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Recommendation T.64

CONFORMANCE TESTING PROCEDURES FOR THE TELETEX RECOMMENDATIONS

CONTENTS

This Recommendation is applicable to the version of Teletex Recommendations in the CCITT Red Book, Geneva, 1984. It is intended that a similar Recommendation on conformance testing procedures applicable to the Teletex Recommendations in the present (1988) Blue Book will be forthcoming during the Study Period 1988-1992.

The CCITT,

considering

that Recommendation F.200 defines the Teletex service;

that Recommendation T.60 defines the terminal characteristics for Teletex;

that Recommendation T.61 defines the character repertoire and coding for Teletex;

that Recommendation T.62 defines the Teletex control procedure;

that Recommendation T.70 defines the network independent transport procedure;

that Recommendation T.90 defines the Teletex requirements for interworking with telex;

that compatible implementation of these standards is necessary for successful development and acceptance of the service,

unanimously declares the following

This Recommendation contains test procedures to facilitate Administrations' verification of the protocol and service conformance of Teletex systems in order to expedite the international compatibility of Teletex.

1 General

1.1 *Scope*

1.1.1 This Recommendation defines test procedures for the 1984 version of Teletex Recommendations.

1.1.2 The test procedures contained herein are based on requirements for Teletex systems in three main areas:

a) Teletex transport layer procedures as specified in Recommendation T.70 (see Annex B).

b) Teletex control procedures specified in Recommendation T.62 (see Annex C).

c) Teletex service aspects as specified in Recommendation F.200 and associated Recommendations T.60, T.61 and T.90 (see Annex D).

1.1.3 The test procedures are intended to assist verification and cannot fully guarantee the compliance of Teletex systems to the relevant Recommendations.

1.1.4 The test procedures do not supersede the relevant Teletex Recommendations which continue to be the definitive specifications for all aspects of the Teletex service and systems.

1.1.5 The test procedures cover those aspects of Teletex which have international end-to-end significance.

1.2 *Fundamental principles*

1.2.1 The test procedures allow the conformance of a Teletex system to be assessed by comparing the ‘‘observed’’ behaviour of the system against an agreed common reference which specifies the expected behaviour of the system.

1.2.2 The test procedures provide an ability to test a Teletex system located remotely from the test equipment so that systems and test equipments need not be portable.

1.2.3 The test procedures enable a Teletex system to be tested without placing any requirements on the system except conformance to the relevant Teletex Recommendations.

1.2.4 The test procedures are independent from any particular test equipment.

1.2.5 The test procedures do not attempt to optimize testing methods or specify any particular sequence of tests unless expressly stated.

1.3 *Definitions*

See Annex A.

1.4 *Testing methodology*

Testing of a Teletex system shall occur from the bottom layer upwards. Before layer (N) can be tested, layer (N - 1) must have been assessed so as not to interfere with the testing of layer (N). This methodology ensures that an error in the lower layer does not corrupt protocol elements received at the higher layer.

1.5 *Test procedures*

1.5.1 The test procedures are applicable to all Teletex systems except where they are marked as being ‘‘conditional’’. Conditional tests are only applicable to Teletex systems which claim certain non-basic capabilities.

1.5.2 The test procedures consist of two types: protocol test procedures and application service test procedures.

1.5.2.1 Protocol test procedures test the conformance of a Teletex system to the Recommendations T.62 and T.70.

1.5.2.2 Application service test procedures test a system’s conformance to those requirements specified in Recommendation F.200 and associated Recommendations T.60, T.61 and T.90.

1.5.3 The tests are divided into a number of sets, those which are carried out with the Teletex system calling and those which are carried out with the Teletex system called. The tests are further sub-divided covering the Teletex system under normal (error free) conditions and the Teletex system under exception (error) conditions.

2 Protocol test procedures

Protocol test procedures are defined by a set of protocol test schedules and protocol data unit (PDU) lists.

2.1 *Protocol test schedules*

2.1.1 The test schedules are described in a tabular form. Test conditions and input sequences together with the expected result are specified.

The tests explore a Teletex system’s behaviour as it passes through the state event transitions defined in the relevant Recommendation.

2.1.2 Normal protocol tests are designed to be carried out sequentially, i.e. a successful conclusion to test N will leave the Teletex system in the correct state for test N + 1 to be carried out.

2.1.3 Exception protocol tests are designed to be carried out individually, i.e. the Teletex system is driven into the correct state for a particular test by procedures which are defined for that test.

2.2 *Tests on transient states*

2.2.1 Where a state is transient (i.e. the system may send a PDU immediately following the occurrence of an internal service primitive) it may not be possible to carry out a particular test. It can be determined from the reaction of the

system whether a state has been accessed. If access is possible then tests should be performed on the required state-event pairs; otherwise no further tests need be attempted on that state.

2.3 *Description of the test tables*

The test tables consist of five columns which are described below.

2.3.1 *Test number*

The *Test number* has the following format: WXY/Z

where:

W is either a ‘‘G’’ to indicate that the test is carried with the Teletex system calling or a ‘‘D’’ to indicate that the test is carried out with the Teletex system called. In certain tests the ‘‘G’’ or ‘‘D’’ is preceded by a test identifier, e.g. CG for conditional tests.

X is either an ‘‘N’’ to indicate that the test is carried out under normal conditions or an ‘‘E’’ to indicate that the test is carried out under exception conditions.

Y specifies the state from which the test is made.

Z is the test number within the particular test group.

2.3.2 *Test type*

The *Test type* provides a brief description of the test.

2.3.3 *Tester action*

Tester action specifies the sequence of protocol elements which shall be sent by the tester during a particular test.

2.3.4 *Tester detects*

Tester detects | pecifies the sequence of protocol elements which shall be received by the tester during a particular test in order for the test to be satisfactorily completed.

2.3.5 *State diagram route in system/PDUs sent by the tester/comments*

2.3.5.1 *State diagram route in system* | describes the sequence of state transitions explored during the test.

2.3.5.2 The *PDUs sent by the tester* | pecify those PDUs sent by the tester during the test. For some tests a number of PDUs are specified, one of which shall be chosen to carry out the test. Other tests have to be repeated for each PDU. These tests are indicated by ‘‘(REP)’’ following the PDU list.

The PDU numbers refer to the PDUs specified in the PDU lists. PDUs are referred to as TPDUs in the T.70 test schedules in Annex B and SPUDs in the T.62 test schedules in Annex C.

2.4 *Protocol data unit (PDU) lists*

2.4.1 Separate PDU lists are defined for the T.70 test schedules and the T.62 test schedules.

2.4.2 The PDU lists specify the PDUs used within the test tables.

2.4.3 There are two types of list: one for valid PDUs and one for invalid PDUs.

3 Application service test procedures

3.1 *Application service tests*

3.1.1 The application service tests establish a number of scenarios which test the conformance of a Teletex system to the Recommendations which specify service and related matters.

3.2 *Description of the application service test schedules*

3.2.1 Each test consists of three parts, the title of the test, the actions required to establish the test and the checks that have to be carried out to assess the Teletex system.

3.2.2 *Where appropriate the Recommendation and section number which define the particular service requirement being tested are referenced.*

3.2.3 Where a particular test requires specific values, these have been chosen to ensure a reasonable level of compatibility between Teletex systems.

3.2.4 The tests use the following numbering format: WXN.

Where:

W indicates whether the test is mandatory (M) or conditional (C).

X is either a ‘‘G’’ to indicate that the test is carried out with the Teletex system calling or a ‘‘D’’ to indicate that the test is carried out with the Teletex system called.

N specifies the test number within the particular test groups.

4 Test limitations

The tests will establish to an acceptable degree of reliability that a Teletex system conforms to the relevant Recommendations. It is not possible to test for ‘‘complete’’ conformance due to:

a) the immense number of state event combinations and possible valid and invalid PDU types which would require an unacceptably large amount of computational resources and time;

b) the possibility that previous actions may affect the results of a particular test;

c) ‘‘transient’’ states that, although defined in the Recommendations, may not externally be accessible.

ANNEX A
(to Recommendation T.64)

Definitions and abbreviations

A.1 *Abbreviations*

The following is a list of abbreviations used in the tables and test schedules of Annexes B, C and D. See § A.2 for symbols other than abbreviations which are used.

A.2 *Other symbols*

I Indicates an invalid PDU

V Indicates a valid PDU

X Represents one or more octets in the correct form, the value is unspecified.

(14) Number of octets.

* Indicates where the incorrect or unexpected value occurs.

— Indicates that the field is empty or not used.

< Less than.

> Greater than.

<> Not equal to.

o A bar above an octet indicates the octet is in error.

Test schedules

Tester action/tester detects | olumns

[| Indicates a valid PDU exchange which may be initiated by the SUT in addition to the PDUs exchanged during the course of a test.

PDUs sent by the tester | olumn

(REP) Indicates that the test must be repeated for each PDU specified.

H.T. [1T1.64]

Abbreviation	Meaning	Reference
CC	Clearing cause	T.64
CDC	Command document continue	T.62, T.64
CDCL	{ Command document capability list }	T.62, T.64
CDD	Command document discard	T.62, T.64
CDE	Command document end	T.62, T.64
CDPB	{ Command document page boundary }	T.62, T.64
CDR	{ Command document resynchronize }	T.62, T.64
CDS	Command document start	T.62, T.64
CDUI	{ Command document user information }	T.62, T.64
CHAR	Character	T.64
CI	Command identifier	T.62, T.64
CIL	Call identification line	T.200, T.64
CLI	Command length indicator	T.64
CM	{ Conditional mandatory parameter }	T.64
CRN	Checkpoint reference number	T.64
CSA	Command session abort	T.62, T.64
CSCC	{ Command session change control }	T.62, T.64
CSE	Command session end	T.62, T.64
CSS	Command session start	T.62, T.64
CSUI	{ Command session under information }	T.62, T.64
DISC	DISCONNECT	T.64
DPE	Document protocol element	T.64
DR	Destination reference	T.64
DRN	Document reference number	T.64
EAD	{ Extended addressing (called = D) }	T.64
EAG	{ Extended addressing (calling = G) }	T.64
EM	End mark	T.64, T.70
GI	Group identifier	T.64
ID	Identification	T.64
ITA2	{ International Telegraph Alphabet No. 2 }	T.64
LI	Length indicator	T.62, T.64
M	Mandatory parameter	T.64
MUT	{ Multi-terminal configuration }	T.64
N-	Network	T.64
NBTC	{ Non basic terminal capabilities }	T.64
PDU	Protocol data unit	T.64
PG	Parameter group	T.64

PGI	Parameter group identifier	T.62, T.64
PGLI	{	
Parameter group length indicator		
}	T.64	
PI	Parameter identifier	T.62, T.64
PLI	Parameter length indicator	T.64
PV	Parameter value	T.62, T.64
R-	Reception	T.64

Tableau [1T1.64], p.

Abbreviation	Meaning	Reference
R-TCR	Receive TCR event	T.64, T.70
R-TDT	Receive TDT event	T.64, T.70
RDCLP	{ Response document capability list positive }	T.62, T.64
RDDP	{ Response document discard positive }	T.62, T.64
RDEP	{ Response document end positive }	T.62, T.64
RDGR	{ Response document general reject }	T.62, T.64
RDPBN	{ Response document page boundary negative }	T.62, T.64
RDPBP	{ Response document page boundary positive }	T.62, T.64
RDRP	{ Response document resynchronize positive }	T.62, T.64
RI	Response identifier	T.62, T.64
RLI	Response length indicator	T.64
RSAP	{ Response session abort positive }	T.62, T.64
RSCCP	{ Response session change control positive }	T.62, T.64
RSEP	Response session end positive	T.62, T.64
RSSN	{ Response session start negative }	T.62, T.64
RSSP	{ Response session start positive }	T.62, T.64
RSUI	{ Response session user information }	T.62, T.64
S-	Session	T.64, X.225
S-	Sending	T.64
S-TCA	Send TCA action	T.64, T.70
SD	Source reference	T.64
SG	Source reference	T.64
SID	Session identification	T.64
SPDU	Session protocol data unit	T.64
SR	Source reference	T.64
SUT	System under test	T.64
T-	Transport	T.64
TBR	Transport block reject block	T.64, T.70
TCA	{ Transport connection accept block }	T.64, T.70
TCC	{ Transport connection clear block }	T.64, T.70
TCR	{ Transport connection request block }	T.64, T.70

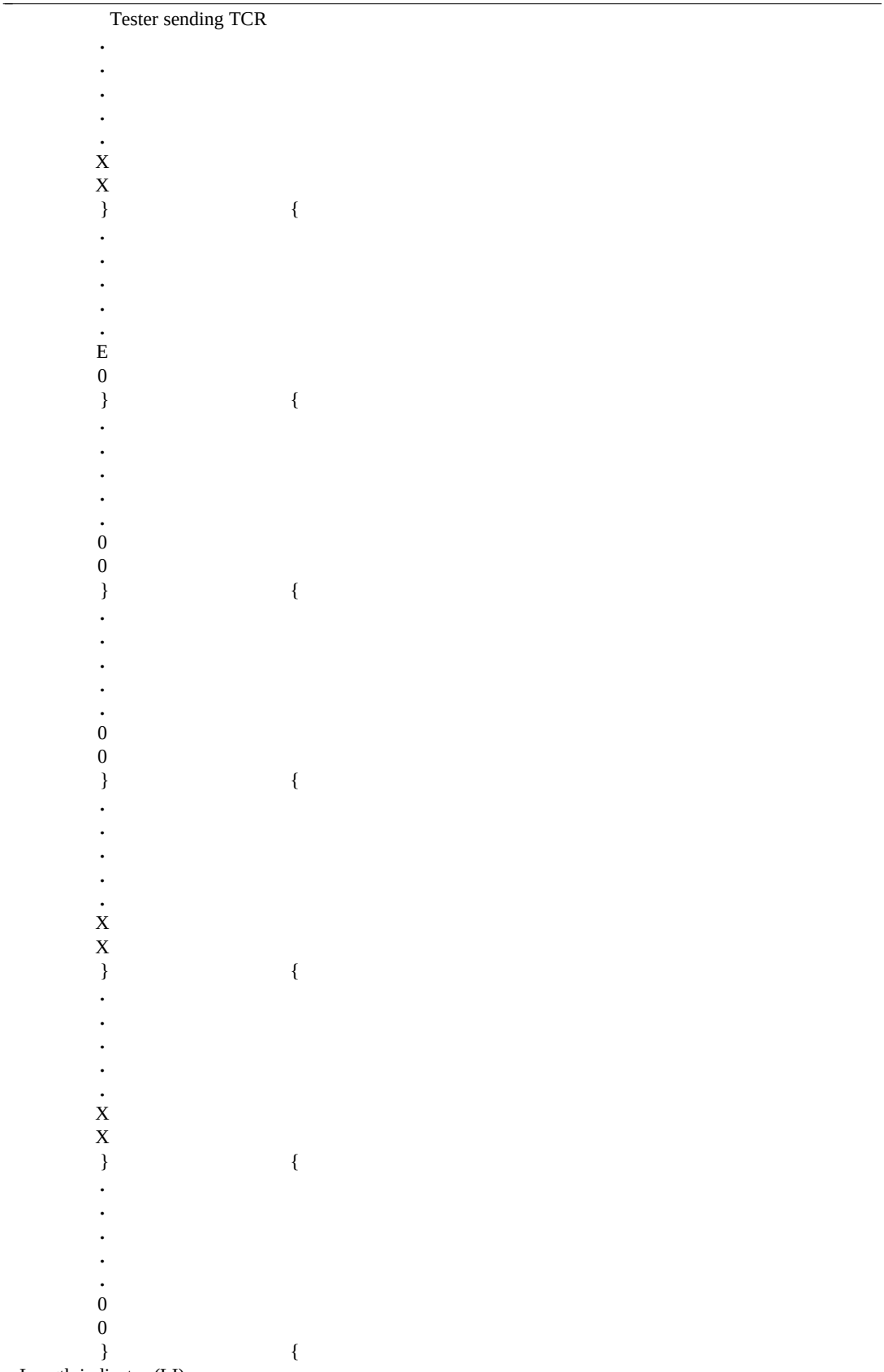
TDT	Transport data block	T.64, T.70
TID	Terminal identification	T.64
TPDU	Transport protocol data unit	T.64
TSDU	Transport service data unit	T.64
TUT	Terminal under test	T.64

Tableau [2T1.64], p.

ANNEX B
(to Recommendation T.64)

B.1 *T.70 Transport Protocol Data Unit (TPDU) list*

H.T. [T2.64]
Test level 4, TCR

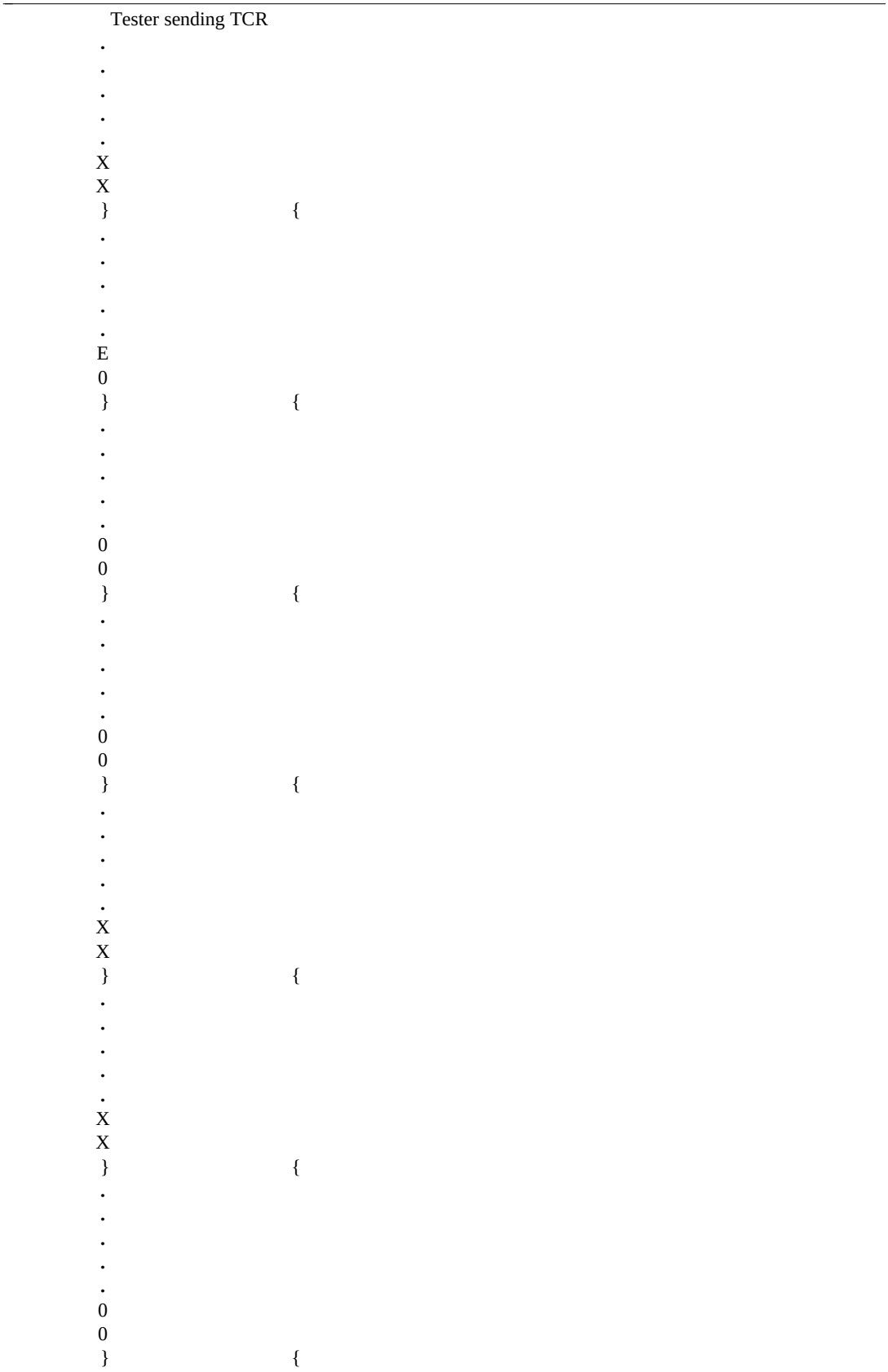

Tester sending TCR
X
X
}
{
E
0
}
{
0
0
}
{
0
0
}
{
X
X
}
{
X
X
}
{
0
0
}
{
Length indicator (LI)
Block type
Destination ref. (DD)
Source ref. (SG)
Extension field

Parameters C0, C1, C2 in any order } Type/No.	Short description	{							

Tableau [T2.64], p.

H.T. [T3.64]

Test level 4, Invalid TCR

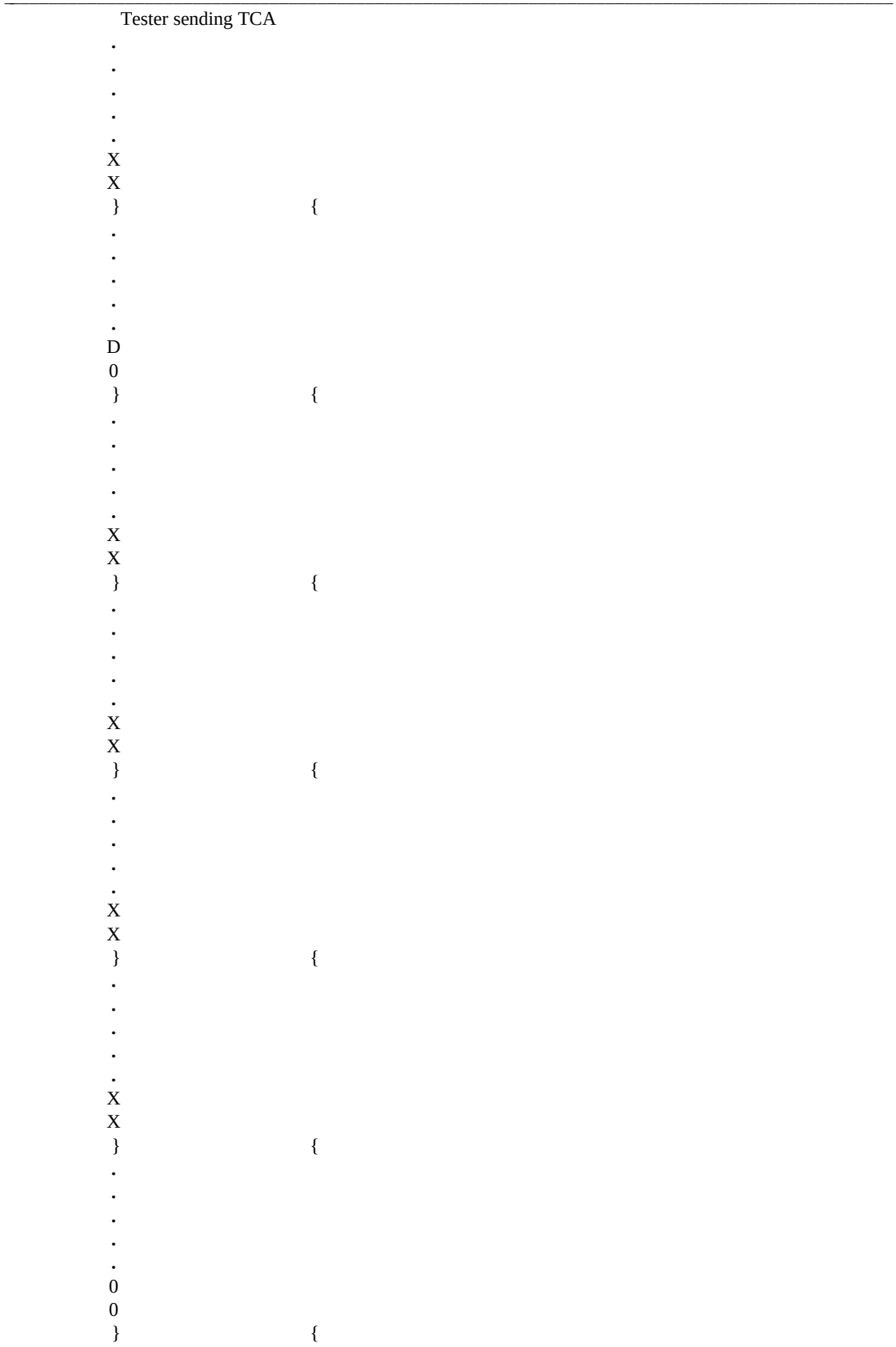

Tester sending TCR
X
X
}
{
E
0
}
{
0
0
}
{
0
0
}
{
X
X
}
{
X
X
}
{
0
0
}
{
Length indicator (LI)
Block type
Destination ref. (DD)
Source ref. (SG)
Extension field

Parameters C0, C1, C2 in any order } Type/No.	Short description	{							

[Unable to convert rest of table]

Tableau [T3.64], p.

H.T. [T4.64]
Test level 4, TCA


Tester sending TCA
X
X
}
{
D
0
}
{
X
X
}
{
X
X
}
{
X
X
}
{
0
0
}
{
Length indicator (LI)
Block type
Destination ref. (DR+SG)
Source ref. (SD)
Extension field

Parameters C0, C1, C2 in any order } Type/No.	Short Description	{							

Tableau [T4.64], p.

H.T. [T5.64]

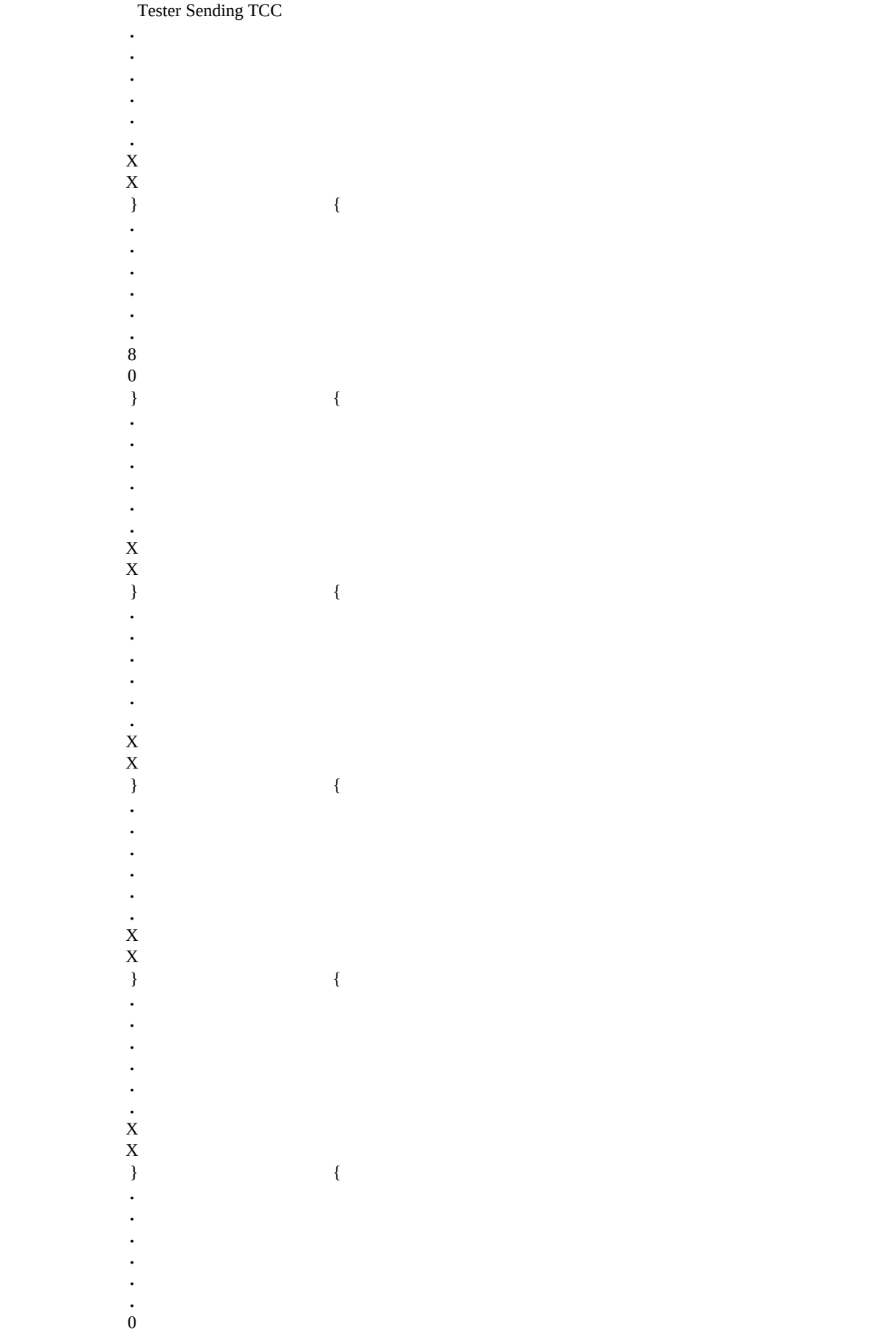
Test level 4, Invalid TCA


Tester sending TCA
X
X
}
{
D
0
}
{
X
X
}
{
X
X
}
{
X
X
}
{
0
0
}
{
Length indicator (LI)
Block type
Destination ref. (DR+SG)
Source ref. (SD)
Extension field

Parameters C0, C1, C2 in any order } Type/No.	Short Description	{							
[unable to convert rest of table]									

Tableau [T5.64], p.

H.T. [T6.64]
Test level 4, TCC


Tester Sending TCC
X
X
}
{
8
0
}
{
X
X
}
{
X
X
}
{
X
X
}
{
0

X }	{									
. . . . . .										
E 0		{								
}	{									
Length indicator (LI) Block type Destination ref. (DR+SG) Source ref. (SD) Clearing cause Additional clearing information }										
Type/No.	Short Description									

Tableau [T6.64], p.

H.T. [T7.64]

Test level 4, Invalid TCC

Tester Sending TCC

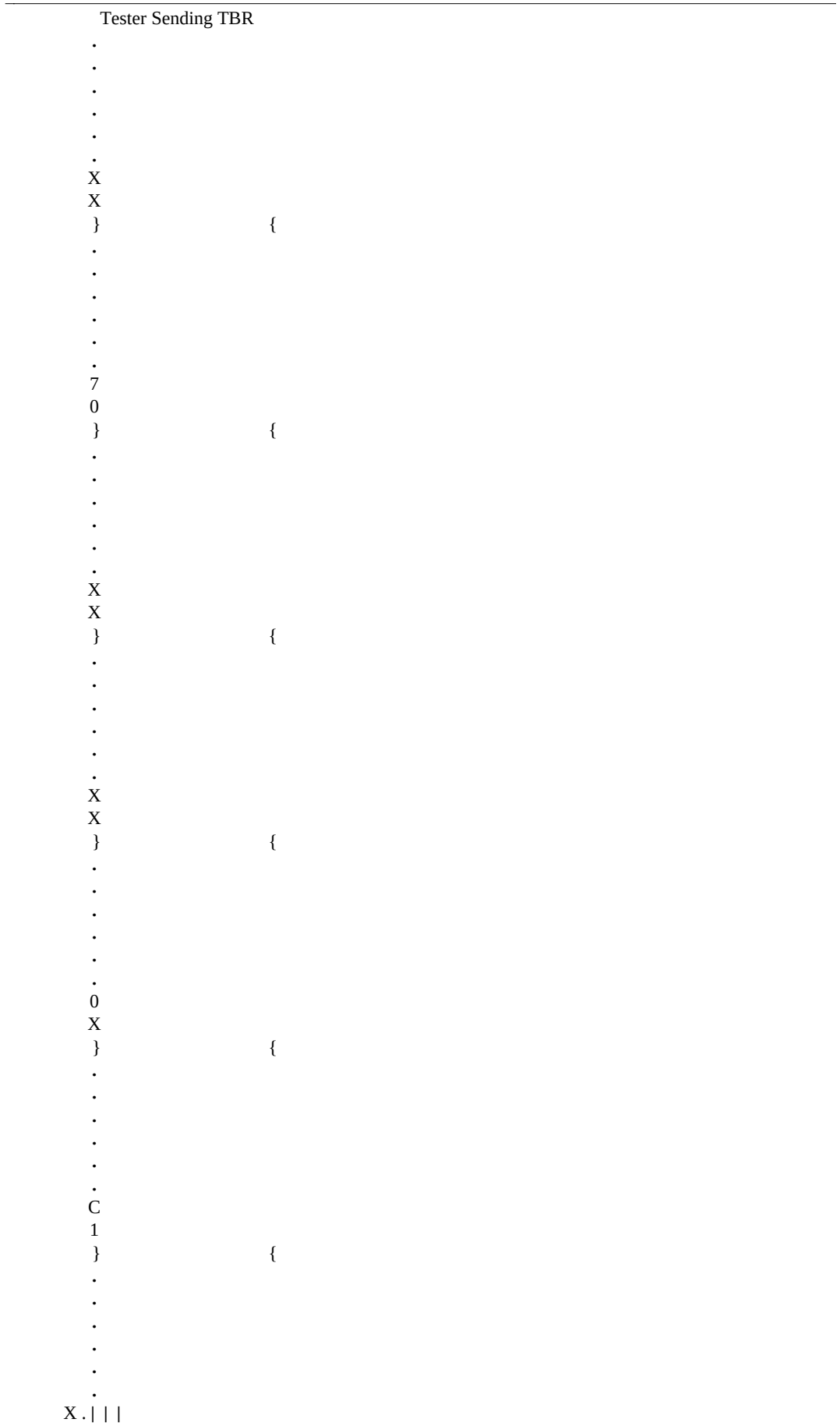
. . . . . .
X
X
} {
. . . . . .
8
0
} {
. . . . . .
X
X
} {
. . . . . .
X
X
} {
. . . . . .
X
X
} {
. . . . . .
X
X
} {
. . . . . .
0

X } . . . . . . E 0 } Length indicator (LI) Block type Destination ref. (DR+SG) Source ref. (SD) Clearing cause (CC) Additional clearing information } Type/No.	{ { Short Description	{ 								
[Unable to Convert Table]										

Note — This PDU must be padded with 120 octets.

Tableau [T7.64], p.

H.T. [T8.64]
Test level 4, TBR


Tester Sending TBR
X
X
}
{
7
0
}
{
X
X
}
{
X
X
}
{
0
X
}
{
C
1
}
{
X . | | |

X . | | | } Length indicator (LI) Block type Destination ref. (DR) Reject cause Reject block PI PLI } Type/No.	{ Short Description	{ 							

Tableau [T8.64], p.

H.T. [T9.64]

Test level 4, TDT

Tester Sending TDT						
.						
.						
.						
.						
.						
0						
2						
}	{					
.						
.						
.						
.						
.						
F						
0						
}	{					
.						
.		{				
.						
.						
.						
X						
0						
}	{					
.						
.						
.						
.						
.						
Data . | | | | | | | |						
}	{					
Length indicator (LI)						
Block type						
TSDU — Endmark						
}						
Type/No.	Short Description					

Tableau [T9.64], p.

H.T. [T10.64]

Test level 4, undefined PDU

Tester Sending Undefined PDU

. . . . . X X } { . . . . . 0 0 } { . . . . . X X } { . . . . . X X } { . . . . . X X } { . . . . . X X } { . . . . . X X } { Length indicator (LI) Block type }

Type/No.	Short Description				
UD1	Octet 2 Incorrecto	0 2	0 0	8 0	TSDU

Tableau [T10.64], p.

B.2 *T.70 test schedule*

Basic test lists

Testing normal conditions

System calling/Tester called

Before this sequence is executed, the system will establish the network connection.
H.T. [T11.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the T.70 test c) Comments }	2 Type of test	3 Tester action	4 Tester detects	{
GN1	Send TCR		R-TCR	a)
GN2 a) 1.1 - 2.1 b) TCA (V1-V6) (REP) except TCA V4 c) Systems complying with the 1984-Version may reject TCA V6 }	Receive TCA	S-TCA		{
GN3	Send TDT		R-TDT (CSS)	a)
GN4 a) 2.1 (no reassembly) - 2.1 b) TDT V1 c) See Note 1 }	Receive TDT	S-TDT (RSSP)		{
GN5 SEND-TDT (with segmentation) }	{			
		{		
R-TDT (CSUI/CDS) R-TDT (CSUI/CDUI) ##N }	{			
a) 2.1 (segmentation) - 2.1 c) ##N is the number of TDT. }				
		{		
S-TDT (RSUI/RDEP) with request session function }	R-TDT (CSUI/CDE)	b) TDT V1		
GN6 (Note 2) S-TDT (RSCCP) S-TDT (CSUI/CDS) }	Receive TDT (with reassembly)	{		
	R-TDT (CSCC)	{		
a) 2.1 (with reassembly) - 2.1 }				
		S-TDT ## N EM = 0		{
b) TDT (V1-V3) c) ##N is the number of TDT }				
		S-TDT EM = 1 (CSUI/CDUI)		
		S-TDT (CSUI/CDE)	R-TDT (RSUI/RDEP)	
		S-TDT (CSCC)	R-TDT (RSCCP)	
		S-TDT (RSEP)	R-TDT (CSE)	

Note 1 — On receiving RSSP, the system may undertake ‘‘terminal capability negotiation’’ and/or ‘‘Session change control’’. In this case, the tester has to answer correctly.

Note 2 — Test GN6 is only possible if the system is capable of acknowledging change request function at the session level, or if the system can be instructed to poll (send CSCC).

Tableau [T11.64], p.

Testing exception conditions from state 0.3

System calling/Tester called

Before each test, a network connection is set up by the system and the tester will:

— R-TCR,

— S-TCR,

— R-TBR.

H.T. [T12.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
GE03/0 a) 0.3 - 0.3 b) Any TPDU c) System discards TPDU and then timeout } Release of the network connection }	Receive any TPDU Timeout a) 0.3 - 0.1	S-TPDU Do nothing	{ 	{

Tableau [T12.64], p.

Testing exception conditions from state 1

System calling/Tester called

Before each test, a network connection is set up by the system and the tester will R-TCR.
H.T. [T13.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
GE1/0 Release of the network connection } a) (T-DISC IND) a) 1.1 - 0.1 c) Correct response to further tests will indicate that implementation can return from state 1.1 to state 0.1 }	Recovery from network DISC {	N-DISC REQ	{	
GE1/1 Force an N-RESET IND in the SUT } Release of the network connection } a) (T-DISC IND, N-DISC REQ) a) 1.1 - 0.1 c) Correct response to further tests will indicate that implementation can return from state 1.1 to state 0.1 }	Recovery from network reset { {	{		
GE1/2 Release of the network connection } a) (T-DISC IND, N-DISC REQ) 1.1 - 0.1 b) TCA I1-I8 TCC I1-I4 Undefined PDU UD1 **H.T. [T14.64]** }	Receive invalid TPDU {	S-TPDU invalid	{	

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
	Receive TCC			{
	Repeat	S-TCC	R-TCR	{

GE1/4 Release of the network connection } a) (T-DISC IND, N-DISC REQ) 1.1 - 0.1 b) TBR V1 }	Receive TBR {	S-TBR	{	
GE1/5 a) 1.1 - 0.3 (N-DISC REQ, T-DISC IND) } R-TBR Release of the network connection } b) TCR V1 GE1/3 a) Timeout (T0.3) 0.3 - 0.1 }	Receive TCR {	S-TCR	{ {	{
GE1/6 Release of the network connection } a) (T-DISC IND, N-DISC REQ) 1.1 - 0.1 }	Timeout T1.1 {	Do nothing for time T1.1	{	

Tableau [T13.64], p.

Testing exception conditions from state 1 (cont)

System calling/Tester called

Before each test, a network connection is set up by the system and the tester will T-TCR.
H.T. [T14.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
	Receive TCC			{
GE1/3	Repeat	S-TCC	R-TCR	{
GE1/4 Release of the network connection } a) (T-DISC IND, N-DISC REQ) 1.1 - 0.1 b) TBR V1 }	Receive TBR {	S-TBR	{	
GE1/5 a) 1.1 - 0.3 (N-DISC REQ, T-DISC IND) } R-TBR Release of the network connection } b) TCR V1-V2 a) Timeout (T0.3) 0.3 - 0.1 }	Receive TCR {	S-TCR	 {	{
GE1/6 Release of the network connection } a) (T-DISC IND, N-DISC REQ) 1.1 - 0.1	Timeout T1.1 {	Do nothing for time T1.1	{	

}				

Tableau [T14.64], p.

Testing exception conditions from state 2

System calling/testing called

Before each test, a network connection is set up by the system and the tester will:

— R-TCR,

— S-TCA,

— R-TDT.

H.T. [T15.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
GE2/0 Release of the network connection. } a) (T-DISC IND) 2.1 - 0.1 c) Correct response to further tests will indicate that the implementation can return from state 2.1 to state 0.1 }	Recovery from network DISC {	N-DISC REQ	{	
GE2/1 Force an N-RESET IND in the SUT } [R-TDT (CSA)] **vide** **vide** Release of the network connection. } a) (T-DISC IND, N-DISC REQ) 2.1 - 0.1 c) Correct response to further test will indicate that the implementation can return from state 2.1 to state 0.1 }	Recovery from network reset { {	{		
GE2/2 a) 2.1 - 0.3 (N-DISC REQ, T-DIS IND) 0.3 - 0.1 } . Release of the network connection } b) TDT I1-I3 Undefined PDU UD1 }	Receive invalid TPDU {	S-TPDU invalid N-DISC REQ	R-TBR [R-TDT (CSA)] {	{
GE2/3 . [R-TDT (CSA)] Release of the network connection } a) (T-DISC IND, N-DISC REQ) 2.1 - 0.1 b) TBR V1	Receive TBR {	S-TBR	{	

}				

Tableau [T15.64], p.

Normal conditions

System called/tester calling

Before this test, the tester will establish the network connection.

H.T. [T16.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects
DN0 a) 0.1 - 1.1 b) TCR V1-V13 (REP) c) Systems conforming to the 1984-Version may reject TCR V13 }	Receive TCR	S-TCR	
DN1	Send TCA		R-TCA
DN2 a) 2.1 b) TDT V1-V3 (REP) c) RSSP with segmentation is possible. }	Receive TDT	S-TDT (CSS) S-TDT (CDS)	. R-TDT (RSSP
DN3 S-TDT ##N (CSUI/CDUI) S-TDT(CSUI/CDE) }	Receive TDT (with reassembly) R-TDT (RSUI/RDEP)	{ {	
a) 2.1 (with reassembly) - 2.1 b) TDT V1-V2 c) ##N, the number of TDT, is dependent on size of document. At least one TDT without TSDU End Mark should contain between 1 and 127 octets }			
DN4 (Note) Send TDT after session change control }	{ {		
S-TDT (CSCC) S-TDT (RSUI/RDEP) S-TDT (RSCCP) S-TDT (CSE) N-DISC REQ }	{ {		
. R-TDT (RSCCP) R-TDT (CSUI/CDS) R-TDT ##N EM = 0 R-TDT EM = 1 (CSUI/CDUI) R-TDT (CSUI/CDE) R-TDT (CSCC) R-TDT (RSEP) Release of the network connection }	{ {		

a) 2.1 (with segmentation) - 2.1 b) TDT V1-V3 c) ##N is dependent on size of document }			

Note — Test DN4 is only possible if the system under test is capable of requesting change request functions at the session level.

Tableau [T16.64], 16 et 17 regroup´es en un seul tableau p.

Testing exception conditions from state 0.2

System called/Tester calling

Before each test, the tester will set up a network connection.

H.T. [T18.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
DE02/0 Release of the network connection. } a) 0.2 - 0.1 c) Correct response to further tests will indicate that the implementation can return from state 0.2 to state 0.1 }	Recovery from network DISC {	N-DISC REQ	{	
DE02/1 Release of the network connection } b) Any invalid TPDU a) 0.2 - 0.1 }	Receive invalid TPDU {	S-TPDU invalid	{	
DE02/2 a) 0.2 - 0.1 b) TCR V1-V12 c) The system is put into a condition so that it responds with TCC. On some systems it may not be possible to cause the system to generate a TCC. }	Receive unacceptable TCR	S-TCR	R-TCC	{ a) 0.2 - 0.2
DNE02/3 . Release of the network connection }	Timeout T0.2	Do nothing	{	

Tableau [T18.64], p.

Testing exception conditions from state 0.3

System called/tester calling

If T-EXCEPT IND has been implemented, it may not be possible to force the terminal under test (TUT) into state 0.3.

Before each test, the tester will:

— set up a Network connection

— S-TCR,

— R-TCA,

— S-invalid TPDU,

— R-TBR.

H.T. [T19.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
DE03/0 Release of the network connection } a) (N-DISC REQ, T-DISC IND) 0.3 - 0.1 b) Any TPDU c) System should discard TPDU and then timeout }	Receive any TPDU {	S-TPDU	{	
DE03/1 . Release of the network connection. }	Timeout T.03 a) 0.3 - 0.1	Do nothing	{	

Tableau [T19.64], p.

Testing exception conditions from state 1 (transient)

System called/tester calling

Before each test, the tester will:

— set up a network connection,

— S-TCR.

H.T. [T20.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
DE1/0 . Release of the network connection. }	Receive invalid TPDU a) 0.3 - 0.1	S-TPDU N-DISC REQ	[R-TCA] R-TBR {	b) Any invalid TPDU a) 1 - 0.3

Tableau [T20.64], p.

Testing exception conditions from state 2

System called/tester calling

Before each test, the tester will:

— set up a network condition,

— S-TCR,

— R-TCA.

H.T. [T21.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
DE2/0 Release of the network connection } a) 2.1 - 0.1 c) Correct response to further tests will ensure that the implementation can return from state 2.1 to state 0.1 }	Recovery from network DISC {	N-DISC REQ	{	
DE2/1 Force an N-RESET IND in the SUT } Release of the network connection } a) (T-DISC IND, N-DISC REQ) 2.1 - 0.1 c) Correct response to further tests will ensure that the implementation can return from state 2.1 to state 0.1 }	Recovery from network reset { {	{		
DE2/2 S-TPDU invalid N-DIS REQ } . R-TBR Release of the network connection } a) 2.1 - 0.3 (N-DIS IND, T-DISC IND) 0.3 - 0.1 b) Any invalid TPDU. }	Receive invalid TPDU { {	{		
DE2/3 b) TBR V1 a) (T-DISC IND, N-DISC REQ) }	Receive TBR	S-TBR	N-DISC IND	{ a) 2.1 | (hy | .1

Tableau [T21.64], p.

B.2.1 *Extended addressing tests (EAD) for T.70: Test for systems and multi-terminal configurations which support transport extended addressing*

System calling/testing called

Before each test, the system will establish network connection.

H.T. [T22.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
AG/0 Ability to correctly encode extended addresses } . S-TCA (EAD = TCR EAD) } R-TCR (EAD) System enters data phase } a) 0.2 - 1.1 a) 1.1 - 2.1 b) TCA V5 }	{ { { {			
AG/1 Ability to accept TCAs containing different EAD from that requested in TCR (redirection acceptable) } R-TCR (EAD) System enters data phase } a) 0.2 - 1.1 c) This test is only possible if the system allows the operator to indicate that redirection is acceptable a) 1.1 - 2.1 b) TCA V1, V4 (REP) }	{ S-TCA (EAD <> TCR EAD) {			
AG/2 Ability to reject TCAs containing different EAD from that requested in TCR (redirection unacceptable) } R-TCR (EAD) Release of the network connection } a) 0.2 - 1.1 b) TCA V1, V4 c) This test is only possible if the system allows the operator to indicate that redirection is unacceptable a) 1.1 - 2.1 c) Before the test the system shall be set up to reject redirection	{ S-TCA (EAD <> TCR EAD) {			

}				

Tableau [T22.64], p.

Multi-terminal configurations only

Multi-terminal configuration (MUT) called/tester calling

Before each test, the system will establish network connection.

H.T. [T23.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
MDA/0 a) 0.2 - 1.1 b) See Table B-1/T.64 c) See Table B-1/T.64 }	Ability to accept TCR	S-TCR	R-TCA	{ a) 1.1 - 2.1

Tableau [T23.64], p.

H.T. [T24.64]

TABLE B-1/T.64

Valid responses for the test MDA/0

TPDUs used in basic T.70 list	Comments	Valid responses
TCR V9 TCA V1 or TCA V2 or TCA V4 or TCA V6 **or** }	1 EAG	{
TCR V4 TCR V5 TCR V7 Available EAG Available EAG Only possible if an available EAG > 3 digits exists }	{ TCA V3 or TCA V5	

Tableau [T24.64], p.

Multi-terminal configurations only

multi-terminal configuration (MUT) called/Tester calling

Before each test, the system will establish network connection.

H.T. [T25.64]

1 Test No. a) State diagram route in the system b) TPDUs sent by the tester c) Comments }	2 Type of test	3 Tester action	4 Tester detects	5 {
MDA/1 Ability to redirect a TCR or Respond with TCC } a) 0.2 - 1.1 b) See Table B-2/T.64 c) See Table B-2/T.64 }	{ S-TCR	. R-TCA	{ 	

Tableau [T25.64], p.

H.T. [T26.64]

TABLE B-2/T.64

Valid responses for the test MDA/1

TPDUs used in basic T.70 list	Comments	Valid responses
TCR V4 TCR V7 TCA V4 or TCC V1 or TCC V4 or TCC V5 **or** }	Non-existing EAD	{
TCR V4 Existing EAD but busy or out of order } TCA V4 or TCC V1 or TCC V2 or TCC V3 or TCC V5 **or** }	{ {	

Tableau [T26.64], p.

ANNEX C
(to Recommendation T.64)

C.1 *T.62 Session protocol data unit (SPDU) list*

H.T. [T27.64]

{
<CSS> Session protocol element
}

		Session reference				Non basic session cap.						
Command session start			Term. ID	Date and time	Add. ref.		Misc. cap.	Window	Service ID	Inactive timer	Sess	

Tableau [T27.64], p. A l'ITALIENNE

H.T. [T28.64]

{
<CSS> Session protocol element
}

		Session reference				Non basic session cap.						
Command session start			Term. ID	Date and time	Add. ref.		Misc. cap.	Window	Service ID	Inactive timer	Sess	

Tableau [T28.64], P. A l’ITALIENNE

H.T. [1T29.64]

{
<RSSP> Session protocol element
}
Unable to convert table

Tableau [1T29.64], p. A l'ITALIENNE

H.T. [2T29.64]

{
<RSSP> Session protocol element
}
Unable to convert table

Tableau [2T29.64], p. A l'ITALIENNE

H.T. [1T30.64]

{
<RSSP> Session protocol element
}
Unable to convert table

Tableau [1T30.64], p. A l'ITALIENNE

H.T. [2T30.64]

{
<RSSP> Session protocol element
}
Unable to convert table

Tableau [2T30.64], p. A l'ITALIENNE

H.T. [1T31.64]

{
<RSSN> Session protocol element
}

{		Session reference	Non basic s. cap. Term. ID	Service ID Data and time	Session service funct. Add. Ref.	Reason	Non basic term. capabilities Misc. cap.	Sessio W

Tableau [1T31.64], p. A l'ITALIENNE

H.T. [2T31.64]

{
<RSSN> Session protocol element
}

{		Session reference	Non basic s. cap. Term. ID	Service ID Date and time	Session service funct. Add. Ref.	Reason	Non basic term. capabilities Misc. cap.	Sessio W

Tableau [2T31.64], p. A l'ITALIENNE

H.T. [T32.64]
Session protocol element

<RSEP>		

Command session end
Response session end positive
 	
}
{
Tester sends
↓ (Testcase)
}
.
PI
LI
PV
1
X
X
1
X
X
OPTIONAL
}
Tester sends
↓ (Testcase)
}
	
	C I LI 0 X 9 X
	
	R I LI 0 0 A 0
		Session termination P
		
		{
		
		{
				{	

V 1 Without parameter	0 0 9 0	—		V 1 Standard	0 0 A 0
V 2 With P 11 retain xport	. 0 0 9 3	. 1 0 0 1 1 0		V 2 3 octet LI	*** 0 F00 A F00

{
V 3
With P 11 but release xport
}
	
	0 0 9 3
		
		1 0 0 1 1 1			

V 4 With PLI = 0	. 0 0 9 2	***** 1 0 (—) 1 0			
I 1 CLI error	* 0 0 9 5	* —		I 1 RLI error	* 0 0 A 5
I 2 PLI error	. 0 0 9 3	* 1 0 0 1 2 0			

Tableau [T32.64], p.

H.T. [T33.64]
Session protocol element

<RSAP>		

Command session abort
Response session abort positive
 	
}
{
Tester sends
↓ (Testcase)
}
.
PI
LI
PV
1
X
X
1
X
X
M
M
M
}
Tester sends
↓ (Testcase)
}
	C I LI 1 X 9 X
	
	R I LI 1 0 A 0
		Session termination P
		
		{
		
		{
				{
				
				V 1 Normal
					1 0 A 0

V 1 With P 11	1 0 9 3	1 0 0 1 1 0			
V 2 Other PV	. 1 0 9 3	. 1 0 0 1 1 5		V 2 With 3 octet LI	*** 1 F00 A F00
V 3 With 3 octet LI	1 0 9 5	1 F00 0 1 F01 1			

Tableau [T33.64], p.

H.T. [T34.64]
Session protocol element

<RSCCP>				

{
Command session change control
 	
}
Response session change control positive
 	
}
{
Tester sends
↓ (Testcase)
}
Tester sends
↓ (Testcase)
}
	C I LI 1 0 5 0
	
	R I LI 1 0 6 0
			{
			
			{	

V 1 Standard	1 0 5 0		V 1 Standard	1 0 6 0
V 2 3 octet LI	1 F00 5 F00		V 2 3 octet LI	1 F00 6 F00
I 1 LI error	* 1 0 5 1		I 1 LI error	* 1 1 6 1

Tableau [T34.64], p.

H.T. [T35.64]
Session protocol element

<RSUI>		

{
Command session user information
 	
}
		{
		Document protocol element (DPE)
		}			

{
Response session user information
 	
}
		Request session function	{		

Document protocol element (DPE)
}
{
Tester sends
↓ (Testcase)
}
	C I LI 0 0 1 0	{			

.
X
X
XXXX
X
X
XXXX
M
M
M
}
		{
		Tester sends
		↓ (Testcase)
		}
			R I LI 0 X 2 X	{	

.
PI
LI
PV
1
X
X
0
X
X
}
	{
	.
	X
	X
	XXXX
	X
	X
	XXXX
	M
	M
	M
	}				

V 1 With DPE V1 With parameter and user info. }	0 0 1 0 0 0 2 3	DPE depends on L.6 state 1 0 0 0 1 1	DPE depends on L.6 state	{ 	
V 2 LI 3 octet	0 F00 1 F00	DPE depends on L.6		V 2 Without parameter	0 0
	V 3 LI 3 octet	0 0 2 9	1 F00 0 0 F01 1	DPE depends on L6 state	
	V 4 With undef. PV	0 0 2 3	1 0 0 0 1 5	DPE depends on L.6 state	
***** I 1 LI not eq. 0	* 0 0 1 3	{			

* DPE depends on L.6 state } * DPE depends on L.6 state }		* I 1 RLI error	* 0 0 2 4	* 1 0 0 0 1 2	{
	I 2 PLI error	0 0 2 3	1 0 0 0 2 1	DPE depends on L.6 state	

Tableau [T35.64], p.

H.T. [T36.64]

{
<CDS> Document protocol element
}

Command document start		Service interw. ID	Document reference number	Document type ID		Graph. char.	Control char.

Tableau [T36.64], p. A l'ITALIENNE

H.T. [T37.64]

{
<CDS> Document protocol element
}

Command document start		Service interw. ID	Document reference number	Document type ID		Graph. char.	Control char.

Tableau [T37.64], p. A l'ITALIENNE

H.T. [T38.64]

{
<CDC> Document protocol element
}

[Unable to convert Table]

Tableau [T38.64], p. A l'ITALIENNE

H.T. [T39.64]
Document protocol element

<RDEP>		

Command document end Response document end positive		Checkpoint reference number	{
}		Checkpoint reference number	
{ Tester sends ↓ (Testcase)			
}	. CI LI 2 0 9 X	{	
. PI LI PV 2 0 0 A X X M M M			
}		{	
Tester sends ↓ (Testcase)			
}	. RI LI 2 X A X	{	
. PI LI PV 2 X 3 A X X M M M			
}			
{ V 1 CRN = 1, after CDS or last CRN+1			
}	2 0 9 X	2 0 3 3 3 A X X X X X	{
V 1 CRN length and PV equal to CDE			
}	2 X A X	2 X 3 3 3 3 A X X X X X X	
{ . V 2 LI three octets			
}	. 2 0 9 X	{	
. 2 F00 3 3 3 A F03 X X X			

}		{		
.				
V 2				
CRN PV equal to CDE, length not equal				
}	. 2 X A X	{		
* *				
*				
*				
*				
*				
2				
X				
3				
3				
3				
3				
A				
X				
X				
X				
X				
X				
}				
	V 3 LI three octets	2 X A X	2 F00 3 3 3 A F03 X X X	
. I 1 CLI error	* 2 E 9 E	{		
.				
2				
0				
3				
3				
3				
A				
X				
X				
X				
X				
}		. I 1 CLI error	* 2 E A E	{
.				
2				
0				
3				
3				
3				
A				
X				
X				
X				
X				
}				
. I 2 PLI error	. 2 X 9 X	* 2 E 3 3 3 A E X X X		. I 2 PLI error . 2
. I 3 Incorrect CRN	. 2 X 9 X	* * * 2 X 3 3 3 A X E E E		{
.				
I 3				
Sequencing of CRN incorrect				
}	. 2 X A X	* * * 2 X 3 3 3 A X E E E		
{				
.				
I 4				
Missing mand. parameter				
}	. 2 0 9 0	********** —		{
.				

I 4 Missed mand. parameter }	. 2 0 A 0	********** —			
. I 5 Mand. PLI = 0	. 2 0 9 2	******** 2 0 (—) A 0		. I 5 Mand. PLI = 0	. 2

{
.
I 6
Non T.61 coded CRN
}
.
I 6
Non T.61 coded CRN
}
	. 2 0 9 X
	
	. 2 0 A X
		* * * 2 0 0 0 0 A 3 1 2 3
		
		* * * 2 0 0 0 0 A 3 1 2 3
				{	

Tableau [T39.64], p.

H.T. [T40.64]
Document protocol element

<CDD>		

{
Command document resynchronise
 	
}
Command document discard
 	
}
{
Tester sends
↓ (Testcase)
}
.
PI
LI
PV
3
0
0
2
1
X
}
Tester sends
↓ (Testcase)
}
.
PI
LI
PV
3
0
0
2
1
X
}
	.CI LI 1 0 9 X
	
	.CI LI 3 X 9 X
		Reason
		
		Reason
		
		{
		
		{
				{		

V 1 With param.	1 0 9 3	3 0 0 2 1 0		V 1 With param.	3 0 9 3	3 0 0 2 1 3
V 2 Without parameter	1 0 9 0	—		V 2 Without parameter	3 0 9 0	—

Tableau [T40.64], p.

H.T. [T41.64]
Document protocol element

<RDDP>				

{
Response document resynchronise positive
 	
}
Response document discard positive
 	
}
{
Tester sends
↓ (Testcase)
}
Tester sends
↓ (Testcase)
}
	I RI LI 1 0 A 0
	
	I RI LI 3 0 A 0
			{
			
			{	

V 1 Normal	1 0 A 0		V 1 Normal	3 0 A 0
V 2 LI three octets	1 F00 A F00		V 2 LI three octets	3 F00 A F00

Tableau [T41.64], p.

H.T. [T42.64]

{
Document protocol element
}

<RDPBP>	<RDPBN>			

{
Command document page boundary

} Checkpoint reference number {
Response document page boundary positive

} Checkpoint reference number Receive ability jeopard.
Response document page boundary negative

} Reason
{
Tester sends
↓ (Testcase)
} . CI LI 3 0 1 X {
.
PI
LI
PV
2
0
0
A
X
X
M
M
M
} {
Tester sends
↓ (Testcase)
} . RI LI 3 X 2 X {
.
PI
LI
PV
2
X
3
A
X
X
M
M
M
} {
.
PI
LI
PV
2
X
X
E
X
X
M
M
M
} {
Tester sends
↓ (Testcase)
} . RI LI 3 0 0 X {

.
PI
LI
PV
3
0
0
2
1
X
}

{
V 1
CRN = 1 after CDS or last CRN+1
}

3 0 1 X

2 0 3 3 3 A X X X X X

{
V 1
CRN length and PV equal to CDPB
}

3 X 2 X

2 X 3 3 3 3 A X X X X X X

2 0 0 E 1 0

V 2 LI three octets

. 3 F00 1 F05

{
.
2
0
3
3
3
A
3
X
X
X
}

{
V 2
CRN PV equal CDPB, length not equal
}

. 3 X 2 X

{
* *
*
*
*
*
2
X
3
3
3
3
A
X
0
X
X
X
}

. 2 0 0 E 1 0

V 2 LI three octets

. 3 0 0 5

V 3 LI three octets

. 3 X 2 X

*** 2 F00 3 3 3 A F03 X X X

. 2 0 0 E

V 4 Parameter 2 E set to 1

3 X 2 X

2 X 3 3 3 A X X X X X

2 0 0 E 1

I 1 CLI error

* 3 E 1 E

{
.
2
0
3
3
3
A

X X X X } . 2 0 3 3 3 A X X X X		I 1 PLI error	* 3 E 2 E	{

}
I 2 PLI error
{
I 3
Sequencing of CNR incorrect
	. 2 0 0 E 1 1
	. 3 X 1 X
		* 2 E 3 3 3 A E X X X		I 2 PLI er

} I 4 Missed mand. parameter . 2 X 3 3 3 A X X X X	. 3 X 1 X . 3 0 1 0	* * * 2 X 3 3 3 A X E E E ********** —		I 3 Incorr I 4 Misse
} I 5 Mand. PLI = 0 . 2 0 3 3 3 A 3 X X X	********** — . 3 0 1 2	******** 2 0 (—) A 0		I 5 Mand.
}	***** 2 0 (—) E 0			

Tableau [T42.64], p.

H.T. [T43.64]

{
<CDCL> Document protocol element
}

{				{	Graph. char.	Control char.	Page format	Misc. t. cap.	Charact. box height	Charac

Tableau [T43.64], p. A l'ITALIENNE

H.T. [T44.64]

{
<RDCLP> Document protocol element
}

{					{	Graph. char.	Control char.	Page format	Misc. t. cap.	Charact. box height

Tableau [T44.64], p. A L'ITALIENNE

H.T. [T45.64]

{
<RDCLP> Document protocol element
}

{					{	Graph. char.	Control char.	Page format	Misc. t. cap.	Charact. box height

Tableau [T45.64], p. A l'ITALIENNE

H.T. [T46.64]
Document protocol element

<RDGR>		

{
Command document user information
 	
}
Response document general reject
 	
}
{
Tester sends
↓ (Testcase)
}
Tester sends
↓ (Testcase)
}
.
PI
LI
PV
3
X
X
1
X
X
M
M
M
}
	
	. CI LI 0 0 1 0
	
	. RI LI 0 X 0 X
		
		Correct user info.
		
		Reflect parameter values
		
		. XXXXXXXX XXXXXXXX
		
		{
				{
				
				{		

V 1 Normal	0 0 1 0	XXXXXXXX XXXXXXXX		V 1 With parameter	0 X 0 X	3 0 X 1 1 X
V 2 LI three octets	*** 0 F00 1 F00	. XXXXXXXX XXXXXXXX		V 2 With parameter	. 0 X 0 X	. 3 X (X) 1 X
I 1 CLI not equal 00 I 2 Without user inform.	* 0 E 1 E . 0 0 1 0	. XXXXXXXX XXXXXXXX ******** —				

Tableau [T46.64], p.