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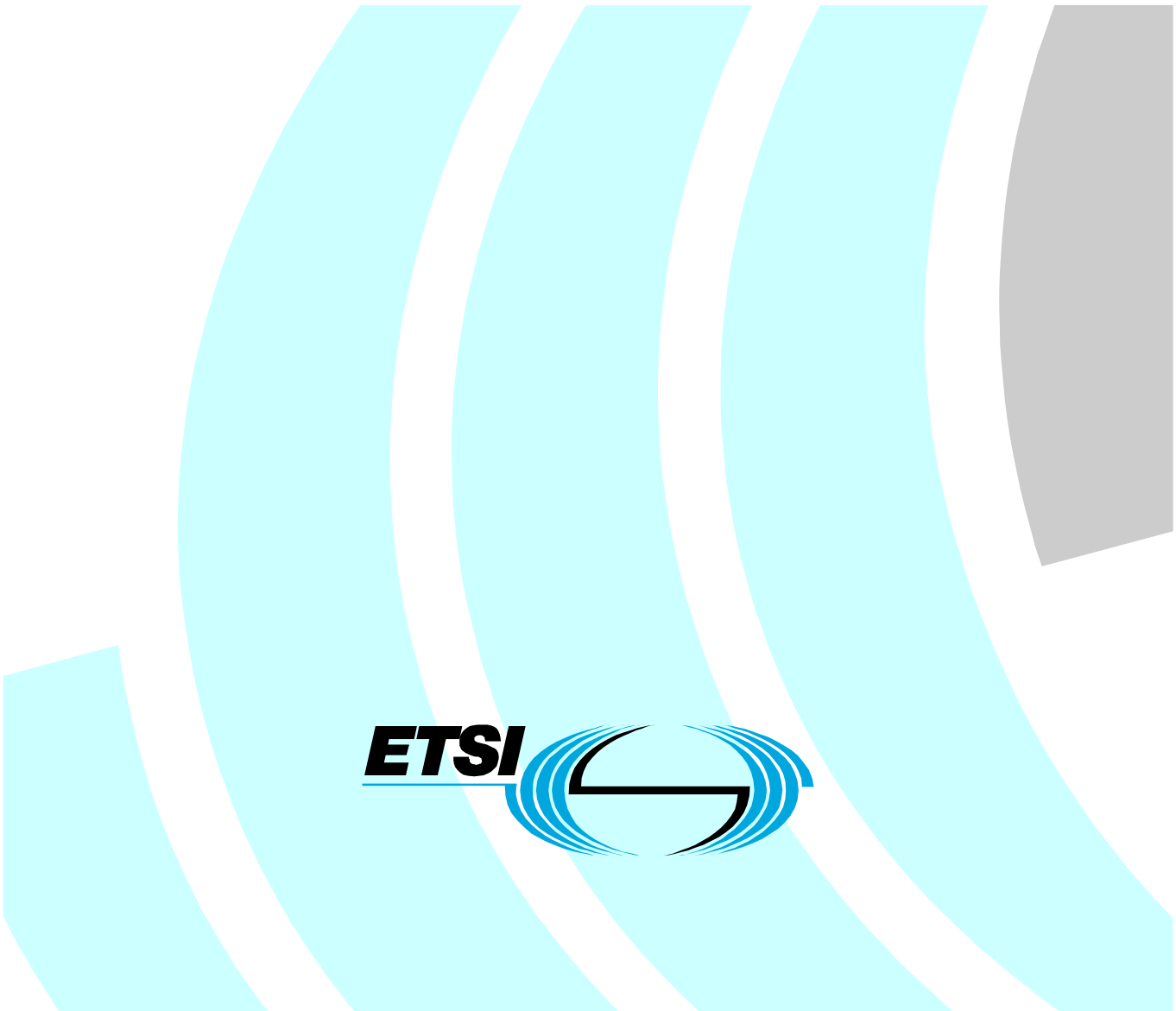
Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer (NTN side)



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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN), and is now submitted for the Vote phase of the ETSI standards Two-step Approval Procedure.

The present document is part 3 of a multi-part deliverable covering the Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS), as identified below:

Part 1: "NMDS interface specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the data link layer (NTN side)";

Part 4: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (NTN side)";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network layer (LE side)";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the NMDS Layer 2 PSTN-GW function (NTN side)";

Part 7: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the PSTN NMDS interface Layer 3 (NTN side)";

Part 8: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) specification for the PSTN NMDS interface Layer 3 (LE side)".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
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1 Scope

The present document defines requirements to support the Narrowband Multi-service Delivery System (NMDS) which provides interfaces connected via a Network Termination Node (NTN) to a Local Exchange (LE), in order to support existing PSTN and ISDN-BA services over an existing ISDN-Basic Access digital subscriber line (DSL).

The present document contains the Test Suite Structure (TSS) and Test Purposes (TPs) for the data link layer (NTN side only) of an NMDS interface. The LE layer 2 state machine is as per ETS 300 402-2 [5].

The present document also contains requirements relating to the functionality of a (new) Network Termination Node (NTN) for supporting both Public Switched Telephone Network (PSTN) access and Integrated Services Digital Network - Basic Access (ISDN-BA) S/T reference point interfaces over a single (digital section) transmission system as used for an existing ISDN-BA. The NTN encompasses NT2-like (noted NT2*) functionality, physical PSTN user port(s), and PSTN protocol functionality.

An NMDS implementation may contain one ISDN-BA port and/or a limited number of PSTN ports up to a maximum of 10. Typically one or two PSTN ports would be supported.

The objective of the present document is to provide conformance test purposes giving a high probability of inter-operability of an Network Termination Node (NTN) and a Local Exchange (LE) on the DLL from different manufacturers over the NMDS interface. The present document covers only the procedures described in EN 301 141-1 [1].

ISO/IEC 9646-1 [11] is used as the basis for the methodology of conformance testing.

EN 301 141-1 [1] defines the NMDS layer 2 functions:

- For the ISDN-BA layer 2 functions, point-to-point (i.e. TEI 0) or point-to-multipoint procedures may be supported using the full ISDN TEI assignment procedures as currently defined. These include TEI assignment and removal procedures. However, there is an NMDS-specific constraint. TEI values 117 through 126 are now reserved for the PSTN_GW layer 2 frames and shall not be used for the ISDN_BA frames. Thus, the DLL TSS and TP as given in ETS 300 402-6 [6] apply as well to the NMDS interface for the ISDN-BA layer 2. The present document does not repeat them.

- For the PSTN layer 2 functions, EN 301 141-1 [1] presents two different state machines. The NTN DLL state machine is an adaptation of the ISDN DSS1 protocol data link layer in ETS 300 402-2 [5]. The LE layer 2 state machine shall be as per ETS 300 402-2 [5]. The present document contains the PSTN layer 2 TSS and TP for the NTN side only.

- The ISDN-BA and PSTN layer 2 functions both use ISDN layer 2 frame formats shown in figure 1/Q.921 of ETS 300 125 [4].

The present document contains no requirements concerning data link layer test purposes for the ISDN-BA component of the NMDS when provisioned.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

[1] ETSI EN 301 141-1 (V2.1.1): "Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 1: NMDS interface specification".

[2] ETSI EN 301 141-2 (V1.3.1): "Integrated Services Digital Network (ISDN); Narrowband Multi-service Delivery System (NMDS); Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[3] ETSI ETS 300 324-1 (1994): "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification".

[4] ETSI ETS 300 125 (1991): "Integrated Services Digital Network (ISDN); User-network interface data link layer specification; Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".

[5] ETSI ETS 300 402-2 (1995): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 2: General protocol specification [ITU-T Recommendation Q.921 (1993), modified]".

[6] ETSI ETS 300 402-6 (1997): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 6: Test Suite Structure and Test Purposes (TSS&TP) specification for the general protocol".

[7] ISO/IEC 7498-1: "Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model".

[8] ISO/IEC 7498-2: "Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 2: Security Architecture".

[9] ISO/IEC 7498-3: "Information technology - Open Systems Interconnection - Basic Reference Model: Naming and addressing".

[10] ISO/IEC 7498-4: "Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 4: Management framework".

[11] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETS 300 324-1 [3] and the following apply:

abstract test suite: See ISO/IEC 9646-1 [11].

data link layer: See ISO/IEC 7498 [7] to [10].

implementation under test: See ISO/IEC 9646-1 [11].

lower tester: See ISO/IEC 9646-1 [11].

network layer: See ISO/IEC 7498 [7] to [10].

notional upper tester: The upper layers of the System Under Test (SUT) realize the functions of the UT without any additional mechanism being installed.

physical layer: See ISO/IEC 7498 [7] to [10].

point of control and observation: See ISO/IEC 9646-1 [11].

Protocol Implementation Conformance Statement (PICS): See ISO/IEC 9646-1 [11].

PICS proforma: See ISO/IEC 9646-1 [11].

Protocol Implementation eXtra Information for Testing (PIXIT): See ISO/IEC 9646-1 [11].

PIXIT proforma: See ISO/IEC 9646-1 [11].

system under test: See ISO/IEC 9646-1 [11].

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AN	Access Network
ATS	Abstract Test Suite
BI	Syntactically Behaviour
BV	Valid Behaviour
DLL	Data Link Layer
FCS	Frame Check Sequence
ISDN	Integrated Services Digital Network
ISDN-BA	Integrated Services Digital Network-Basic Access
IUT	Implementation Under Test
LE	Local Exchange
NMDS	Narrowband Multi-service Delivery System
NTN	Network Termination Node
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PSTN	Public Switched Telephone Network
SAPI	Service Access Point Identifier
SUT	System Under Test
TEI	Terminal Endpoint Identifier
TI	Timer
TP	Test Purpose
TSS	Test Suite Structure
UT	Upper Tester

4 Test Suite Structure (TSS)

4.1 TSS overview

Figure 1 shows the structure of the NMDS DLL test suite for the PSTN part of the NMDS interface. ETS 300 402-6 [6] gives the structure for the ISDN-BA part.

4.2 Test Suite Structure (TSS) details

- Layer management
  - DL state 9
    - Inopportune behaviour
    - Syntactically invalid
  - DL state 7.0
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
  - DL state 8.0
    - Valid behaviour
    - Inopportune behaviour

- Data control
  - DL state 9
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
  - DL state 5.1
    - Valid behaviour
  - DL state 7.0
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
    - Outstanding I frames
      - Valid behaviour
      - Inopportune behaviour
    - Timers
  - DL state 7.1
    - Valid behaviour
    - Inopportune behaviour
  - DL state 7.4
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
    - Outstanding I frames
      - Valid behaviour
      - Inopportune behaviour
    - Timers
  - DL state 7.5
    - Valid behaviour
    - Inopportune behaviour
  - DL state 8.0
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
    - Outstanding I frames
      - Valid behaviour
      - Inopportune behaviour
    - Timers
    - Counters
  - DL state 8.1
    - Valid behaviour
    - Inopportune behaviour
  - DL state 8.4
    - Valid behaviour
    - Inopportune behaviour
    - Syntactically invalid
    - Outstanding I frames
      - Valid behaviour
      - Inopportune behaviour
    - Timers
    - Counters
  - DL state 8.5
    - Valid behaviour
    - Inopportune behaviour
- Multiple Ports

Figure 1: Test suite structure

5 Test Purposes (TP)

5.1 Test purpose naming convention

For each test requirement, a TP is defined.

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite (see table 1).

Table 1: TP identifier naming convention scheme

Identifier:		**<suite><side>_<category><state>_<group>_<n>**	
<suite>	=	suite	L2 = layer 2
<side>	=	side	U = user
<category>	=	procedure category	L Layer management D Data control M Multiple ports
<state>	=	data link entity state	e.g.: 70, 9, 81, etc.
<group>	=	group	one character representing group reference according to TSS: V: Valid behaviour I: Inopportune behaviour S: Syntactically incorrect behaviour T: timers C: counters
<n>	=	sequential number	(1-99)

5.2 Test groups

5.2.1 Protocol groups

5.2.1.1 Layer Management for the NMDS PSTN-GW Ports

The test purposes cover the basic NTN functions required by the PSTN-GW part of the NMDS interface upon receipt of TEI assignment and management messages. In fact, the NMDS has no layer management functions. This test group checks the NTN's response to layer management directives received from the LE. The responses are derived from the revised state table per clause 6.2 of EN 301 141-1 [1]. The tests check the following:

- Correct response upon reception of inopportune UI-frames.
- Correct handling of the largest size possible I-frame.
- Correct handling of syntactically incorrect frames.

5.2.1.2 Data Control over the NMDS PSTN-GW Ports

The test purposes cover the data link functions required for the NMDS interface's PSTN part (see EN 301 141-1 [1], clause 6).

5.2.1.3 Multiple ports

The test purposes cover the data link functions required for the NMDS interface for the following two port configurations:

1) Multiple PSTN ports assigned TEIs in descending order starting from TEI = 126.

2) One ISDN-BA port using automatic TEI determination and one PSTN port assigned TEI 126.

5.2.2 Main test groups

5.2.2.1 Valid Behaviour (V) tests

The BV subgroup contains test purposes for valid message sequences and contents.

5.2.2.2 Inopportune Behaviour (I) tests

This test subgroup verifies that the IUT reacts properly when an inopportune protocol event occurs. Such an event is syntactically correct but it occurs unexpectedly.

5.2.2.3 Syntactically Incorrect Behaviour (S) tests

The BI subgroup verifies the IUT's proper reaction when receiving a syntactically incorrect Protocol Data Unit (PDU).

5.2.2.4 Timer (T)

The TI test group contains tests related to the system timer T200.

5.2.2.5 Counters (C)

The TI test group contains tests related to the system counter N200.

5.3 Test step structure

Repeated dynamic behaviours are often described as test steps.

5.3.1 Preambles

The preamble test group contains the test steps needed to initialize the IUT before executing the test case.

5.3.2 Postambles

After each test, the appropriate postamble brings the IUT back to the Link Not Established State (State 9).

5.3.3 State verification

Based on the modifications to tables D-1 to D-3 of ETS 300 402-2 [5] as specified in EN 301 141-1 [1], the following IUT states can be determined during testing.

Check State 9 (Test Case Identifier CS_90_…)
Check State 5.n (Test Case Identifier CS_5n_…)

NOTE: A substate under state 5 cannot be determined. In the NMDS case, only state 5.1 is valid.

Check State 7.0 (Test Case Identifier CS_70_…)
Check State 7.1 (Test Case Identifier CS_71_…)
Check State 7.4 (Test Case Identifier CS_74_…)
Check State 7.5 (Test Case Identifier CS_75_…)

Check State 8.0 (Test Case Identifier CS_80_…)
Check State 8.1 (Test Case Identifier CS_81_…)
Check State 8.4 (Test Case Identifier CS_84_…)
Check State 8.5 (Test Case Identifier CS_85_…)

5.3.4 Defaults

The default section describes the behaviour on receiving an unexpected event.

5.4 Abstract Service Primitives (ASPs) and Protocol Data Units (PDUs)

5.4.1 ASPs

Five ASPs are defined:

- PH_DATA_RQ;
- PH_DATA_IN;
- PH_ACT_IN;
- PH_DEACT_IN;
- PH_DATA_IN_UI_M.

The PH-data information shall be defined as described in ETS 300 125 [4], figure 1/Q.921.

The value of the flag sequence and the FCS are supplied by the NMDS tester. However, for testing one function it is necessary to corrupt the FCS value.

5.4.2 PDUs

The PDUs used on the NMDS interface are split into two parts:

1) PDUs sent to an NMDS port (refer to EN 301 141-1 [1], clause 6):
   - SABME-command;
   - UA-response;
   - DM-response;
   - RR-command;
   - RR-response;
   - RNR-command;
   - RNR-response;
   - REJ-command;
   - REJ-response;
   - I-command.
2) PDUs sent to an ISDN-BA terminal via an ISDN-BA user port:
   - refer to ETS 300 402-2 [5], table 5.

5.5 Timers and counters of the Abstract Test Suite (ATS)

This clause describes the timer and counters.

The *Timer Declarations* part of the ATS shows the timers used. The **min** and **max** are the timer's minimum or maximum tolerances. Timer values contain additional tolerances for tester delays.

Table 2 shows the counters used in the ATS.

Table 2: ATS counters

ATS counter name	ATS counter value	Comments
N200	3	Corresponding counter variable: RC
N201	260	Maximum number of octets in an information field

6 Test Purposes (TP)

6.1 Introduction

This clause contains the TPs for NMDS DLL testing for the PSTN part. The below clauses present the test purpose criteria, procedures for which no TPs are defined, the IUT initial state for a TP, and configuration for NTN testing.

6.1.1 Test purpose criteria

The following criteria were used to develop test purposes:

- In the revised state transition tables, state actions identified by the characters "|" or "/" are not converted into TP. These states are "impossible" by the definition of the DLL service or the peer-to-peer data link procedures.
- Refer to the SDL diagrams B-1 to B-9 of ETS 300 402-2 [5]. If variation of the P/F and C/R bits is not in a state transition path, a test purpose is written for only one value of those bits. If the state transition paths immediately following two different start states are identical, a test purpose is written for only one of those paths. This last criterion was ignored for syntactically incorrect test purposes because they require more extensive testing.

6.1.2 Procedures for which no TPs are defined

a) To determine the IUT's state, the test steps defined in clause 6.3 shall be applied.

b) In general, the tester can determine if the IUT is in state 7.x. However, for some tests (I-frame procedures) this is impossible.

c) Sequence number ranges are implicitly included in the LE TPs.

d) No TPs are defined for state actions defined by the character "-" for states 5.1 and 9 in the state transition tables. From states 7.x and 8.x, the states 5.1 and 9 cannot be reached by an external protocol event. They are reached only by internal system management events. TPs are not written for internal system management events.

e) TPs are not defined where only error indication primitives are shown for a state transition.

6.1.3 Initial state

If the DLL is released between each test, the data link to the IUT may have to be re-established. If there is a data link failure, the NMDS interface establishment procedure brings the IUT into its initial state. The initial state for NMDS DLL testing is state 9 "link not established". At the end of each test, the IUT shall be brought into state 9 or 7.0.

6.1.4 Configuration for NTN testing

To test the NTN DLL entities, a particular IUT configuration shall be applied to avoid complicated test cases. Depending on the services supported by the IUT, three IUT data configurations are considered:

- Only ISDN-BA user port supported (EN 301 141-2 [2], PICS item A.1.1);
- Only PSTN ports supported (EN 301 141-2 [2], PICS item A.1.2);
- Both one ISDN-BA user port and one or several PSTN ports supported.

Port considerations:

- If only the ISDN-BA user port is supported, the configuration shall be the same as that described in ETS 300 402-6 [6].
- If only the PSTN ports are supported, no PSTN terminal is required to be connected to any of the ports for DLL testing.
- If both ISDN-BA and PSTN applications are supported, the configuration for each protocol group shall be as follows:
  - Layer Management of the PSTN-GW port:
    There shall be no device connected to the ISDN-BA and PSTN-GW ports.
  - Data Control of the PSTN-GW port:
    There shall be no device connected to the ISDN-BA and PSTN-GW ports.
  - Two port testing:

    Two PSTN ports:
    No PSTN devices need be connected to the two Z interfaces. The Level 2 functions are internal to the NTN.

    One ISDN-BA port and one PSTN port:
    An automatic TEI assignment ISDN-BA terminal with a point to point connection over a single data link shall be connected to the ISDN-BA port. The single ISDN-BA terminal will not be able to enter the link established state after system start-up. Instead, ATS preambles will bring the IUT into state 7.0 for the ISDN-BA link. No PSTN device is to be connected to the Z interface.

6.2 NMDS DLL test purposes for NTN

6.2.1 Layer Management

6.2.1.1 State 9: Link Not Established

6.2.1.1.1 Inopportune Behaviour

L2U_L90_I_1
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity assigned message with Ai = other automatic TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_2
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity denied message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L90_I_3
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity denied message with Ai = other automatic TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_4
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L90_I_5
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_6
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = other TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_7
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity remove message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L90_I_8
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity remove message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_9
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity remove message with Ai = other TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_10
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity assigned message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_12
Ensure that the IUT, in the state 9, on receipt of an unsolicited UA frame with F=1 (MDL error C),
transmits no frame and remains in the same state.

L2U_L90_I_13
Ensure that the IUT, in the state 9, on receipt of an unsolicited UA frame with F=0 (MDL error D),
transmits no frame and remains in the same state.

L2U_L90_I_14
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity denied message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L90_I_15
Ensure that the IUT, in the state 9, on receipt of an UI frame, with a TEI value not currently assigned, containing a layer 3 message requesting a response,
transmits no frame and remains in the same state.

L2U_L90_I_16
Ensure that the IUT, in the state 9, on receipt of a SABME frame with P=1, with a TEI value not currently assigned,
transmits no frame and remains in the same state.

L2U_L90_I_17
Ensure that the IUT, in the state 9, on receipt of a DISC frame, with a TEI value not currently assigned, with P=1,
transmits no frame and remains in the same state.

L2U_L90_I_18
Ensure that the IUT, in the state 9, on receipt of a DM frame, with a TEI value not currently assigned, with F=1,
transmits no frame and remains in the same state.

L2U_L90_I_19
Ensure that the IUT, in the state 9, on receipt of an UA frame, with a TEI value not currently assigned, with F=1,
transmits no frame and remains in the same state.

L2U_L90_I_20
Ensure that the IUT, in the state 9, on receipt of a RR command frame, with a TEI value not currently assigned, with P=1,
transmits no frame and remains in the same state.

L2U_L90_I_21
Ensure that the IUT, in the state 9, on receipt of an I frame, with a TEI value not currently assigned, with P=1, containing a layer 3 message,
transmits no frame and remains in the same state.

6.2.1.1.2 Syntactically Incorrect Behaviour

L2U_L90_S_1
Ensure that the IUT, in the state 9, on receipt of an UI frame, containing an Identity check request message with Ai = 127, without closing flag,
transmits no frame and remains in the same state.

L2U_L90_S_2
Ensure that the IUT, in the state 9, on receipt of a frame containing 4 octets between flags (without control field octet),
transmits no frame and remains in the same state.

L2U_L90_S_3
Ensure that the IUT, in the state 9, on receipt of a RR frame containing 5 octets between flags (without the second control field octet),
transmits no frame and remains in the same state.

L2U_L90_S_4
Ensure that the IUT, in the state 9, on receipt of an UI frame, containing an Identity check request message with Ai = 127, which does not consist of an integral number of octets,
transmits no frame and remains in the same state.

L2U_L90_S_5
Ensure that the IUT, in the state 9, on receipt of an UI frame, containing an Identity check request message with Ai = 127, with a FCS error,
transmits no frame and remains in the same state.

L2U_L90_S_6
Ensure that the IUT, in the state 9, on receipt of an UI frame with a single octet address field, containing an Identity check request message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L90_S_7
Ensure that the IUT, in the state 9, on receipt of an UI frame, with a SAPI not supported,
transmits no frame and remains in the same state.

L2U_L90_S_8
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = 127 with an erroneous C/R bit value,
transmits no frame and remains in the same state.

L2U_L90_S_9
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = 127 with an erroneous EA bit value in the first address field octet,
transmits no frame and remains in the same state.

L2U_L90_S_10
Ensure that the IUT, in the state 9, on receipt of an UI frame containing an Identity check request message with Ai = 127 with an erroneous EA bit value in the second address field octet,
transmits no frame and remains in the same state.

L2U_L90_S_11
Ensure that the IUT, in the state 9, on receipt of an undefined frame,
transmits no frame and remains in the same state.

L2U_L90_S_12
Ensure that the IUT, in the state 9, on receipt of an UI frame with a TEI value = 127, containing a layer 3 message requesting a response with a length exceeding the maximum possible value,
transmits no frame and remains in the same state.

6.2.1.2 State 7.0: Link Established

6.2.1.2.1 Inopportune Behaviour

L2U_L70_I_1
Ensure that the IUT, in the state 7.0, on receipt of an UI frame containing an Identity remove message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L70_I_2
Ensure that the IUT, in the state 7.0, on receipt of an UI frame containing an Identity remove message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L70_I_3
Ensure that the IUT, in the state 7.0, on receipt of an UI frame containing an Identity remove message with Ai = other TEI value,
transmits no frame and remains in the same state.

L2U_L70_I_4
Ensure that the IUT, in the state 7.0, on receipt of an UI frame containing an Identity assigned message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L70_I_5
Ensure that the IUT, in the state 7.0, on receipt of an unsolicited UA frame with F=1 (MDL error C),
transmits no frame and remains in the same state.

L2U_L70_I_6
Ensure that the IUT, in the state 7.0, on receipt of an unsolicited UA frame with F=0 (MDL error D),
transmits no frame and remains in the same state.

6.2.1.3 State 8.0: Link Established, Timer Recovery

6.2.1.3.1 Inopportune Behaviour

L2U_L80_I_1
Ensure that the IUT, in the state 8.0, on receipt of an UI frame containing an Identity remove message with Ai = 127,
transmits no frame and remains in the same state.

L2U_L80_I_2
Ensure that the IUT, in the state 8.0, on receipt of an UI frame containing an Identity remove message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L80_I_3
Ensure that the IUT, in the state 8.0, on receipt of an UI frame containing an Identity remove message with Ai = other TEI value,
transmits no frame and remains in the same state.

L2U_L80_I_4
Ensure that the IUT, in the state 8.0, on receipt of an UI frame containing an Identity assigned message with Ai = own TEI value,
transmits no frame and remains in the same state.

L2U_L80_I_5
Ensure that the IUT, in the state 8.0, on receipt of an unsolicited UA frame with F=1 (MDL error C), transmits no frame and remains in the same state.

L2U_L80_I_6
Ensure that the IUT, in the state 8.0, on receipt of an unsolicited UA frame with F=0 (MDL error D), transmits no frame and remains in the same state.

6.2.2 Data Control

6.2.2.1 State 9: Link Not Established

6.2.2.1.1 Valid Behaviour

L2U_D90_V_1
Ensure that the IUT in state 9, on receipt of a SABME frame with P=1 and being able to enter state 7.0, transmits an UA frame with F=1 and enters state 7.0.

L2U_D90_V_2
Ensure that the IUT in state 9, on receipt of a SABME frame with P=1 and being unable to enter state 7.0, transmits a DM frame with F=1 and remains in the same state.

6.2.2.1.2 Inopportune Behaviour

L2U_D90_I_1
Ensure that the IUT in state 9, on receipt of a SABME frame with P=0 and being able to enter state 7.0, transmits an UA frame with F=0 and enters state 7.0.

L2U_D90_I_2
Ensure that the IUT in state 9, on receipt of a SABME frame with P=0 and being unable to enter state 7.0, transmits a DM frame with F=0 and remains in the same state.

L2U_D90_I_3
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1,
transmits a DM frame with F=1 and remains in the same state.

L2U_D90_I_4
Ensure that the IUT in state 9, on receipt of a DISC frame with P=0,
transmits a DM frame with F=0 and remains in the same state.

L2U_D90_I_5
Ensure that the IUT in state 9, on receipt of a DM frame with F=1,
transmits no frame and remains in the same state.

L2U_D90_I_6
Ensure that the IUT in state 9, on receipt of a DM frame with F=0 and being able to enter state 7.0,
transmits no frame and remains in the same state.

L2U_D90_I_7
Ensure that the IUT in state 9, on receipt of a DM frame with F=0 and being unable to enter state 7.0,
transmits no frame and remains in the same state.

L2U_D90_I_8
Ensure that the IUT in state 9, on receipt of a FRMR response frame with F=1 rejecting DM,
transmits no frame and remains in the same state.

L2U_D90_I_9
Ensure that the IUT in state 9, on receipt of a RR command frame with P=1,
transmits no frame and remains in the same state.

L2U_D90_I_10
Ensure that the IUT in state 9, on receipt of a RR response frame with F=1,
transmits no frame and remains in the same state.

L2U_D90_I_11
Ensure that the IUT in state 9, on receipt of a REJ command frame with P=1,
transmits no frame and remains in the same state.

L2U_D90_I_12
Ensure that the IUT in state 9, on receipt of a REJ response frame with F=1,
transmits no frame and remains in the same state.

L2U_D90_I_13
Ensure that the IUT in state 9, on receipt of a RNR command frame with P=1,
transmits no frame and remains in the same state.

L2U_D90_I_14
Ensure that the IUT in state 9, on receipt of a RNR response frame with F=1,
transmits no frame and remains in the same state.

L2U_D90_I_15
Ensure that the IUT in state 9, on receipt of an I frame with P=1 which contains a layer 3 STATUS ENQUIRY message,
transmits no frame and remains in the same state.

6.2.2.1.3 Syntactically Invalid Behaviour

L2U_D90_S_1
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 without closing flag,
transmits no frame and remains in the same state.

L2U_D90_S_2
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which is too short (without control field octet),
transmits no frame and remains in the same state.

L2U_D90_S_3
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which does not consist of an integral number of octets,
transmits no frame and remains in the same state.

L2U_D90_S_4
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which contains a frame check sequence error,
transmits no frame and remains in the same state.

L2U_D90_S_5
Ensure that the IUT in state 9, on receipt of a too short DISC frame with P=1 which contains a single octet address field,
transmits no frame and remains in the same state.

L2U_D90_S_6
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which contains an erroneous Address field extension bit value in the first address field octet,
transmits no frame and remains in the same state.

L2U_D90_S_7
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which contains an erroneous Address field extension bit value in the second address field octet,
transmits no frame and remains in the same state.

L2U_D90_S_8
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which contains an erroneous Command/response field bit value,
transmits no frame and remains in the same state.

L2U_D90_S_9
Ensure that the IUT in state 9, on receipt of an undefined frame,
transmits no frame and remains in the same state.

L2U_D90_S_10
Ensure that the IUT in state 9, on receipt of a DISC frame with P=1 which contains an information field='00'O (unnumbered frame with incorrect length),
transmits no frame and remains in the same state.

6.2.2.2 State 5.1: Link Re-establishment

6.2.2.2.1 Valid Behaviour

L2U_D51_V_1
Ensure that the IUT in state 5.1, having one I frame in queue and no I frame is unacknowledged, on receipt of an UA frame with F=1,
transmits the I frame with P=0 and enters state 7.0.

L2U_D51_V_2
Ensure that the IUT in state 5.1, having one I frame in queue and one I frame is unacknowledged, on receipt of an UA frame with F=1,
transmits no frame and enters state 7.0.

6.2.2.3 State 7.0: Link Established

6.2.2.3.1 Valid Behaviour

L2U_D70_V_1
Ensure that the IUT in state 7.0, having requested the sending of an I frame,
transmits an I frame with P=0 and remains in the same state.

L2U_D70_V_2
Ensure that the IUT in state 7.0, on receipt of a DISC frame with P=1,
discards the I queue, transmits an UA frame with F=1 and enters state 9.

L2U_D70_V_3
Ensure that the IUT in state 7.0, on receipt of an UI frame with current TEI and layer 3 content,
transmits no frame and remains in the same state.

L2U_D70_V_4
Ensure that the IUT in state 7.0, having stopped timer T200, on receipt of a RR command frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D70_V_5
Ensure that the IUT in state 7.0, on receipt of a RR command frame with P=0,
transmits no frame and remains in state 7.0.

L2U_D70_V_6
Ensure that the IUT in state 7.0, having I frames queued up, on receipt of a RR response frame with F=1,
transmits the I frames not exceeding the maximum number of outstanding I frames k.

L2U_D70_V_7
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1, subsequently transmits the corresponding I frame and remains in the same state.

L2U_D70_V_8
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on receipt of a REJ command frame with P=0,
transmits the corresponding I frame and remains in the same state.

L2U_D70_V_9
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on receipt of a REJ response frame with F=0, transmits the corresponding I frame and remains in the same state.

L2U_D70_V_10
Ensure that the IUT in state 7.0, on receipt of a REJ response frame with F=1,
transmits the corresponding I frame and remains in the same state.

L2U_D70_V_11
Ensure that the IUT in state 7.0, on receipt of a RNR command frame with P=1,
transmits a RR response frame with F=1 and enters state 7.4.

L2U_D70_V_12
Ensure that the IUT in state 7.0, on receipt of a RNR command frame with P=0,
transmits no frame and enters state 7.4.

L2U_D70_V_13
Ensure that the IUT in state 7.0, on receipt of a RNR response frame with F=0,
transmits no frame and enters state 7.4.

L2U_D70_V_14
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D70_V_15
Ensure that the IUT in state 7.0, receiving continuously I frames with P=0 and N(S) sequentially numbered from 0 through 127,
transmits a RR response with F=0 and remains in the same state; or
transmits an I frame with P=0 as response to each I frame and remains in the same state.

L2U_D70_V_16
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and remains in the same state; or
transmits an I frame with P=0 as acknowledgement and remains in the same state.

6.2.2.3.2 Inopportune Behaviour

L2U_D70_I_1
Ensure that the IUT in state 7.0, on receipt of a SABME frame with P=1,
transmits an UA frame with F=1 and remains in the same state.

L2U_D70_I_2
Ensure that the IUT in state 7.0, having transmitted an I frame, on receipt of a SABME frame with P=1,
discards the I queue, transmits an UA frame with F=1 and remains in the same state.

L2U_D70_I_3
Ensure that the IUT in state 7.0, on receipt of a SABME frame with P=0,
transmits an UA frame with F=0 and remains in the same state.

L2U_D70_I_4
Ensure that the IUT in state 7.0, having transmitted an I frame, on receipt of a SABME frame with P=0,
discards the I queue, transmits an UA frame with F=0 and remains in the same state.

L2U_D70_I_5
Ensure that the IUT in state 7.0, on receipt of a DISC frame with P=0,
transmits an UA frame with F=0 and enters state 9.

L2U_D70_I_6
Ensure that the IUT in state 7.0, on receipt of an unsolicited DM frame with F=1,
transmits no frame and remains in the same state.

L2U_D70_I_7
Ensure that the IUT in state 7.0, on receipt of an unsolicited DM frame with F=0,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_8
Ensure that the IUT in state 7.0, on receipt of a FRMR response frame with F=1 rejecting an UA frame, transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_9
Ensure that the IUT in state 7.0, on receipt of a FRMR response frame with F=1 rejecting an I frame, transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_10
Ensure that the IUT in state 7.0, on receipt of a FRMR response frame with F=1 rejecting a RR frame, transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_11
Ensure that the IUT in state 7.0, on receipt of a RR response frame with F=1,
transmits no frame and remains in the same state.

L2U_D70_I_12
Ensure that the IUT in state 7.0, on receipt of a RR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_13
Ensure that the IUT in state 7.0, on receipt of a RR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_14
Ensure that the IUT in state 7.0, on receipt of a RR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_15
Ensure that the IUT in state 7.0, on receipt of a RR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_16
Ensure that the IUT in state 7.0, on receipt of a REJ command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_17
Ensure that the IUT in state 7.0, on receipt of a REJ command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_18
Ensure that the IUT in state 7.0, on receipt of a REJ response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_19
Ensure that the IUT in state 7.0, on receipt of a REJ response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_20
Ensure that the IUT in state 7.0, on receipt of a RNR response frame with F=1,
transmits no frame and enters state 7.4.

L2U_D70_I_21
Ensure that the IUT in state 7.0, on receipt of a RNR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_22
Ensure that the IUT in state 7.0, on receipt of a RNR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_23
Ensure that the IUT in state 7.0, on receipt of a RNR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_24
Ensure that the IUT in state 7.0, on receipt of a RNR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_25
Ensure that the IUT in state 7.0, on receipt of an I frame with P=1 and invalid N(S),
transmits a REJ response frame with F=1 and enters state 7.1.

L2U_D70_I_26
Ensure that the IUT in state 7.0, on receipt of an I frame with P=0 and invalid N(S),
transmits a REJ response frame with F=0 and enters state 7.1.

L2U_D70_I_27
Ensure that the IUT in state 7.0, on receipt of an I frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_28
Ensure that the IUT in state 7.0, on receipt of an I frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_29
Ensure that the IUT in state 7.0, on receipt of an I frame with P=1 and invalid N(R) and N(S),
transmits a REJ response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D70_I_30
Ensure that the IUT in state 7.0, on receipt of an I frame with P=0 and invalid N(R) and N(S),
transmits a REJ response frame with F=0, subsequently a SABME frame with P=1 and enters state 5.1.

6.2.2.3.3 Syntactically Invalid Behaviour

L2U_D70_S_1
Ensure that the IUT in state 7.0, on receipt of a DISC frame with P=1 containing an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_2
Ensure that the IUT in state 7.0, on receipt of a FRMR response frame with F=0 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_3
Ensure that the IUT in state 7.0, on receipt of a RR command frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_4
Ensure that the IUT in state 7.0, on receipt of an I frame with an information field which exceeds N201 octets,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_5
Ensure that the IUT in state 7.0, on receipt of an I frame which contains a Command/response field bit incorrectly set indicating a response frame type,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_6
Ensure that the IUT in state 7.0, on receipt of an undefined frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D70_S_7
Ensure that the IUT in state 7.0, on receipt of an I frame with P=0 which contains a frame check sequence error,
transmits no frame and remains in the same state.

L2U_D70_S_8
Ensure that the IUT in state 7.0, having transmitted a RR response frame with F=1, on receipt of an I frame with P=0 which contains a frame check sequence error,
transmits no frame and remains in the same state.

6.2.2.3.4 Outstanding I Frames

6.2.2.3.4.1 Valid Behaviour

L2U_D70OI_V_1
Ensure that the IUT in state 7.0, having transmitted two I frames, on receipt of a RR response frame with F=0,
transmits no frame and remains in the same state.

L2U_D70OI_V_2
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RR command frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D70OI_V_3
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RR command frame with P=0 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D70OI_V_4
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RR response frame with F=0 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D70OI_V_5
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1, subsequently the rejected I frames and remains in the same state.

L2U_D70OI_V_6
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a REJ command frame with P=0,
transmits the rejected I frames and remains in the same state.

L2U_D70OI_V_7
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a REJ response frame with F=0,
transmits the rejected I frames and remains in the same state.

L2U_D70OI_V_8
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RNR command frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and enters state 7.4.

L2U_D70OI_V_9
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RNR command frame with P=0 which does not acknowledge the last transmitted I frame,
transmits no frame and enters state 7.4.

L2U_D70OI_V_10
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RNR response frame with F=0 which does not acknowledge the last transmitted I frame,
transmits no frame and enters state 7.4.

L2U_D70OI_V_11
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D70OI_V_12
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=0 and remains in the same state; or
transmits an I frame with P=0 as acknowledgement and remains in the same state.

6.2.2.3.4.2 Inopportune Behaviour

L2U_D70OI_I_1
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RR response frame with F=1 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D70OI_I_2
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a REJ response frame with F=1,
transmits the rejected I frames and remains in the same state.

L2U_D70OI_I_3
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of a RNR response frame with F=1 which does not acknowledge the last transmitted I frame,
transmits no frame and enters state 7.4.

L2U_D70OI_I_4
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=1 and enters state 7.1.

L2U_D70OI_I_5
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=0 and enters state 7.1.

6.2.2.3.5 Timers

L2U_D70_T_1
Ensure that the IUT in state 7.0, having transmitted an I frame with P=0, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_2
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and an I frame with P=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_3
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and an I frame with P=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_4
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and a RR command frame with P=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_5
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and a RR command frame with P=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_6
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and a RR response frame with F=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D70_T_7
Ensure that the IUT in state 7.0, having transmitted I frames which are still unacknowledged and a RR response frame with F=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

6.2.2.4 State 7.1: Link Established

6.2.2.4.1 Valid Behaviour

L2U_D71_V_1
Ensure that the IUT in state 7.1, on receipt of an I frame with P=1 and correct send and receive sequence numbers,
transmits a RR response frame with F=1 and enters state 7.0.

L2U_D71_V_2
Ensure that the IUT in state 7.1, on receipt of an I frame with P=0 and correct send and receive sequence numbers,
transmits a RR response frame with F=0 and enters state 7.0; or
transmits an I frame with P=0 as acknowledgement and enters state 7.0.

6.2.2.4.2 Inopportune Behaviour

L2U_D71_I_1
Ensure that the IUT in state 7.1, on receipt of an I frame with P=1 and invalid N(S),
transmits a RR response frame with F=1 and remains in the same state.

L2U_D71_I_2
Ensure that the IUT in state 7.1, on receipt of an I frame with P=0 and invalid N(S),
transmits no frame and remains in the same state.

6.2.2.5 State 7.4: Link Established

6.2.2.5.1 Valid Behaviour

L2U_D74_V_1
Ensure that the IUT in state 7.4, on receipt of a DISC frame with P=1,
discards the I queue, transmits an UA frame with F=1 and enters state 9.

L2U_D74_V_2
Ensure that the IUT in state 7.4, on receipt of a RR command frame with P=1,
transmits a RR response frame with F=1 and enters state 7.0.

L2U_D74_V_3
Ensure that the IUT in state 7.4, on receipt of a RR response frame with F=0,
transmits no frame and enters state 7.0.

L2U_D74_V_4
Ensure that the IUT in state 7.4, having received a RNR response frame with F=1 and subsequently an I frame with P=0, on receipt of a RR response frame with F=0,
transmits the corresponding I frame and enters state 7.0.

L2U_D74_V_5
Ensure that the IUT in state 7.4, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1 and enters state 7.0.

L2U_D74_V_6
Ensure that the IUT in state 7.4, on receipt of a REJ command frame with P=0,
transmits no frame and enters state 7.0.

L2U_D74_V_7
Ensure that the IUT in state 7.4, on receipt of a REJ response frame with F=0,
transmits no frame and enters state 7.0.

L2U_D74_V_8
Ensure that the IUT in state 7.4, on receipt of a RNR command frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D74_V_9
Ensure that the IUT in state 7.4, on receipt of a RNR command frame with P=0,
transmits no frame and remains in the same state.

L2U_D74_V_10
Ensure that the IUT in state 7.4, on receipt of a RNR response frame with F=0,
transmits no frame and remains in the same state.

L2U_D74_V_11
Ensure that the IUT in state 7.4, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D74_V_12
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and remains in the same state.

L2U_D74_V_13
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and remains in the same state.

6.2.2.5.2 Inopportune Behaviour

L2U_D74_I_1
Ensure that the IUT in state 7.4, on receipt of a SABME frame with P=1,
transmits an UA frame with F=1 and enters state 7.0.

L2U_D74_I_2
Ensure that the IUT in state 7.4, on receipt of a SABME frame with P=0,
transmits an UA frame with F=0 and enters state 7.0.

L2U_D74_I_3
Ensure that the IUT in state 7.4, on receipt of a DISC frame with P=0,
discards the I queue, transmits an UA frame with F=0 and enters state 9.

L2U_D74_I_4
Ensure that the IUT in state 7.4, on receipt of an unsolicited DM frame with F=1,
transmits no frame and remains in the same state.

L2U_D74_I_5
Ensure that the IUT in state 7.4, on receipt of an unsolicited DM frame with F=0,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_6
Ensure that the IUT in state 7.4, on receipt of a FRMR response frame with F=1 rejecting an I frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_7
Ensure that the IUT in state 7.4, on receipt of a RR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_8
Ensure that the IUT in state 7.4, on receipt of a RR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_9
Ensure that the IUT in state 7.4, on receipt of a RR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_10
Ensure that the IUT in state 7.4, on receipt of a RR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_11
Ensure that the IUT in state 7.4, on receipt of a REJ response frame with F=1,
transmits no frame and enters state 7.0.

L2U_D74_I_12
Ensure that the IUT in state 7.4, on receipt of a REJ command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_13
Ensure that the IUT in state 7.4, on receipt of a REJ command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_14
Ensure that the IUT in state 7.4, on receipt of a REJ response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_15
Ensure that the IUT in state 7.4, on receipt of a REJ response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_16
Ensure that the IUT in state 7.4, on receipt of a RNR response frame with F=1,
transmits no frame and remains in the same state.

L2U_D74_I_17
Ensure that the IUT in state 7.4, on receipt of a RNR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_18
Ensure that the IUT in state 7.4, on receipt of a RNR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_19
Ensure that the IUT in state 7.4, on receipt of a RNR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_20
Ensure that the IUT in state 7.4, on receipt of a RNR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_21
Ensure that the IUT in state 7.4, on receipt of an I frame with P=1 and invalid N(S),
transmits a REJ response frame with F=1 and enters state 7.5.

L2U_D74_I_22
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0 and invalid N(S),
transmits a REJ response frame with F=0 and enters state 7.5.

L2U_D74_I_23
Ensure that the IUT in state 7.4, on receipt of an I frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_24
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_25
Ensure that the IUT in state 7.4, on receipt of an I frame with P=1 and invalid N(R) and N(S),
transmits a REJ response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D74_I_26
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0 and invalid N(R) and N(S),
transmits a REJ response frame with F=0, subsequently a SABME frame with P=1 and enters state 5.1.

6.2.2.5.3 Syntactically Invalid Behaviour

L2U_D74_S_1
Ensure that the IUT in state 7.4, on receipt of a DISC frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_S_2
Ensure that the IUT in state 7.4, on receipt of a FRMR response frame with F=0 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_S_3
Ensure that the IUT in state 7.4, on receipt of a RR command frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_S_4
Ensure that the IUT in state 7.4, on receipt of an I frame with an information field which exceeds N201 octets,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_S_5
Ensure that the IUT in state 7.4, on receipt of an undefined frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D74_S_6
Ensure that the IUT in state 7.4, on receipt of an I frame with P=0 which contains a frame check sequence error,
transmits no frame and remains in the same state.

6.2.2.5.4 Outstanding I Frames

6.2.2.5.4.1 Valid Behaviour

L2U_D74OI_V_1
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1, subsequently the rejected I frames and enters state 7.0.

L2U_D74OI_V_2
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a REJ command frame with P=0,
transmits the rejected I frames and enters state 7.0.

L2U_D74OI_V_3
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a REJ response frame with F=0,
transmits the rejected I frames and enters state 7.0.

L2U_D74OI_V_4
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a RNR command frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D74OI_V_5
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a RNR command frame with P=0 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D74OI_V_6
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a RNR response frame with F=0 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D74OI_V_7
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D74OI_V_8
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=0 and remains in the same state.

6.2.2.5.4.2 Inopportune Behaviour

L2U_D74OI_I_1
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a REJ response frame with F=1,
transmits the rejected I frames and enters state 7.0.

L2U_D74OI_I_2
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of a RNR response frame with F=1 which does not acknowledge the last transmitted I frame,
transmits no frame and remains in the same state.

L2U_D74OI_I_3
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=1 and enters state 7.5.

L2U_D74OI_I_4
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=0 and enters state 7.5.

6.2.2.5.5 Timers

L2U_D74_T_1
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RR command frame with P=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D74_T_2
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RR command frame with P=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D74_T_3
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RR response frame with F=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D74_T_4
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RR response frame with F=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.0; or
transmits an I frame with P=1 and enters state 8.0.

L2U_D74_T_5
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RNR command frame with P=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.4.

L2U_D74_T_6
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RNR command frame with P=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200 transmits a RR command frame with P=1 and enters state 8.4.

L2U_D74_T_7
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RNR response frame with F=0 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200, transmits a RR command frame with P=1 and enters state 8.4.

L2U_D74_T_8
Ensure that the IUT in state 7.4, having transmitted I frames which are still unacknowledged and a RNR response frame with F=1 was received which does not acknowledge the last transmitted I frame, on expiry of timer T200, transmits a RR command frame with P=1 and enters state 8.4.

L2U_D74_T_9
Ensure that the IUT in state 7.4, on expiry of timer T200,
transmits a RR command frame with P=1 and enters state 8.4.

6.2.2.6 State 7.5: Link Established

6.2.2.6.1 Valid Behaviour

L2U_D75_V_1
Ensure that the IUT in state 7.5, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and enters state 7.4.

L2U_D75_V_2
Ensure that the IUT in state 7.5, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and enters state 7.4.

6.2.2.6.2 Inopportune Behaviour

L2U_D75_I_1
Ensure that the IUT in state 7.5, on receipt of an I frame with P=1 and invalid N(S),
transmits a RR response frame with F=1 and remains in the same state.

L2U_D75_I_2
Ensure that the IUT in state 7.5, on receipt of an I frame with P=0 and invalid N(S),
transmits no frame and remains in the same state.

6.2.2.7 State 8.0: Timer Recovery

6.2.2.7.1 Valid Behaviour

L2U_D80_V_1
Ensure that the IUT in state 8.0, on receipt of a DISC frame with P=1,
discards the I queue, transmits an UA frame with F=1 and enters state 9.

L2U_D80_V_2
Ensure that the IUT in state 8.0, on receipt of a DISC frame with P=0,
discards the I queue, transmits an UA frame with F=0 and enters state 9.

L2U_D80_V_3
Ensure that the IUT in state 8.0, having transmitted a RR command frame with P=1 or an I frame with P=1, on receipt of a RR response frame with F=1 which does not acknowledge the last transmitted I frame,
transmits an I frame with P=0, and enters state 7.0.

L2U_D80_V_4
Ensure that the IUT in state 8.0, on receipt of a REJ response frame with F=0,
transmits no frame and remains in the same state.

L2U_D80_V_5
Ensure that the IUT in state 8.0, having transmitted an I frame with P=0, on receipt of a REJ response frame with F=1,
transmits the corresponding I frame and enters state 7.0.

L2U_D80_V_6
Ensure that the IUT in state 8.0, on receipt of a RNR command frame with P=1,
transmits a RR response frame with F=1 and enters state 8.4.

L2U_D80_V_7
Ensure that the IUT in state 8.0, having transmitted an I frame with P=0, on receipt of a RNR response frame with F=1,
transmits no frame and enters state 7.4.

6.2.2.7.2 Inopportune Behaviour

L2U_D80_I_1
Ensure that the IUT in state 8.0, on receipt of a SABME frame with P=1,
transmits an UA frame with F=1 and enters state 7.0.

L2U_D80_I_2
Ensure that the IUT in state 8.0, on receipt of a SABME frame with P=0,
transmits an UA frame with F=0 and enters state 7.0.

L2U_D80_I_3
Ensure that the IUT in state 8.0, on receipt of a DM frame with F=1,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_4
Ensure that the IUT in state 8.0, on receipt of an unsolicited DM frame with F=0,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_5
Ensure that the IUT in state 8.0, on receipt of a FRMR response frame with F=1 rejecting an I frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_6
Ensure that the IUT in state 8.0, on receipt of a RR command frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D80_I_7
Ensure that the IUT in state 8.0, on receipt of a RR command frame with P=0,
transmits no frame and remains in the same state.

L2U_D80_I_8
Ensure that the IUT in state 8.0, on receipt of a RR response frame with F=0,
transmits no frame and remains in the same state.

L2U_D80_I_9
Ensure that the IUT in state 8.0, having received I frames containing layer 3 messages requesting a response, on receipt of a RR response frame with F=1,
transmits an I frame with P=0 and enters state 7.0.

L2U_D80_I_10
Ensure that the IUT in state 8.0, on receipt of a RR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_11
Ensure that the IUT in state 8.0, on receipt of a RR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_12
Ensure that the IUT in state 8.0, on receipt of a RR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_13
Ensure that the IUT in state 8.0, on receipt of a RR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_14
Ensure that the IUT in state 8.0, having transmitted an I frame with P=0, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D80_I_15
Ensure that the IUT in state 8.0, on receipt of a REJ command frame with P=0,
transmits no frame and remains in the same state.

L2U_D80_I_16
Ensure that the IUT in state 8.0, on receipt of a REJ command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_17
Ensure that the IUT in state 8.0, on receipt of a REJ command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_18
Ensure that the IUT in state 8.0, on receipt of a REJ response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_19
Ensure that the IUT in state 8.0, on receipt of a REJ response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_20
Ensure that the IUT in state 8.0, on receipt of a RNR command frame with P=0,
transmits no frame and enters state 8.4.

L2U_D80_I_21
Ensure that the IUT in state 8.0, on receipt of a RNR response frame with F=0,
transmits no frame and enters state 8.4.

L2U_D80_I_22
Ensure that the IUT in state 8.0, on receipt of a RNR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_23
Ensure that the IUT in state 8.0, on receipt of a RNR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_24
Ensure that the IUT in state 8.0, on receipt of a RNR response frame with F=0 and invalid N(R),
transmits a SABE frame with P=1 and enters state 5.1.

L2U_D80_I_25
Ensure that the IUT in state 8.0, on receipt of a RNR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_26
Ensure that the IUT in state 8.0, having transmitted an I frame with P=0, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D80_I_27
Ensure that the IUT in state 8.0, having transmitted an I frame with P=0, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and remains in the same state; or
transmits an I frame with P=0 as acknowledgement and remains in the same state.

L2U_D80_I_28
Ensure that the IUT in state 8.0, on receipt of an I frame with P=1 and invalid N(S),
transmits a REJ response frame with F=1 and enters state 8.1.

L2U_D80_I_29
Ensure that the IUT in state 8.0, on receipt of an I frame with P=0 and invalid N(S),
transmits a REJ response frame with F=0 and enters state 8.1.

L2U_D80_I_30
Ensure that the IUT in state 8.0, on receipt of an I frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_31
Ensure that the IUT in state 8.0, on receipt of an I frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_32
Ensure that the IUT in state 8.0, on receipt of an I frame with P=1 and invalid N(R) and N(S),
transmits a REJ response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D80_I_33
Ensure that the IUT in state 8.0, on receipt of an I frame with P=0 and invalid N(R) and N(S),
transmits a REJ response frame with F=0, subsequently a SABME frame with P=1 and enters state 5.1.

6.2.2.7.3 Syntactically Invalid Behaviour

L2U_D80_S_1
Ensure that the IUT in state 8.0, on receipt of a DISC frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_S_2
Ensure that the IUT in state 8.0, on receipt of a FRMR response frame with F=0 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_S_3
Ensure that the IUT in state 8.0, on receipt of a RR command frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_S_4
Ensure that the IUT in state 8.0, on receipt of an I frame with an information field which exceeds N201 octets,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_S_5
Ensure that the IUT in state 8.0, on receipt of an undefined frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D80_S_6
Ensure that the IUT in state 8.0, on receipt of an I frame with P=0 which contains a frame check sequence error,
transmits no frame and remains in the same state.

6.2.2.7.4 Outstanding I Frames

6.2.2.7.4.1 Valid Behaviour

L2U_D80OI_V_1
Ensure that the IUT in state 8.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D80OI_V_2
Ensure that the IUT in state 8.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=0 as acknowledgement and remains in the same state; or
transmits an I frame with P=0 as acknowledgement and remains in the same state.

6.2.2.7.4.2 Inopportune Behaviour

L2U_D80OI_I_1
Ensure that the IUT in state 8.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=1 and enters state 8.1.

L2U_D80OI_I_2
Ensure that the IUT in state 8.0, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=0 and enters state 8.1.

6.2.2.7.5 Timers

L2U_D80_T_1
Ensure that the IUT in state 8.0, on expiry of timer T200,
transmits RR command frames with P=1 and remains in the same state; or
transmits I frames with P=1 and remains in the same state.

L2U_D80_T_2
Ensure that the IUT in state 8.0, on expiry of timer T200,
transmits RR command frames with P=1 and remains in the same state.

6.2.2.7.6 Counters

L2U_D80_C_1
Ensure that the IUT in state 8.0, having transmitted N200 times RR command frames with P=1 or I frames with P=1,
transmits a SABME frame with P=1 and enters state 5.1.

6.2.2.8 State 8.1: Timer Recovery

6.2.2.8.1 Valid Behaviour

L2U_D81_V_1
Ensure that the IUT in state 8.1, on receipt of an I frame with P=1 and correct send and receive sequence numbers,
transmits a RR response frame with F=1 and enters state 8.0.

L2U_D81_V_2
Ensure that the IUT in state 8.1, on receipt of an I frame with P=0 and correct send and receive sequence numbers,
transmits a RR response frame with F=0 as acknowledgement and enters state 8.0; or
transmits an I frame with P=0 as acknowledgement and enters state 8.0.

6.2.2.8.2 Inopportune Behaviour

L2U_D81_I_1
Ensure that the IUT in state 8.1, on receipt of an I frame with P=1 and invalid N(S),
transmits a RR response frame with F=1 and remains in the same state.

L2U_D81_I_2
Ensure that the IUT in state 8.1, on receipt of an I frame with P=0 and invalid N(S),
transmits no frame and remains in the same state.

6.2.2.9 State 8.4: Timer Recovery

6.2.2.9.1 Valid Behaviour

L2U_D84_V_1
Ensure that the IUT in state 8.4, on receipt of a DISC frame with P=1,
discards the I queue, transmits an UA frame with F=1 and enters state 9.

L2U_D84_V_2
Ensure that the IUT in state 8.4, on receipt of a DISC frame with P=0,
discards the I queue, transmits an UA frame with F=0 and enters state 9.

L2U_D84_V_3
Ensure that the IUT in state 8.4, on receipt of a RR response frame with F=1,
transmits no frame and enters state 7.0.

L2U_D84_V_4
Ensure that the IUT in state 8.4, on receipt of a RR response frame with F=1,
transmits the corresponding I frame and enters state 7.0.

L2U_D84_V_5
Ensure that the IUT in state 8.4, on receipt of a REJ response frame with F=1,
transmits no frame and enters state 7.0.

6.2.2.9.2 Inopportune Behaviour

L2U_D84_I_1
Ensure that the IUT in state 8.4, on receipt of a SABME frame with P=1,
transmits an UA frame with F=1 and enters state 7.0.

L2U_D84_I_2
Ensure that the IUT in state 8.4, on receipt of a SABME frame with P=0,
transmits an UA frame with F=0 and enters state 7.0.

L2U_D84_I_3
Ensure that the IUT in state 8.4, on receipt of a DM frame with F=1,
transmits a SABME frame with P=1 and enters state 5.1

L2U_D84_I_4
Ensure that the IUT in state 8.4, on receipt of an unsolicited DM frame with F=0,
transmits a SABME frame with P=1 and enters state 5.1

L2U_D84_I_5
Ensure that the IUT in state 8.4, on receipt of a FRMR response frame with F=1 rejecting an I frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_6
Ensure that the IUT in state 8.4, on receipt of a RR command frame with P=1,
transmits a RR response frame with F=1 and enters state 8.0.

L2U_D84_I_7
Ensure that the IUT in state 8.4, on receipt of a RR command frame with P=0,
transmits no frame and enters state 8.0.

L2U_D84_I_8
Ensure that the IUT in state 8.4, on receipt of a RR response frame with F=0,
transmits no frame and enters state 8.0.

L2U_D84_I_9
Ensure that the IUT in state 8.4, on receipt of a RR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_10
Ensure that the IUT in state 8.4, on receipt of a RR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_11
Ensure that the IUT in state 8.4, on receipt of a RR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_12
Ensure that the IUT in state 8.4, on receipt of a RR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_13
Ensure that the IUT in state 8.4, on receipt of a REJ command frame with P=1,
transmits a RR response frame with F=1 and enters state 8.0.

L2U_D84_I_14
Ensure that the IUT in state 8.4, on receipt of a REJ command frame with P=0,
transmits no frame and enters state 8.0.

L2U_D84_I_15
Ensure that the IUT in state 8.4, on receipt of a REJ response frame with F=0,
transmits no frame and enters state 8.0.

L2U_D84_I_16
Ensure that the IUT in state 8.4, on receipt of a REJ command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_17
Ensure that the IUT in state 8.4, on receipt of a REJ command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_18
Ensure that the IUT in state 8.4, on receipt of a REJ response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_19
Ensure that the IUT in state 8.4, on receipt of a REJ response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_20
Ensure that the IUT in state 8.4, on receipt of a RNR command frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D84_I_21
Ensure that the IUT in state 8.4, on receipt of a RNR command frame with P=0,
transmits no frame and remains in the same state.

L2U_D84_I_22
Ensure that the IUT in state 8.4, on receipt of a RNR response frame with F=0,
transmits no frame and remains in the same state.

L2U_D84_I_23
Ensure that the IUT in state 8.4, on receipt of a RNR command frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_24
Ensure that the IUT in state 8.4, on receipt of a RNR command frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_25
Ensure that the IUT in state 8.4, on receipt of a RNR response frame with F=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_26
Ensure that the IUT in state 8.4, on receipt of a RNR response frame with F=1 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_27
Ensure that the IUT in state 8.4, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D84_I_28
Ensure that the IUT in state 8.4, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and remains in the same state.

L2U_D84_I_29
Ensure that the IUT in state 8.4, on receipt of an I frame with P=1 and invalid N(S),
transmits a REJ response frame with F=1 and enters state 8.5.

L2U_D84_I_30
Ensure that the IUT in state 8.4, on receipt of an I frame with P=0 and invalid N(S),
transmits a REJ response frame with F=0 and enters state 8.5.

L2U_D84_I_31
Ensure that the IUT in state 8.4, on receipt of an I frame with P=1 and invalid N(R),
transmits a RR response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_32
Ensure that the IUT in state 8.4, on receipt of an I frame with P=0 and invalid N(R),
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_33
Ensure that the IUT in state 8.4, on receipt of an I frame with P=1 and invalid N(R) and N(S),
transmits a REJ response frame with F=1, subsequently a SABME frame with P=1 and enters state 5.1.

L2U_D84_I_34
Ensure that the IUT in state 8.4, on receipt of an I frame with P=0 and invalid N(R) and N(S),
transmits a REJ response frame with F=0, subsequently a SABME frame with P=1 and enters state 5.1.

6.2.2.9.3 Syntactically Invalid Behaviour

L2U_D84_S_1
Ensure that the IUT in state 8.4, on receipt of a DISC frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_S_2
Ensure that the IUT in state 8.4, on receipt of a FRMR response frame with F=0 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_S_3
Ensure that the IUT in state 8.4, on receipt of a RR command frame with P=1 which contains an information field,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_S_4
Ensure that the IUT in state 8.4, on receipt of an I frame with an information field which exceeds N201 octets,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_S_5
Ensure that the IUT in state 8.4, on receipt of an undefined frame,
transmits a SABME frame with P=1 and enters state 5.1.

L2U_D84_S_6
Ensure that the IUT in state 8.4, on receipt of an I frame with P=0 which contains a frame check sequence error,
transmits no frame and remains in the same state.

6.2.2.9.4 Outstanding I Frames

6.2.2.9.4.1 Valid Behaviour

L2U_D84OI_V_1
Ensure that the IUT in state 8.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=1 and remains in the same state.

L2U_D84OI_V_2
Ensure that the IUT in state 8.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 which does not acknowledge the last transmitted I frame,
transmits a RR response frame with F=0 and remains in the same state.

6.2.2.9.4.2 Inopportune Behaviour

L2U_D84OI_I_1
Ensure that the IUT in state 8.4, having transmitted I frames which are still unacknowledged, on receipt of a RR response frame with F=1,
transmits the corresponding I frame and enters state 7.0.

L2U_D84OI_I_2
Ensure that the IUT in state 8.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=1 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=1 and enters state 8.5.

L2U_D84OI_I_3
Ensure that the IUT in state 8.4, having transmitted I frames which are still unacknowledged, on receipt of an I frame with P=0 and invalid N(S) which does not acknowledge the last transmitted I frame,
transmits a REJ response frame with F=0 and enters state 8.5.

6.2.2.9.5 Timers

L2U_D84_T_1
Ensure that the IUT in state 8.4, on expiry of timer T200,
transmits RR command frames with P=1 and remains in the same state.

L2U_D84_T_2
Ensure that the IUT in state 8.4, on expiry of timer T200,
transmits RR command frames with P=1 and remains in the same state.

6.2.2.9.6 Counters

L2U_D84_C_1
Ensure that the IUT in state 8.4, having retransmitted N200 times RR command frames with P=1,
transmits a SABME frame with P=1 and enters state 5.1.

6.2.2.10 State 8.5: Timer Recovery

6.2.2.10.1 Valid Behaviour

L2U_D85_V_1
Ensure that the IUT in state 8.5, on receipt of an I frame with P=1,
transmits a RR response frame with F=1 and enters state 8.4.

L2U_D85_V_2
Ensure that the IUT in state 8.5, on receipt of an I frame with P=0,
transmits a RR response frame with F=0 and enters state 8.4.

6.2.2.10.2 Inopportune Behaviour

L2U_D85_I_1
Ensure that the IUT in state 8.5, on receipt of an I frame with P=1 and invalid N(S),
transmits a RR response frame with F=1 and remains in the same state.

L2U_D85_I_2
Ensure that the IUT in state 8.5, on receipt of an I frame with P=0 and invalid N(S),
transmits no frame and remains in the same state.

6.2.3 Multiple Ports

L2U_M70_V_1
Given a configuration with more than 1 active PSTN port, ensure that each port in state 7.0, having requested the sending of an I frame,
transmits an I frame with P=0 and remains in the same state.

L2U_M70_V_2
Given a configuration of 1 active ISDN-BA port and 1 active PSTN port, ensure that each port in state 7.0, having requested the sending of an I frame, transmits an I frame with P=0 and remains in the same state.

Annex A (informative): Bibliography

- ETSI ETS 300 324-2 (1994): "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 2: Protocol Implementation Conformance Statement (PICS) proforma".

History

Document history				
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