INTERNATIONAL STANDARD

ISO/IEC 8882-3

Second edition
1995-12-15

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

Part 3:

Packet layer conformance test suite

Technologies de l'information — Télécommunications et échange d'information entre systèmes — Test de conformité X.25 DTE —

Partie 3: Suite d'essais de conformité pour la couche paquet

INTERNATIONAL ISO/IEC

Reference number
ISO/IEC 8882-3:1995(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development on International Standards through technical committees established by the respective organization to deal with particular fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 8882-3 was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

This second edition cancels and replaces the first edition (ISO/IEC 8882-3:1991), which has been technically revised.

ISO/IEC 8882 consists of the following parts, under the general title *Information technology -- Telecommunications and information exchange between systems -- X.25 DTE conformance testing*:

- *Part 1 : General principles*
- *Part 2 : Data link layer conformance test suite*
- *Part 3 : Packet layer conformance test suite*

Annex A of this part of IOS/IEC 8882 is for information only.

Introduction

This part of ISO/IEC 8882 specifies a set of tests to evaluate Data Terminal Equipment (DTE) conformance to International Standards ISO/IEC 7776 (X.25 LAPB) and/or ISO/IEC 8208 (X.25 Packet Layer). ISO/IEC 7776 and ISO/IEC 8208 allow for a DTE to interface with a Data Circuit-Terminating Equipment (DCE) conforming to CCITT Recommendation X.25 or to another DTE conforming to ISO/IEC 7776 and/or ISO/IEC 8208. ISO/IEC 8208 also allows for connection to Local Area Networks.

CCITT Recommendation X.25 (1980) and X.25 (1984) are written from the perspective of a DCE and therefore do not explicitly specify the DTE operation. However, recommended operation of DTEs is included by implication because of the need to communicate with X.25 DCEs. Tests within this part of ISO/IEC 8882 pertaining to X.25 (1980) and X.25 (1984) are based on the DTE operational characteristics implied by CCITT X.25.

This part of ISO/IEC 8882 presents the packet layer aspects for evaluating conformance to ISO/IEC 8208 and follows the procedures and guidelines defined in ISO/IEC 9646.

Where it is claimed that X.25 is used to provide the OSI Network Layer Service, the conformance tests as defined in this part of ISO/IEC 8882 can be used to verify the implementation of the necessary protocol elements.

The test suite is presented in an abstract form by means of the test case notation TTCN, as defined in ISO/IEC 9646-3. This is an abstract set of tests. Not every test applies to every public network or every type of DTE.

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

Part 3:
Packet layer conformance test suite

1 Scope

This part of ISO/IEC 8882 specifies a set of abstract tests for verifying that the implementation of X.25 protocols, for use by Data Terminal Equipment (DTE), conform to the requirements of International Standards that specify those protocols.

This part of ISO/IEC 8882

a) specifies a PIXIT proforma;

b) describes the relationship of the PICS to the test suite;

c) describes the relationship of the PIXIT to the test suite;

d) specifies a set of abstract tests using TTCN Graphical notation.

This part of ISO/IEC 8882 defines the testing of a DTE operating at the packet layer designed to access a public or private packet-switched network conforming to CCITT Recommendation X.25 (1980, 1984) or another DTE conforming to ISO/IEC 8208. The specification of test cases in executable/machine processable TTCN is outside the scope of this part of ISO/IEC 8882.

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, and ITU-T maintains published editions of its current Recommendations.

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 systems -- High-level data link control procedures -- Description of the X.25 LAPB-compatible DTE data link procedures.*

ISO/IEC 8208: 1990, *Information technology -- Data communications -- X.25 Packet Layer Protocol for Data Terminal Equipment.*

ISO/IEC 8208/Amd.1: 1990, *Information technology -- Data communications -- X.25 Packet Layer Protocol for Data Terminal Equipment -- Amendment 1: Alternative Logical Channel Identifier Assignment.*

ISO/IEC 8208/Amd. 3: 1991, *Information technology -- Data communications -- X.25 Packet Layer Protocol for Data Terminal Equipment -- Amendment 3: Conformance requirements.*

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 8886: 1992, *Information technology -- Telecommunications and information exchange between systems -- Data link service definition for Open Systems Interconnection.*

ISO/IEC 9646-1: 1994, *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 meth-*

odology 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.*

CCITT Recommendation X.25 (1988), *Interface Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for terminals operating in the Packet Mode and connected to Public Data Networks by Dedicated Circuit, CCITT Blue Book.*

3 Definitions

3.1 Reference model definitions

This part of ISO/IEC 8882 makes use of the following term defined in ISO/IEC 7498-1.

(N)-protocol-data-unit (N-PDU)

3.2 Conformance testing definitions

This part of ISO/IEC 8882 makes use of the following terms defined in ISO/IEC 9646.

a) Abstract Test Suite

b) Conforming System or Implementation

c) Conformance Test Suite

d) Conformance Testing

e) Executable Test Suite

f) Postamble

g) Preamble

h) Protocol Implementation Conformance Statement

i) Protocol Implementation eXtra Information for Testing

j) Test Group

k) Test Step

l) Test Suite

3.3 X.25-DTE conformance testing definitions

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

a) Improper PDU

b) Inopportune PDU

c) Proper PDU

d) Test Subgroup

e) Test Selection

f) Tester

g) Transient States

3.4 Additional definitions

For the purposes of this part of ISO/IEC 8882, the following definitions apply.

3.4.1 proper packet : A packet that is a proper PDU.

3.4.2 improper packet : A packet that is an improper PDU.

3.4.3 inopportune packet : A packet that is an inopportune PDU.

4 Abbreviations

The following abbreviations are used in this part of ISO/IEC 8882:

ADX	Address
ASP	Abstract Service Primitive
ATS	Abstract Test Suite
ETS	Executable Test Suite
FAC	Facility
IUT	Implementation Under Test
LCI	Logical Channel Identifier
LEN	Length
PCO	Point of Control and Observation
PDU	Protocol Data Unit

PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PKT	Packet
PLG	Packet Layer Group
RX	Receive
TST	Tester
TX	Transmit
UDF	User Data Field

5 Conformance

The test realizer shall comply with the requirements of ISO/IEC 9646-4. In particular, these concern the realization of an ETS based on the ATS. Test laboratories running conformance test services for this abstract test suite shall comply with ISO/IEC 9646-5.

6 Test suite information

6.1 Packet layer test suite structure

The packet layer tests are grouped as shown in Table 1.

Table 1. Packet layer test groups

Test group #	Packet layer test groups	Test group #	Packet layer test groups
1	r1 - Packet Layer Ready State	15	i2 - DTE Interrupt Sent State
2	r2 - DTE Restart Request State	16	j1 - DXE Interrupt Ready State
3	r3 - DXE Restart Indication State	17	j2 - DXE Interrupt Sent State
4	p1 - Ready State	18	f1 - DXE Receive Ready State
5	p2 - DTE Call Request State	19	f2 - DXE Receive Not Ready State
6	p3 - DXE Incoming Call State	20	g1 - DTE Receive Ready State
7	p4 - Data Transfer State	21	g2 - DTE Receive Not Ready (*)
8	p5 - Call Collision State	22	Data Transfer
9	p6 - DTE Clear Request State	23	Timer Tests
10	p7 - DXE Clear Indication State	24	Address
11	d1 - Flow Control Ready State	25	Facility
12	d2 - DTE Reset Request State	26	Registration
13	d3 - DXE Reset Indication State	27	Multiple Logical Channel Assignment
14	i1 - DTE Interrupt Ready State	28	DTE/DTE Tests NOTE - (*) This group has been deleted but the number has been retained for consistency.

For each test group that tests a packet layer state (PLG1 through PLG28), the test cases specified are categorized into the following three subgroups.

- Subgroup 1 contains test cases in which the Tester transmits a proper test packet, these test cases are identified with a one hundred series test case identifier xx_1xx.
- Subgroup 2 contains test cases in which the Tester transmits an improper test packet, these test cases are identified with a two hundred series test case identifier xx_2xx.
- Subgroup 3 contains test cases in which the Tester transmits an inopportune test packet, these test cases are identified with a three hundred series test case identifier xx_3xx.

6.2 Packet layer initialization

In accordance with ISO/IEC 8208 Section 3.10, the DTE must transmit a Restart Request whenever link layer initialization has completed. However, DTEs developed in conformance with the 1980 and 1984 versions of Recommendation X.25 are not required to send a Restart Request at this time. To accommodate both DTE implementations, the Tester initiates the restart procedure upon completion of link layer initialization.

The Tester will accept either a Restart Confirmation or a Restart Request as a valid response to its Restart Indication, as shown below in example EG_001. Packet layer initialization always occurs once at the start of a test session. State initialization, on the other hand, is performed many times during a test session as part of each test case. Packet layer initialization will also occur as part of state initialization when the previously executed test case results in a Fail or Inconclusive verdict, or the previously executed test case is part of PLG 1, 2, 3, 26 or in test groups in which the Restart procedure is executed as part of state initialization (PLG 1, 2, 3 and 26).

The following are examples of initialization of ISO/IEC 8208 over ISO/IEC 7776 (LAPB). Any other examples of initialization sequences using other underlying protocols are not shown, but may be appropriate. For example, normal state initialization steps in state r1 (PLG 1) are as shown in Table 2.

For those DTEs which disconnect the link upon receipt of a Restart Indication (or transmittal of a Restart Request) the state initialization steps include link layer initialization as shown in Table 3.

Table 2. Test Case Dynamic Behavior

Test Step Name : EG_001
Group : Example Test Step / Packet Layer Initialization
Objective : An example test step illustrating Packet Layer Initialization
Default :
Comments :

Nr	Label	Behavior Description	Constraints Ref	Verdict	Comments
1		! Restart_Indication START TD	STRT_DCE		1
2		? Restart_Confirmation CANCEL TD	STRTC		
3		? Restart_Request CANCEL TD	STRT_DTEA		
4		? TIMEOUT TD		FAIL	4
5		? OTHERWISE CANCEL TD		FAIL	

Detailed Comments:

1 The Restart Indication is sent upon successful initialization of the Data Link Layer
4 TD expired

Table 3. Test Case Dynamic Behavior

Test Step Name : EG_002
Group : Example Test Step / Packet Layer Initialization / Link Layer Initialization
Objective : An example test step illustrating Packet Layer Initialization that includes Data Link Layer Initialization
Default :
Comments : a) L is the PCO at the Tester (Packet Layer) to Link Layer interface.
: b) D is the PCO at the Link Layer to Physical interface.
: c) This example uses the Multi-layer testing method, the Packet Layer Test Suite only uses the Remote Single-layer test method.

Nr	Label	Behavior Description	Constraints Ref	Verdict	Comments
1		FG_002 [L,D]			
2		L! Restart_Indication START TD	STRT_DCE		
3		L? Restart_Confirmation START TD	STRTC		
4		D? Disconnect CANCEL TD	DISC_1		4
5		+LINK_INIT			
6		L? TIMEOUT TD			6
7		L? Restart_Request START TD	STRT_DTEA		
8		D? Disconnect CANCEL TD	DISC_1		
9		+LINK_INIT			
10		L? TIMEOUT TD		FAIL	
11		L? TIMEOUT TD		FAIL	
12		L? OTHERWISE CANCEL TD		FAIL	
13		LINK_INIT			
14		D! UA	UA_DCE		14
15		D? SABM	SABM_1		15
16		D! UA	UA_DCE		14
17		L! Restart_Indication START TD	STRT_DCE		
18		L? Restart_Confirmation CANCEL TD	STRTC		
19		L? Restart_Request CANCEL TD	STRT_DTEA		
20		L? TIMEOUT TD		FAIL	
21		L? OTHERWISE CANCEL TD		FAIL	

Detailed Comments:

4	Wait for DISC
6	TD expired
14	Send UA
15	Wait for SABM

6.3 DTE-initiated actions

DTE-initiated actions specified by the test suite are handled using the Implicit Send mechanism defined in ISO/IEC 9646-3. The ability of the IUT to perform these actions, and its ability to execute the tests containing the actions, is determined by the information provided in the PIXIT and the PICS.

6.4 Timer definitions

This part of ISO/IEC 8882 defines the following timers:

TR the time required by the IUT to resume testing after completion of the Restart procedure. The duration is provided in PIXIT question 1.18a and contained in the test suite parameter TR_DELAY;

TC the time required by the IUT to resume testing after completion of the Clear procedure. The duration is provided in PIXIT question 1.18b and contained in the test suite parameter TC_DELAY;

TS the time required by the IUT to resume testing after completion of the Reset procedure. The duration is provided in PIXIT question 1.18c and contained in the test suite parameter TS_DELAY;

TD the time that the Tester waits before determining that the IUT will not respond to a Tester stimulus. For example, how long the Tester should wait before assuming that the IUT has either discarded or failed to respond to the stimulus. TD must be less than all other timers specific to ISO/IEC 8208, i.e. T20 through T28. The duration is calculated by the formula contained in the PIXIT question 1.23 (TD = 2 * TD_RESPONSE + MAX(TO_R3, TO_P3, TO_P7, TO_D3, TO_J2) and contained in the test suite parameter TD_WAIT_TIME;

TD_RESP the maximum time that the tester should wait for an immediate response from the IUT to a tester stimulus. The duration is provided in PIXIT question 1.20 and contained in TD_RESPONSE;

TDEL is a tolerance used in testing timers T20 - T28 of the base standard. The duration is provided in PIXIT question 1.21 and contained in the test suite parameter TDELTA. The duration considers the round trip transit delay between the Tester and IUT, and the time necessary for an IUT to respond to a received packet or timer expiry;

TO_R3 is the minimum time that the IUT remains in state R3. The duration is provided in PIXIT question 1.22 and contained in TO_DELAY_R3_MIN;

TO_P3 is the minimum time that the IUT remains in state P3. The duration is provided in PIXIT question 1.22 and contained in TO_DELAY_P3_MIN;

TO_P7 is the minimum time that the IUT remains in state P7. The duration is provided in PIXIT question 1.22 and contained in TO_DELAY_P7_MIN;

TO_D3 is the minimum time that the IUT remains in state D3. The duration is provided in PIXIT question 1.22 and contained in TO_DELAY_D3_MIN;

TO_J2 is the minimum time that the IUT remains in state J2. The duration is provided in PIXIT question 1.22 and contained in TO_DELAY_J2_MIN.

6.5 Cause codes and diagnostic codes

ISO/IEC 8208 requires the cause code to be 0 or 128 and the diagnostic code to be present in the Restart, Clear or Reset packet. Use of cause code 0 designates the use of standard diagnostic codes as specified in ISO/IEC 8208, figure 14-B. Use of cause code 128 designates the use of DTE-specific diagnostic codes.

CCITT X.25 (1984) requires the cause code in the Restart, Clear, or Reset Request packets to be either 0 or a value in the range of 128 through 255. The diagnostic code field is not mandatory in the basic format of these request packets. However, when the extended format is used, the diagnostic code field shall be present.

CCITT X.25 (1980) requires the cause code field in the Restart, Clear, or Reset Request packet to be set to 0. The diagnostic code field is not mandatory in the request packets.

Any one of several diagnostic codes may be generated by the IUT, on a per test case basis, especially where multiple error conditions are present in the same packet. In such instances any one of the possible diagnostic codes shall be accepted.

The test cases allow for the use of multiple diagnostic codes by DTEs. In the case where the DTE implements specific diagnostic codes it is recommended that these codes be in accordance with Tables 31-36 in ISO/IEC 8208.

6.6 Data transfer states

A limited set of data transfer tests (PLG20 and PLG22) are included in this test suite to verify the IUT's ability to perform the following:

- send and/or receive valid data packets;
- manage window rotation;
- detect improper data packets, and react accordingly;
- observe the remote busy condition.

In order to facilitate the exchange of data packets during these tests, the IUT provider shall specify the contents of the data packet user data field (UDF) for the Tester. The UDF values are supplied by the IUT provider in the PIXIT.

The following items should be considered when completing the PIXIT:

a) The UDF content in data packets received by the Tester will not be verified. Consequently, the information is not requested in the PIXIT.

Note: Receive-only IUTs are not expected to send data packets during data transfer tests.

b) The start of data transfer (i.e. Tester or IUT transmits first) is based on the response in the PIXIT.

c) Depending on the test being performed, the full list of UDFs specified in the PIXIT may not be sent. Exchange of data packets containing UDFs specified in the list may terminate at any point. Subsequent tests will start with the entry in the UDF list that is specified in the PIXIT (i.e. first entry or next entry).

d) If UDF contents are specified in the PIXIT, they will be sent (in sequence) whenever a data packet must be sent, or in response to data packets received from the IUT.

Note: Q-bit, D-bit and M-bit settings in these data packets are based on information provided in the PIXIT. Receive Ready (RR) packets may also be sent by the Tester and the IUT.

e) It is also assumed that the IUT can send consecutive data packets as required for window rota-

tion tests. The Tester will only send Receive Ready (RR) packets during these tests.

6.7 Other user data fields

When necessary, the content of user data fields in the Call setup, Clearing and Interrupt packets shall be provided to the Tester by the IUT provider in order to successfully execute the Packet Layer Test Suite. In this case, the IUT requires the Tester to transmit user data fields in accordance with higher layer protocols which are operating above the packet layer.

6.8 Transient states

It is recognized that for those DTEs that process packets sequentially, certain states are not observable. Specifically, the testing of the DTE during the DXE defined states (for example, r3 - RESTART INDICATION, p3 - INCOMING CALL, p7 - CLEAR INDICATION, and d3 - RESET INDICATION) may end up in the testing of some other states (p1 - Packet Layer Ready, p4 - Data Transfer, d1 - Flow Control Ready). For example, to test the response to an error (r3) state, the Tester would send a RESTART INDICATION, immediately followed by the error packet. The Tester is expecting the DTE to discard the error packet, then send a RESTART REQUEST in response. However, the DTE generally responds immediately to the RESTART INDICATION with a RESTART CONFIRMATION and processes the next packet from the packet layer state r1. This test suite contains tests for these transient states only if they are observable. They are observable and testable if the minimum duration of the state is at least twice TD_RESPONSE.

6.9 Relationship of PICS to test suite

The Protocol Implementation Conformance Statement (PICS) defines the capabilities and options which have been implemented by the IUT, and also any features not implemented. The PICS shall be provided by the IUT, and its function is to ensure that the IUT implementation will be tested for conformance against only relevant requirements. The PICS proforma is defined in ISO/IEC 8208/Amd. 3.

6.10 Relationship of PIXIT to test suite

The PIXIT consists of a list of questions developed to obtain the characteristics of the IUT which are necessary to successfully execute the conformance test suite.

6.11 Test case selection

Test case selection is performed using Boolean equations consisting of PICS and PIXIT parameters. Selection is performed at the test group level first, then at the test case level.

6.12 PIXIT proforma

Information supplied by the IUT provider in Table 4 will be used to configure the Tester to execute the conformance test suite. Questions pertaining to function(s) not supported by the IUT should be ignored, since tests requiring the information will be eliminated from the conformance test suite by the PICS. It may be necessary to complete more than one PIXIT in order to represent the various configuration options of a specific IUT.

An uppercase mnemonic enclosed in parenthesis i.e. (IUT_TX) indicates the Test Suite Parameter that maps to this PIXIT question. Values supplied in the PIXIT will be directly mapped into the Test Suite via their associated Test Suite Parameter, therefore all supplied values must be in valid TTCN notation. A field that may contain any valid value based on the protocol specification is indicated by use of a ? in the PIXIT answer. A field which may or may not be present is indicated by an * and a field which is never present is indicated by a - . Refer to the Test Suite Parameter table for the declared type (INTEGER, BITSTRING, HEXSTRING) of each test suite parameter.

Table 4 (Page 1 of 12). Protocol Implementation eXtra Information for Testing (PIXIT) Proforma			
Item	**IUT Type**	**Values**	**Comments**
1.1	Indicate the protocol to be tested, by answering the all of the following:		
1.1a	ISO 8208 (ISO)	☐Yes ☐No	
1.1b	CCITT X.25 1984 (CCITT_84)	☐Yes ☐No	
1.1c	CCITT X.25 1980 (CCITT_80)	☐Yes ☐No	
1.2	State whether the IUT is capable of sending data and/or receiving data.		
1.2a	sending (IUT_TX)	☐Yes ☐No	
1.2b	receiving (IUT_RX)	☐Yes ☐No	
Item	**Logical Channel Configuration**	**Values**	**Comments**
1.3	Range of PVC Logical Channel Identifier(s) (must be less than or equal to PICS item LC7)		
1.3a	Lowest PVC (LPV)	Value:	
1.3b	Highest PVC (HPV)	Value:	
1.4	Range of SVC Logical Channel Identifier(s) (must be within the ranges specified in the PICS items LC1 through LC6)		
1.4a.a	Lowest One-way incoming (LIC)	Value:	Note 1
1.4a.b	Highest One-way incoming (HIC)	Value:	Note 1
1.4b.a	Lowest One-way outgoing (LOC)	Value:	Note 1
1.4b.b	Highest One-way outgoing (HOC)	Value:	Note 1
1.4c.a	Lowest Two-way (LTC)	Value:	Note 1
1.4c.b	Highest Two-way (HTC)	Value:	Note 1
1.5	Indicate a logical channel to be used by the Tester for Incoming Calls (to the IUT) or PVCs. (LCI_UNDER_TEST)	Value:	Note 9
1.6	Indicate a logical channel to be used for logical channel unassigned testing. (LUC)	Value:	
1.7	How many Incoming virtual calls can be supported at the same time using the information in PIXIT question 1.4 and PIXIT question 2.2a? (SIM_CALL_IN)	Value:	
1.8	How many Outgoing virtual calls can be supported at the same time using the information in PIXIT question 1.4 and PIXIT question 2.3a? (SIM_CALL_OUT)	Value:	
Item	**Flow Control Information**	**Values**	**Comments**
1.9	Window sizes		
1.9a	Indicate the default window size to be used during test execution. This value is used for both transmit and receive windows (must be in range of PICS items V2s and V2r). (DEF_WIN_SZ)	Value:	
1.9b.a	Indicate a transmit nonstandard default window size to be used during test execution. (NS_DEF_WIN_SZ_TX)	Value:	
1.9b.b	Indicate a receive nonstandard default window size to be used during test execution. (NS_DEF_WIN_SZ_RX)	Value:	
1.9c	Provide the integer value of the nonstandard default window size given in 1.9b above. (NS_DEF_WIN_SZ_NUM)	Value:	
1.10	Packet sizes		
1.10a	Indicate a transmit nonstandard default packet size to be used during test execution. (NS_DEF_PKT_SZ_TX)	Value:	
1.10b	Indicate a receive nonstandard default packet size to be used during test execution. (NS_DEF_PKT_SZ_RX)	Value:	
1.11	Indicate maximum flow control packet size. (MAX_PKT_SZ)	Value:	
1.12	Indicate the modulo to be used for testing. (SEQ_MODULO)	☐8 ☐128	

Table 4 (Page 2 of 12). Protocol Implementation eXtra Information for Testing (PIXIT) Proforma			
Item	**IUT Behavior Information**	**Values**	**Comments**
1.13	Does the IUT re-initialize at the Data Link Layer upon execution of an unexpected Restart procedure? (DISC_AT_DL)	☐Yes ☐No	
1.14	Does the IUT require a one for one exchange of Data packets when transmitting a window or more of data? (REPLY_REQUIRED)	☐Yes ☐No	
1.15	Will the IUT send the first data packet? (FIRST_DATA_FROM_IUT)	☐Yes ☐No	
1.16	Will the IUT send more data packets than its send window size? (MORE_DATA)	☐Yes ☐No	
1.17	Will the IUT send at least three data packets more than its modulo size? (THREE_MORE)	☐Yes ☐No	
Item	**Timer Information**	**Values**	**Comments**
1.18	State the time required by the IUT to resume testing after completion of the following procedures (in milli-seconds):		
1.18a	Restart (TR_DELAY)	Value:	Note 3
1.18b	Clear (TC_DELAY)	Value:	Note 3
1.18c	Reset (TS_DELAY)	Value:	Note 3
1.19	Enter the values used by the IUT for the following timers:		
1.19a	(T20)	Value:	Note 3
1.19b	(T21)	Value:	Note 3
1.19c	(T22)	Value:	Note 3
1.19d	(T23)	Value:	Note 3
1.19e	(T24)	Value:	Note 3
1.19f	(T25)	Value:	Note 3
1.19g	(T26)	Value:	Note 3
1.19h	(T27)	Value:	Note 3
1.19i	(T28)	Value:	Note 3
1.20	State the maximum time the tester should wait for an immediate response for the IUT to a tester stimulus, see clause 6.4. (TD_RESPONSE)	Value:	Note 3
1.21	State the delta value to be added to timers used by the Tester, see clause 6.4. (TDELTA)	Value:	Note 3
1.22	For R3, P3, D3, P7, J2 give the minimum and time that the IUT remains in these states.		
1.22a	R3 (TO_DELAY_R3_MIN)	Value:	Note 3,7
1.22b	R3 (TO_DELAY_R3_MAX)	Value:	Note 3,7
1.22c	P3 (TO_DELAY_P3_MIN)	Value:	Note 3,7
1.22d	P3 (TO_DELAY_P3_MAX)	Value:	Note 3,7
1.22e	D3 (TO_DELAY_D3_MIN)	Value:	Note 3,7
1.22f	D3 (TO_DELAY_D3_MAX)	Value:	Note 3,7
1.22g	P7 (TO_DELAY_P7_MIN)	Value:	Note 3,7
1.22h	P7 (TO_DELAY_P7_MAX)	Value:	Note 3,7
1.22i	J2 (TO_DELAY_J2_MIN)	Value:	Note 3,7
1.22j	J2 (TO_DELAY_J2_MAX)	Value:	Note 3,7
1.23	The time that the tester will use in most cases when waiting for a response from the IUT should be a function of the following formula: TD_WAIT_TIME = 2 * TD_RESPONSE + the maximum value of (TO_DELAY_R3_MAX, TO_DELAY_P3_MAX, TO_DELAY_D3_MAX, TO_DELAY_P7_MAX TO_DELAY_J2_MAX)	Value:	Note 3