Type	: PCO
Comments	:
Type Definition	
SEQUENCE { address control_86 p_f control_41 }	Frame_Address , BIT STRING (SIZE (3)) , Poll_Final , BIT STRING (SIZE (4))

Table 30. ASN.1 PDU Type Definition

PDU Name	: DM
PCO Type	: PCO
Comments	:
Type Definition	
SEQUENCE { address control_86 p_f control_41 }	Frame_Address , BIT STRING (SIZE (3)) , Poll_Final , BIT STRING (SIZE (4))

Table 31. ASN.1 PDU Type Definition

PDU Name	: UA
PCO Type	: PCO
Comments	:
Type Definition	
SEQUENCE { address control_86 p_f control_41 }	Frame_Address , BIT STRING (SIZE (3)) , Poll_Final , BIT STRING (SIZE (4))

Table 32. ASN.1 PDU Type Definition

PDU Name	: FRMR
PCO Type	: PCO
Comments	:
Type Definition	
SEQUENCE { address control_86 p_f control_41 l_field }	Frame_Address , BIT STRING (SIZE (3)) , Poll_Final , BIT STRING (SIZE (4)) , FRMR_l_Field

Table 33. ASN.1 PDU Type Definition

PDU Name : Unformatted_Frame_Type
 PCO Type : PCO
 Comments :

Type Definition

OCTET STRING (SIZE (1..4103))

Table 34. ASN.1 PDU Type Definition

PDU Name : RR_L
 PCO Type : PCO
 Comments :

Type Definition

```
SEQUENCE {
  address                Frame_Address ,
  control                S_Control ,
  info                  OCTET STRING (SIZE (1..32))
}
```

Table 35. ASN.1 PDU Type Definition

PDU Name : RNR_L
 PCO Type : PCO
 Comments :

Type Definition

```
SEQUENCE (
  address                Frame_Address ,
  control                S_Control ,
  info                  OCTET STRING (SIZE (1..32))
)
```

Table 36. ASN.1 PDU Type Definition

PDU Name : REJ_L
 PCO Type : PCO
 Comments :

Type Definition

```
SEQUENCE (
  address                Frame_Address ,
  control                S_Control ,
  info                  OCTET STRING (SIZE (1..32))
)
```

5.11 ASN.1 PDU constraint declarations

Table 37. ASN.1 PDU Constraint Declaration	
Constraint Name	: ABORT_1
PDU Type	: Unformatted_Frame_Type
Derivation Path	:
Comments	:
Constraint Value	
*	

Table 38. ASN.1 PDU Constraint Declaration	
Constraint Name	: DISC_10
PDU Type	: DISC
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '010'B, p_f off, control_41 '0011'B }</pre>	

Table 39. ASN.1 PDU Constraint Declaration	
Constraint Name	: DISC_11
PDU Type	: DISC
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '010'B, p_f on, control_41 '0011'B }</pre>	

Table 40. ASN.1 PDU Constraint Declaration	
Constraint Name	: DISC_12
PDU Type	: DISC
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '010'B, p_f ?, control_41 '0011'B }</pre>	

Table 41. ASN.1 PDU Constraint Declaration

Constraint Name : DISC_30
PDU Type : DISC
Derivation Path :
Comments :

Constraint Value

```

{
  address          a,
  control_86       '010'B,
  p_f              off,
  control_41       '0011'B
}

```

Table 42. ASN.1 PDU Constraint Declaration

Constraint Name : DISC_31
PDU Type : DISC
Derivation Path :
Comments :

Constraint Value

```

{
  address          a,
  control_86       '010'B,
  p_f              on,
  control_41       '0011'B
}

```

Table 43. ASN.1 PDU Constraint Declaration

Constraint Name : DISC_40
PDU Type : DISC
Derivation Path :
Comments : Invalid address

Constraint Value

```

{
  address          4,
  control_86       '010'B,
  p_f              off,
  control_41       '0011'B
}

```

Table 44. ASN.1 PDU Constraint Declaration

Constraint Name : DM_1 (PF: Poll_Final)
PDU Type : DM
Derivation Path :
Comments :

Constraint Value

```

{
  address          b,
  control_86       '000'B,
  p_f              PF,
  control_41       '1111'B
}

```

Table 45. ASN.1 PDU Constraint Declaration

Constraint Name	: DM_10
PDU Type	: DM
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '000'B, p_f off, control_41 '1111'B }</pre>	

Table 46. ASN.1 PDU Constraint Declaration

Constraint Name	: DM_11
PDU Type	: DM
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '000'B, p_f on, control_41 '1111'B }</pre>	

Table 47. ASN.1 PDU Constraint Declaration

Constraint Name	: DM_30
PDU Type	: DM
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address a, control_86 '000'B, p_f off, control_41 '1111'B }</pre>	

Table 48. ASN.1 PDU Constraint Declaration

Constraint Name	: DM_31
PDU Type	: DM
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address a, control_86 '000'B, p_f on, control_41 '1111'B }</pre>	

Table 49. ASN.1 PDU Constraint Declaration

Constraint Name	: FCS_ERROR_1
PDU Type	: Unformatted_Frame_Type
Derivation Path	:
Comments	:
Constraint Value	
*	

Table 50. ASN.1 PDU Constraint Declaration

Constraint Name	: FRMR_10
PDU Type	: FRMR
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '100'B, p_f off, control_41 '0111'B i_field mod8 { control 'FF'H, vr 0, c_r on, vs 0, bit_1 '0'B, bit_85 '0000'B, zywx '0001'B } }</pre>	

Table 51. ASN.1 PDU Constraint Declaration

Constraint Name	: FRMR_11
PDU Type	: FRMR
Derivation Path	:
Comments	:
Constraint Value	
<pre>{ address b, control_86 '100'B, p_f on, control_41 '0111'B i_field mod8 { control 'FF'H, vr 0, c_r off, vs 0, bit_1 '0'B, bit_85 '0000'B, zywx '0001'B } }</pre>	

Table 52. ASN.1 PDU Constraint Declaration	
Constraint Name	: FRMR_30
PDU Type	: FRMR
Derivation Path	:
Comments	:
Constraint Value	
<pre> { address a, control_86 '100'B, p_f off, control_41 '0111'B i_field mod8 { control ?, vr ?, c_r ?, vs ?, bit_1 '0'B, bit_85 '0000'B, zyxw ? } } </pre>	

Table 53. ASN.1 PDU Constraint Declaration	
Constraint Name	: FRMR_31
PDU Type	: FRMR
Derivation Path	:
Comments	:
Constraint Value	
<pre> { address a, control_86 '100'B, p_f on, control_41 '0111'B i_field mod8 { control ?, vr ?, c_r ?, vs ?, bit_1 '0'B, bit_85 '0000'B, zyxw ? } } </pre>	