INTERNATIONAL TELECOMMUNICATION UNION

ITU-T Q.2971 F

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SERIES Q: SWITCHING AND SIGNALLING

Broadband ISDN – B-ISDN application protocols for access signalling

Digital Subscriber Signalling System No. 2 – User-network interface layer 3 specification for point-to-multipoint call/connection control: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network

ITU-T Recommendation Q.2971 F

(Formerly CCITT Recommendation)

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ITU-T Recommendation Q.2971 F

Digital Subscriber Signalling System No. 2 – User-network interface layer 3 specification for point-to-multipoint call/connection control: Abstract test suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network

Summary

This ITU-T Recommendation specifies Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proformas for the network at the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [3]) of implementations conforming to the procedures for the support of point-to-multipoint switched virtual channel connections, between a root and multiple leaves of the Digital Subscriber Signalling System No. 2 (DSS2) protocol for the Broadband Integrated Services Digital Network (B-ISDN), ITU-T Recommendation Q.2971 [1].

Further parts of this ITU-T Recommendation specify the Protocol Implementation Conformance Statement (PICS) proforma and Test Suite Structure and Test Purposes (TSS & TP) proformas based on this ITU-T Recommendation.

Source

ITU-T Recommendation Q.2971 F was prepared by ITU-T Study Group 11 (1997-2000) and approved under the WTSC Resolution 1 procedure on 3 December 1999.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSC Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

ITU-T Recommendation Q.2971 F[1]

Digital Subscriber Signalling System No. 2 – User-network interface layer 3 specification for point-to-multipoint call/connection control: Abstract test suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network

1 Scope

This ITU-T Recommendation specifies Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proformas for the network at the T_B reference point or coincident S_B and T_B reference point (as defined in ITU-T Recommendation I.413 [3]) of implementations conforming to the procedures for the support of point-to-multipoint switched virtual channel connections, between a root and multiple leaves of the Digital Subscriber Signalling System No. 2 (DSS2) protocol for the Broadband Integrated Services Digital Network (B-ISDN), ITU-T Recommendation Q.2971 [1].

Further parts of this ITU-T Recommendation specify the Protocol Implementation Conformance Statement (PICS) proforma and Test Suite Structure and Test Purposes (TSS & TP) proformas based on this ITU-T Recommendation.

The ATS realizes test purposes identified in the TSS & TP part of the Recommendation and groups them according to the test suite structure given in the TSS & TP. Test purposes defined in the TSS & TP part but not testable are identified in this part of the Recommendation.

This Recommendation is applicable to equipment, supporting point-to-multipoint calls/connections, to be attached at either side of a T_B reference point or coincident S_B and T_B reference point when used as an access to the public B-ISDN.

The supplier of a protocol implementation that is claimed to conform to Q.2971 [1] is required to complete a copy of the PIXIT proforma provided by the testlab. The PIXIT proforma shall contain the tables defined in the partial PIXIT proforma part of this Recommendation and contains additional questions required by the testlab to be able to appropriately execute the test campaign.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation Q.2971 (1995), *Digital Subscriber Signalling System No. 2 (DSS2) – User-network interface layer 3 specification for point-to-multipoint call/connection control*.

[2] ITU-T Recommendation Q.2931 (1995), *Digital Subscriber Signalling System No. 2 (DSS2) – User-Network Interface (UNI) layer 3 specification for basic call/connection control*.

[3] ITU-T Recommendation I.413 (1993), *B-ISDN user-network interface*.

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[1] ITU-T Recommendation Q.2971 F was previously numbered as Q.2971 *sexies* during the approval process.

[4] ETSI ETS 300 771-6 (1998), *Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for point-to-multipoint call/bearer control; Part 6: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the network*.

3 Endorsement

The text of ETS 300 771-6 [4] was approved by ITU-T as Recommendation Q.2971 F with agreed modifications as given below.

NOTE – New or modified text is indicated using sidebars. In addition, underlining and/or strike-out are used to highlight detailed modifications where necessary.

4 Coverage

This part of the Recommendation covers Q.2971 [1] as modified by Q.2971 Corrigendum 1.

Recommendation Q.2971 specifies extensions of coding and procedures given in Recommendation Q.2931 [2] needed to handle point-to-multipoint calls/connections. The purpose of test cases in this Recommendation is to check compliance to procedures of Q.2971 but the TTCN part also built upon coding and procedures of Q.2931 as amended by Amendment 1 (06/97), Amendment 2 (03/99) and Amendment 3 (03/99).

5 Modifications

Throughout the text of ETSI ETS 300 771-6 [4], replace references and expressions as shown in the following table:

Reference in ETS 300 771-6	Modified reference
ETS 300 771	Recommendation of the Q.2971 series
ETS 300 771-1	ITU-T Recommendation Q.2971 (10/95)
ETS 300 771-6	ITU-T Recommendation Q.2971 F
ETS	Recommendation
standard	Recommendation

5.1 Other modifications in the document part

Page 5, Foreword

Delete the whole Foreword.

NOTE – It is replaced by the Foreword of this Recommendation.

Page 7, clause 1 Scope

Replace the whole clause 1 with the following:

"**1 Scope**

See Clause 1, Scope, of this Recommendation above."

Page 7, clause 2 Normative References

Modify reference [2] as below:

"[2] Void~~"ETS 300 771-2: 2: Broadband Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for point-to-multipoint call/bearer control; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification"~~."

Page 33, subclause B.6.1, Note

Delete the Note.

Page 36, History

Delete the whole clause "History".

5.2 Modifications in the TTCN part

NOTE – Modifications in the TTCN part of this Recommendation are described in terms of changes in the TTCN.GR representation.

Length of the Called Party Number IE

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions alter the definition for the type "CalledPartyNumber" as below:

```
"SEQUENCE {
    iEHeader            IEHeader,
    iELength            IELength,
    extension_o5        BIT STRING(SIZE(1)),    -- Extension bit, set to '1'B
    cpn_type            BIT STRING(SIZE(3)),    -- Type of number
    numbering_plan_id BIT STRING(SIZE(4)),      -- Addressing/numbering plan identification
    address_digits      IA5String~~(SIZE(0..20))~~ OPTIONAL   -- Address/number digits
    }"
```

Length of the Calling Party Number IE

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions alter definition for the type "CallingPartyNumber" as below:

```
"SEQUENCE {
    iEHeader            IEHeader,
    iELength            IELength,
    extension_o5        BIT STRING(SIZE(1)),    -- Extension bit, set to '1'B
    cpn_type            BIT STRING(SIZE(3)),    -- Type of number
    numbering_plan_id BIT STRING(SIZE(4)),      -- Addressing/numbering plan identification
    octet5a             Octet5a OPTIONAL,       -- Optional octet 5a
    address_digits      IA5String~~(SIZE(0..20))~~ OPTIONAL   -- Address/number digits
    }

Octet5a ::= SEQUENCE {
    extension_o5a           BIT STRING('1'B),       -- Extension bit, set to '1'B
    presentation_indicator  BIT STRING(SIZE(2)),
    spare_345               BIT STRING(SIZE(3)),    -- Spare bits, normally set to '000'B
    screening_indicator     BIT STRING(SIZE(2)) }"
```

Length of the AAL parameters IE

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions alter definition for the type "AAL_contents" as follows:

"OCTET STRING(SIZE(1..2017~~)~~)".

Second Cause IE on T398 expiry in the DROP PARTY ACKNOWLEDGE message

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions modify definition for the type "IEs_DROP_PARTY_ACKNOWLEDGE" as below:

```
"SET {
      causes      Causes      OPTIONAL,
      endPointReference EndPointReference
      }"
```

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, modify the declaration of the constraint DPA_R1 as below:

```
"iEs_DROP_PARTY_ACKNOWLEDGE
{
 causes {
      cause       CAU_R IF_PRESENT
      },
 endPointReference ER_R1(FLAG,END_REF)
}"
```

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, modify the declaration of the constraint DPA_R2 as below:

```
"iEs_DROP_PARTY_ACKNOWLEDGE
{
 causes {
      cause  CAU_R1(CAUV)
      },
 endPointReference ER_R1(FLAG,END_REF)
}"
```

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, modify the declaration of the constraint DPA_S1 as below:

```
"iEs_DROP_PARTY_ACKNOWLEDGE
{
 causes {
      cause       CAU_S1(CAU_VAL)
      },
 endPointReference ER_S1(FLAG,END_REF)
}"
```

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, add a new constraint as below:

ASN.1 Type Constraint Declaration	
Constraint name:	DPA_R3(FLAG: Flag; END_REF: Er_value; CAU_VAL: Cause_value)
ASN.1 Type:	InformationElements
Derivation Path:	
Encoding Variation:	
Comments:	Receive constraint; used for DROP PARTY ACKNOWLEDGE messages containing second Cause#102

Constraint Value

iEs_DROP_PARTY_ACKNOWLEDGE
{
causes {
cause CAU_R1(CAU_VAL),
cause_repeated CAU_R1(102) IF_PRESENT,
},
endPointReference ER_R1(FLAG,END_REF)
}

Detailed Comments:

In the Dynamic Part, Test Step Library, modify Behaviour Description of L3MN_PR_P3_P5 line 7, L3MN_PR_P70_P5 line 9, L3MN_PR_P4_P5 line 5 and L3MN_PR_P71_P5 line 6 as below:

"0?DSS2_PDU (CAUV:=DSS2_PDU.informationElements.iEs_DROP_PARTY.cause.cause_value) CANCEL TWAIT"

In the Dynamic Part, Test Cases, modify Constraint Reference of L3MN_10_08 line 7, L3MN_10_09 line 7, L3MN_36_08 line 6 and L3MN_36_09 line 6 as:

"Mr(DPA,F0,CREF,DPA_R3~~1~~(F0,EREF2,CAUV))".

Check cause on T399 expiry in the Drop Party message

In the Dynamic Part, Test Cases, modify The Constraint References column for test cases as below.

L3MN_32_01 line 6: "Mr(DP,F0,CREF,DP_R2~~1~~(F0,EREF2,C102))"
L3MN_32_02 line 6: "Mr(DP,F0,CREF,DP_R2~~1~~(F0,EREF2,C102))"

Check optional diagnostic in the STATUS message sent on error handling

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions add the following new type:

ASN.1 Type Definition	
Type name:	Diagnostics
Encoding Variation:	
Comments:	Diagnostics field of the Cause IE

Type Definition
BIT STRING(SIZE(8..32))
Detailed Comments: Ref.: Q2610 subclause 3.3; 1 octet when identifies IE or IE subfield, 4 octets when identifies a VC

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions, alter the definition of the type "Cause" as follows:

```
"SEQUENCE {
        iEHeader        IEHeader,
        iELength        IELength,
        extension_o5    BIT STRING(SIZE(1)),    -- Extension bit, set to '1'B
        spare_567       BIT STRING(SIZE(3)),    -- Spare bits, normally set to '000'B
        location        BIT STRING(SIZE(4)),
```

extension_o6 BIT STRING('1'B), *-- Extension bit, set to '1'B*
cause_value Cause_value,
diagnostics Diagnostics ~~OCTET STRING~~ OPTIONAL
}"

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, add a new constraint as below:

ASN.1 Type Constraint Declaration
Constraint name: CAU_R2(CAU_VAL: Cause_value; DIAG: Diagnostics)
ASN.1 Type: Cause
Derivation Path:
Encoding Variation:
Comments: Receive constraint with parametrized cause & diagnostics value
Constraint Value

{
iEHeader IE_HDR_receive(Cause_ID),
iELength ?, -- *any value*
extension_o5 '1'B,
spare_567 '000'B,
location ?, -- *any value*
extension_o6 '1'B,
cause_value CAU_VAL, -- *parametrized cause value*
diagnostics DIAG IF_PRESENT -- *parametrized diagnostics*
}

Detailed Comments:

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, add a new constraint as below:

ASN.1 Type Constraint Declaration
Constraint name: ST_R5(CAU_VAL: Cause_value; DIAG: Diagnostics; CST_VAL: State_value; FLAG: Flag; END_REF: Er_value; PST_VAL: State_value)
ASN.1 Type: InformationElements
Derivation Path:
Encoding Variation:
Comments: Receive constraint; used for STATUS messages, allows to pass diagnostics in the Cause IE
Constraint Value

iEs_STATUS
{
cause CAU_R2(CAU_VAL,DIAG),
callState CST_R2(CST_VAL),
endPointReference ER_R1(FLAG,END_REF),
endPointState EPST_R2(PST_VAL)
}

Detailed Comments:

In the Dynamic Part, Test Cases, modify The Constraint References column for test cases as below.

L3MN_22_05 line 6:
"Mr(ST,F0,CREF,ST_R5~~1~~(C99,PX_UNRECOGNISED_ID,U4,F0,EREF2,P1))",
L3MN_22_06 line 6: "Mr(ST,F1,CREF,ST_R5~~1~~(C99,PX_UNRECOGNISED_ID,N10,F1,EREF2,P0))",
L3MN_22_11 line 6:
"Mr(ST,F1,CREF,ST_R5~~1~~(C100,Broadband_low_layer_info_ID,N4,F1,EREF2,P0))",

L3MN_22_12 line 6:
"Mr(ST,F1,CREF,ST_R5+(C100,Broadband_low_layer_info_ID,N10,F1,EREF2,P0))",
L3MN_22_29 line 10: "Mr(ST,F1,CREF,ST_R5+(C100,Notification_indicator_ID,N4,F1,EREF2,P6))",
L3MN_22_30 line 10: "Mr(ST,F1,CREF,ST_R5+(C100,Notification_indicator_ID,N10,F1,EREF2,P6))",
L3MN_22_31 line 10: "Mr(ST,F1,CREF,ST_R5+(C100,Notification_indicator_ID,N10,F1,EREF2,P6))",
L3MN_22_44 line 6: "Mr(ST,F1,CREF,ST_R5+(C100,Cause_ID,N4,F1,EREF2,P0))",
L3MN_22_45 line 6: "Mr(ST,F1,CREF,ST_R5+(C100,Cause_ID,N10,F1,EREF2,P0))",
L3MN_47_05 line 5: "Mr(ST,F0,CREF,ST_R5+(C99,PX_UNRECOGNISED_ID,N7,F0,EREF2,P4))",
L3MN_47_06 line 5: "Mr(ST,F0,CREF,ST_R5+(C99,PX_UNRECOGNISED_ID,N10,F0,EREF2,P4))",
L3MN_47_11 line 5: "Mr(ST,F0,CREF,ST_R5+(C100,Notification_indicator_ID,N7,F0,EREF2,P4))",
L3MN_47_12 line 5: "Mr(ST,F0,CREF,ST_R5+(C100,Notification_indicator_ID,N10,F0,EREF2,P4))",
L3MN_47_17 line 5: "Mr(ST,F0,CREF,ST_R5+(C99,PX_UNRECOGNISED_ID,N10,F0,EREF2,P7))",
L3MN_47_18 line 5: "Mr(ST,F0,CREF,ST_R5+(C99,PX_UNRECOGNISED_ID,N10,F0,EREF2,P7))",
L3MN_47_23 line 5:
"Mr(ST,F0,CREF,ST_R5+(C100,Broadband_low_layer_info_ID,N10,F0,EREF2,P7))",
L3MN_47_24 line 5:
"Mr(ST,F0,CREF,ST_R5+(C100,Broadband_low_layer_info_ID,N10,F0,EREF2,P7))",
L3MN_47_37 line 9: "Mr(ST,F0,CREF,ST_R5+(C100,Notification_indicator_ID,N7,F0,EREF2,P6))",
L3MN_47_38 line 9: "Mr(ST,F0,CREF,ST_R5+(C100,Notification_indicator_ID,N10,F0,EREF2,P6))",
L3MN_47_39 line 9: "Mr(ST,F0,CREF,ST_R5+(C100,Notification_indicator_ID,N10,F0,EREF2,P6))",
L3MN_47_48 line 5: "Mr(ST,F0,CREF,ST_R5+(C100,Cause_ID,N7,F0,EREF2,P0))",
L3MN_47_49 line 5: "Mr(ST,F0,CREF,ST_R5+(C100,Cause_ID,N10,F0,EREF2,P0))",

Improved synchronization with PTC1

In the Declarations Part, Test Case Variable Declarations, add the following new variable:

Test Case Variable Declarations			
Variable Name	**Type**	**Value**	**Comments**
SEND_OK	BOOLEAN	FALSE	Control flag for PTC received the awaited PDU
Detailed Comments:			

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, add two new constraints as below:

ASN.1 Type Constraint Declaration	
Constraint name:	AL_R3(FLAG: Flag; END_REF: Er_value)
ASN.1 Type:	InformationElements
Derivation Path:	
Encoding Variation:	
Comments:	Receive constraint; used for ALERTING messages
Constraint Value	

iEs_ALERTING
{
connectionIdentifier *,
notificationIndicator *,
endPointReference ER_R1(FLAG,END_REF)
}	

Detailed Comments:	

ASN.1 Type Constraint Declaration	
Constraint name:	CN_R4(FLAG: Flag; END_REF: Er_value)
ASN.1 Type:	InformationElements
Derivation Path:	
Encoding Variation:	
Comments:	Receive constraint; used for CONNECT messages including the Broadband low layer compatibility information element
Constraint Value	

iEs_CONNECT
{
aTMAdaptionLayerParameters *,
broadbandLowLayerInformation *,
connectionIdentifier *,
endToEndTransitDelay *,
notificationIndicator *,
oAMTrafficDescriptor *,
endPointReference ER_R1(FLAG,END_REF)
}	

Detailed Comments:	

In the Constraints Part, CM Constraint Declarations, TTCN CM Constraint Declarations, add a new coordination message:

CM Constraint Declaration		
Constraint Name:	S_DROP_PARTY2_P4	
CM type:	CP_M	
Derivation Path		
Comments:	To trigger the sending of a DROP PARTY message for party 2 after receiving PARTY ALERTING	
Field Name	Field Value	Comments
CM_content	"SEND_DROP_PARTY2_P4"	
Detailed Comments:		

In the Dynamic Part, Test Step Library, modify the "Constraints Ref" column in line 4 of test step L3MN_PR_P4_P5 as: "S_DROP_PARTY2_P4".

In the Dynamic Part, Test Step Library, modify test step L3MN_CS1 as below:

Test Step Dynamic Behaviour					
Test Step Name:	L3MN_CS1(ES: State_value; FL, ER_FL: Flag; ER: Er_value; PS: State_value)				
Group:					
Objective:	To check the link state and one party state of the IUT.				
Default:	L3MN_DEF(FL)				
Comments:					
Nr	**L**	**Behaviour Description**	**Constraint Ref**	**V**	**Comments**
1		L0!DSS2_PDU (END_FLAG := FALSE, INV_FL := INVERSE(FL), INV_EFL := INVERSE(ER_FL)) START T322	Ms(SQ,FL,CREF,SQ_S1(ER_FL,ER))		(1)
2		REPEAT SUBTREE_CS1 UNTIL [END_FLAG]			(2)
		SUBTREE_CS1			
3		L0?AAL_REL_IN [(ES= N0) AND PX_L2_RELEASE_N00] CANCEL T322		(P)	(3)
4		(END_FLAG := TRUE)			
5		L0?DSS2_PDU CANCEL T322	Mr(ST,INV_FL,CREF,ST_R1(C30,ES,INV_EFL,ER,PS))	(P)	(4)
6		(END_FLAG := TRUE)			
~~7~~		~~L0?DSS2_PDU [STATUS_EXPECTED]~~	~~Mr(ST,INV_FL,CREF,ST_R3(CAUV))~~		~~(5)~~
~~8~~		~~(STATUS_EXPECTED := FALSE)~~			
7~~9~~		?TIMEOUT T322		(F)	no response
8~~10~~		(END_FLAG := TRUE)			

Detailed Comments:

(1) A STATUS ENQUIRY message containing anEndpoint reference information element is sent.

(2) The subtree SUBTREE_CS is repeated until a STATUS message indicating the current link and party state and a valid cause value is received.

(3) A AAL-RELEASE-INDICATION is received. The IUT has released layer 2 after entering N0.

(4) A STATUS message is received indicating the expected link and party state values and the appropriate cause value 30.

~~(5) A STATUS message is received indicating the cause value as stored in the test case variable CAUV. This variable is set in test cases which allow optionally the receipt of a STATUS message (e.g. reaction to a message with a non-mandatory information element contents error).~~

In the Dynamic Part, Test Step Library, modify test step PTC1_IN as below:

Test Step Dynamic Behaviour					
Test Step Name:	PTC1_IN				
Group:					
Objective:	Test step to initiate and handle incoming calls (from the MTC's point of view).				
Default:	PTC1_DEF(F0)				
Comments:					
Nr	**L**	**Behaviour Description**	**Constraint Ref**	**V**	**Comments**
1		+PTC1_PR			preamble N0
2		REPEAT MAINTREE UNTIL [END_FLAG]	(1)		(1)
		MAINTREE			
3		CPA1?CP_M	S_SETUP		(2)
4		L1!DSS2_PDU	Ms(SU,F0,CREF,SU_S2(F0,EREF1,ATMTD_S))		
5		CPA1?CP_M	S_SETUP_EREF_0		
6		L1!DSS2_PDU	Ms(SU,F0,CREF,SU_S2(F0,'000000000000000'B,ATMTD_S))		
7		CPA1?CP_M [SEND_OK]	S_ADD_PARTY		(3)
8		L1!DSS2_PDU	Ms(AP,F0,CREF,AP_S3(F0,EREF2))		
9		CPA1?CP_M	S_DROP_PARTY1		(4)
10		L1!DSS2_PDU	Ms(DP,F0,CREF,DP_S1(F0,EREF1,C16))		
11		CPA1?CP_M	S_DROP_PARTY2		(5)
12		L1!DSS2_PDU	Ms(DP,F0,CREF,DP_S1(F0,EREF2,C16))		
13		CPA1?CP_M [SEND_OK]	S_DROP_PARTY2_P4		
14		L1!DSS2_PDU	Ms(DP,F0,CREF,DP_S1(F0,EREF2,C16))		
15~~13~~		CPA1?CP_M	S_NOTIFY		(6)
16~~14~~		L1!DSS2_PDU	Ms(NO,F0,CREF,NO_S1)		
17~~15~~		CPA1?CP_M [SEND_OK]	S_RELEASE		(7)
18~~16~~		L1!DSS2_PDU	Ms(RL,F0,CREF,RL_S1(C16))		
19~~17~~		L1?DSS2_PDU	Mr(AL,F1,CREF,AL_R2)		(8)
20~~18~~		CPA1!CP_M	R_ALERTING		(9)
21~~19~~		L1?DSS2_PDU	Mr(RL,F1,CREF,RL_R1)		(10)

2220		L1!DSS2_PDU (END_FLAG:=TRUE)	Ms(RC,F0,CREF,RC_S2)		(11)
2321		L1?DSS2_PDU (END_FLAG:=TRUE)	Mr(RC,F1,CREF,RC_R1)		(12)
2422		CPA1?CP_M (END_FLAG:=TRUE)	STOP_PTC		(13)
2523		+PTC1_PO(F0)			postamble N0
26		L1?DSS2_PDU	Mr(AL,F1,CREF,AL_R3(F1,EREF1))		
27		(SEND_OK:= TRUE)			
28		L1?DSS2_PDU	Mr(AL,F1,CREF,AL_R3(F1,EREF1))		
29		(SEND_OK:= TRUE)			
30		L1?DSS2_PDU	Mr(PA,F1,CREF,PA_R1(F1,EREF1))		
31		(SEND_OK:= TRUE)			

Detailed Comments:

(1) The subtree that handles all message transfers at PTC1 is called in a REPEAT statement. The initial value of END_FLAG is FALSE.

(2) A coordination message prompting PTC1 to send a SETUP message is received. In the following event lines this SETUP message is sent.

(3) A coordination message prompting PTC1 to send an ADD PARTY message is received. In the following event lines this ADD PARTY message is sent.

(4) A coordination message prompting PTC1 to send a DROP PARTY message for party 1 is received. In the following event lines this DROP PARTY message is sent.

(5) A coordination message prompting PTC1 to send a DROP PARTY message for party 2 is received. In the following event lines this DROP PARTY message is sent.

(6) A coordination message prompting PTC1 to send a NOTIFY message is received. In the following event lines this NOTIFY message is sent.

(7) A coordination message prompting PTC1 to send a RELEASE message is received. In the following event lines this RELEASE message is sent.

(8) An ALERTING message is received.

(9) This coordination message indicates to the MTC that the ALERTING message has been delivered to PTC1.

(10) A RELEASE message is received.

(11) A RELEASE COMPLETE message is sent and the subtree is left.

(12) A RELEASE COMPLETE message is received and the subtree is left.

(13) A coordination message prompting PTC1 to stop its activity is received.

Editorial and Syntactical changes

In the Declarations Part, Test Suite Type Definitions, ASN.1 Type Definitions, modify definitions of types "CalledPartySubaddress" and "CallingPartySubaddress"as follows:

```
"SEQUENCE {
        iEHeader            IEHeader,
        iELength            IELength,
        extension_o5        BIT STRING('1'B),                 -- Extension bit, set to '1'B
        cps_type            BIT STRING(SIZE(3)),              -- Type of subaddress
        odd_even_indicator BIT STRING(SIZE(14)),
        spare_123           BIT STRING(SIZE(3)),              -- Spare bits, normally set to '000'B
        subaddress_info     IA5String(SIZE(0..20)) OPTIONAL   -- Subaddress information
        }"
```

In the Constraints Part, Test Suite Type Constraint Declarations, ASN.1 Type Constraint Declarations, modify declarations of constraints SU_R1, SU_R2 and SU_R3, as below:

```
"iEs_SETUP
{
 aTMAdaptionLayerParameters      AALP_R IF_PRESENT,
 aTMTrafficDescriptor            ATMTD_R1,
 broadbandBearerCapability       BBC_R,
```

```
        broadbandHighLayerInformation BHLC_R IF_PRESENT,
        broadbandLowLayerInformations (single_LLI BLLC_R) IF_PRESENT,
        calledPartyNumber           CDPN_R IF_PRESENT,
        calledPartySubaddress       CDPS_R IF_PRESENT,
        callingPartyNumber          CGPN_R IF_PRESENT,
        callingPartySubaddress      CGPS_R IF_PRESENT,
<rest of the declaration shall remain unchanged>
```

In the Dynamic Part, Test Cases, modify the "Constraint References" column for test cases as below:

L3MN_07_15 line 4: "Mr(ST,F0,CREF,ST_R3(C96~~C100~~))"
L3MN_07_16 line 4: "Mr(ST,F0,CREF,ST_R3(C96~~C100~~))"
L3MN_07_17 line 4: "Mr(ST,F0,CREF,ST_R3(C96~~C100~~))"
L3MN_43_18 line 4: "Mr(ST,F0,CREF,ST_R1(C101,N7~~N9~~,F0,EREF1,P1))"

In the Dynamic Part, Test Cases, modify the "Behaviour description" column for test cases as below:

L3MN_37_01 line 10: " +L3MN_PO(F1)" (NOTE)
L3MN_37_02 line 10: " +L3MN_PO(F1)" (NOTE)
L3MN_51_04 line 2: " +L3MN_PR_~~N4~~N7"
L3MN_51_05 line 2: " +L3MN_PR_~~N4~~N7"
L3MN_51_04 line 7: " +L3MN_CS1(N7,F1,F1,EREF2~~EREF1~~,P1)"
L3MN_51_05 line 7: " +L3MN_CS1(N7,F1,F1,EREF2~~EREF1~~,P4)"
L3MN_51_06 line 7: " +L3MN_CS1(N10,F1,F1,EREF2~~EREF1~~,P1)"
L3MN_51_07 line 7: " +L3MN_CS1(N10,F1,F1,EREF2~~EREF1~~,P4)"
L3MN_51_08 line 7: " +L3MN_CS1(N10,F1,F1,EREF2~~EREF1~~,P7)"

NOTE – Indentation to be increased by two levels.

In the Dynamic Part, Test Cases, modify test cases as below:

insert new line 4 to L3MN_02_01:

Nr	L	Behaviour Description	Constraint Ref	V	Comments
3		+L3MN_PR_N4			preamble N4
4		CPA2!CP_M (PTC2_ACTIVATED:= TRUE)	R_SETUP		
5~~4~~		L0!DSS2_PDU (PTC2_ACTIVATED := TRUE) START TNOAC	Ms(AP,F0,CREF,AP_S1(F0,EREF2))		(3)

insert new line 4 to L3MN_02_02:

Nr	L	Behaviour Description	Constraint Ref	V	Comments
3		+L3MN_PR_N10O			preamble N10
4		CPA2!CP_M (PTC2_ACTIVATED:= TRUE)	R_SETUP		
5~~4~~		L0!DSS2_PDU (PTC2_ACTIVATED := TRUE) START TNOAC	Ms(AP,F0,CREF,AP_S1(F0,EREF2))		(3)

In the Dynamic Part, Test Step Library, insert new line 2 to test step PTC2_PR as below:

Test Step Dynamic Behaviour					
Test Step Name: PTC2_PR Group: Objective: Preamble to the Null call state N0 for PTC2. Default: Comments:					
Nr	**L**	**Behaviour Description**	**Constraint Ref**	**V**	**Comments**
1 2 ~~3~~2		[ESTABLISH_UNDERLYING_LAYERS()] (CREF:= RANDOM_CREF()) [NOT ESTABLISH_UNDERLYING_LAYERS()]		(P) I	
Detailed Comments: The AAL connection of the IUT at the access related to the PTC2 has to be established before the execution of a test case. The procedures to do so are out of the scope of ETS 300 443-1 and ETS 300 771-1. The test suite operation in this preamble has to be replaced by TTCN code that describes the procedures to establish and/or maintain the underlying layers. The definition of that code has to be agreed between the test laboratory and the IUT provider.					

In the Dynamic Part, Test Cases, modify the "Purpose" in the header of table "Test Case Dynamic behaviour" of the following test cases as below:

L3MN_22_29

"Ensure that the IUT in N4 and P3 for party 1 and P3 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 4, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message~~and optionally sends a STATUS message (Cause value = 100, Call state value = 4, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P3 for party 1, enters P0 for party 2 and remains in N4."

L3MN_22_30

"Ensure that the IUT in N10 and P7 for party 1 and P3 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message ~~and optionally sends a STATUS message (Cause value = 100, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P7 for party 1, enters P0 for party 2 and remains in N10."

L3MN_22_31

"Ensure that the IUT in N10 and P7 for party 1 and P7 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message ~~and optionally sends a STATUS message (Cause value = 100, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P7 for party 1, enters P0 for party 2 and remains in N10."

L3MN_32_01

"Ensure that the IUT in N7 and P4 for party 1 and P1 for party 2, on the expiry of T399, sends a DROP PARTY message (Endpoint reference value = party 2, Cause value = 102), enters P5 for party 2, remains in P4 for party 1 and remains in N7."

L3MN_32_02

"Ensure that the IUT in N10 and P7 for party 1 and P1 for party 2, on the expiry of T399, sends a DROP PARTY message (Endpoint reference value = party 2, Cause value = 102), enters P5 for party 2, remains in P7 for party 1 and remains in N10."

L3MN_47_37

"Ensure that the IUT in N7 and P4 for party 1 and P4 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 7, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message ~~and optionally sends a STATUS message (Cause value = 100, Call state value = 7, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P4 for party 1, enters P0 for party 2 and remains in N7."

L3MN_47_38

"Ensure that the IUT in N10 and P7 for party 1 and P4 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message ~~and optionally sends a STATUS message (Cause value = 100, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P7 for party 1, enters P0 for party 2 and remains in N10."

L3MN_47_39

"Ensure that the IUT in N10 and P7 for party 1 and P7 for party 2, on receipt of a DROP PARTY message (Optional information element with content error present, IE instruction field flag = IE instruction field not significant, Endpoint reference value = party 2),

optionally sends a STATUS message (Cause = value 100 and optional diagnostics field carrying correct IE identifier, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6) followed by a DROP PARTY ACKNOWLEDGE message ~~and optionally sends a STATUS message (Cause value = 100, Call state value = 10, Endpoint reference value = party 2, Endpoint reference party state = 6 or 0 dependant on the order of transmission)~~, remains in P7 for party 1, enters P0 for party 2 and remains in N10."

APPENDIX I

Bibliography

[A] ETSI ETS 300 771-1 (1997), *Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS 2) protocol; B-ISDN user-network interface layer 3 specification for point-to-multipoint call/bearer control; Part 1: Protocol specification.*

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