

The drawings contain in this Recommendation have been done in Autocad.

Recommendation Q.783

TUP TEST SPECIFICATION

1 Introduction

This Recommendation contains a set of detailed tests for the Signalling System No. 7 Telephony User Part (TUP). These tests are intended to validate the protocol specified in Q.721–Q.724 Recommendations. This Recommendation conforms to Q.780 Recommendations which describes the basic rules of the test specification.

2 General principles of TUP tests

The TUP tests aim at testing TUP protocol conformance in a given implementation. The tests are described as “Validation” tests or “Validation” and “Compatibility” tests. Each test description indicates in the field “type of test” whether the test is “Validation” or “Validation” and “Compatibility”. As the TUP also describes the required call control actions resulting from TUP message transfer the TUP tester also checks the result of those call control actions, e.g. that speech/information transfer is possible.

3 Test configuration

A stable signalling relation is required between “SP A” and “SP B” in order to effectively test the TUP. In addition telephony circuits are required for some of the tests.

4 TUP test list

All tests may be validation tests. Tests marked “*” are compatibility tests. Tests marked “fs” are for further study.

1 *Circuit supervision*

* 1.1 Non allocated circuits

1.2 Reset of circuits

1.2.1

RSC received on an idle circuit

1.2.2

RSC sent on an idle circuit

1.2.3

Group reset received

1.2.4

Group reset sent

1.3 Blocking of circuits

1.3.1

Group blocking/unblocking

1.3.1.1
HGB received

1.3.1.2
HGB sent

* 1.3.1.3
MGB received

* 1.3.1.4
MGB sent

1.3.2
Circuit blocking/unblocking

* 1.3.2.1
BLO received

* 1.3.2.2
BLO sent

* 1.3.2.3
Circuit blocking from both ends; removal of blocking from one end

1.3.2.4
Interruption for FDM circuits

1.4 Continuity check test call

* 1.4.1
CCTC received: successful

* 1.4.2
CCTC sent: successful

1.4.3
CCTC received: unsuccessful

1.4.4
CCTC sent: unsuccessful

1.5 Receipt of unreasonable signalling information

1.5.1
Received

2 *Normal call set-up*

2.1 Both way circuit selection

* 2.1.1
IAM sent by controlling SP

* 2.1.2
IAM sent by non controlling SP

- 2.2 Called address sending
 - * 2.2.1
“en bloc” operation
 - * 2.2.2
Overlap operation
 - 2.3 Successful call set-up
 - 2.3.1
Ordinary call (with various ACM and ANS)
 - * 2.3.2
Call switched via satellite
 - * 2.3.3
Test for echo suppressor call set-up
 - * 2.3.4
Blocking and unblocking during a call (initiated)
 - * 2.3.5
Blocking and unblocking during a call (received)
- 3 *Normal call release*
 - * 3.1 Calling party clears: before ACM
 - * 3.2 Calling party clears: before ANS
 - * 3.3 Calling party clears: after ANS
 - * 3.4 Calling party clears: after CLEAR BACK
 - * 3.5 Reanswer
- 4 *Unsuccessful set-up*
 - 4.1 SEC
 - 4.1.1
SEC received
 - 4.1.2
SEC sent
 - 4.2 CGC
 - 4.2.1
CGCreceived
 - 4.2.2
CGC sent
 - 4.3 NNC

- 4.3.1
NNC received
- 4.3.2
NNC sent
- 4.4 ADI
 - * 4.4.1
ADI received
 - * 4.4.2
ADI sent
- 4.5 CFL
 - 4.5.1
CFL received
 - 4.5.2
CFL sent
- 4.6 SSB
 - * 4.6.1
SSB received
 - * 4.6.2
SSB sent
- 4.7 UNN
 - * 4.7.1
UNN received
 - * 4.7.2
UNN sent
- 4.8 LOS
 - 4.8.1
LOS received
 - 4.8.2
LOS sent
- 4.9 SST
 - 4.9.1
SST received
 - 4.9.2
SST sent
- 4.10 ACB

4.10.1
ACB received

4.10.2
ACB sent

4.11 DPN

4.11.1
DPN received

4.11.2
DPN sent

5 *Abnormal situation during a call*

5.1 Inability to release in response to a CLF

5.2 Inability to release in response to a backward signal

5.3 Timers

5.3.1
T2

5.3.2
T3

5.3.3
T4

5.3.4
T5

5.3.5
T6

* 5.3.6
ANS signal not received (Q.118 Timer)

* 5.3.7
Delay in clearing by calling party (Q.118 Timer)

5.4 Reset of circuits during a call

5.4.1
Of an outgoing circuit

5.4.2
Of an incoming circuit

5.5 Receipt of unreasonable signalling information

5.5.1
(Now test No. 1.5.1)

fs 5.5.2
Received

 5.6 Interruption of signalling relation

6 *Special call set-up*

 6.1 Continuity check call

* 6.1.1
COT applied on an outgoing circuit

* 6.1.2
COT applied on previous circuit

* 6.1.3
COT on a satellite circuit

 6.1.4
Calling party clears during a COT

* 6.1.5
Delay of through connect

 6.1.6
COT unsuccessful

 6.1.7
COT received on incoming circuit

 6.2 Automatic repeat attempt

 6.2.1
Dual seizure

 6.2.2
Circuit reset

 6.2.3
Reception of unreasonable signal information

* 6.2.4
Blocking of the circuit

 6.2.5
Continuity check failure

 6.3 Dual seizure

 6.3.1
Dual seizure for controlling side

7 *Supplementary services*

fs 7.1 CUG

- fs 7.2 User access to the calling line identity
- fs 7.3 User access to the called line identity
- fs 7.4 Redirection of calls
- fs 7.5 CCBS
- fs 7.6 Network access to calling line identity

8 *Performance tests*

Note – For further study.

Fig. 1/Q.783 /T1109850-88 = 1 cm

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE: To verify that on receipt of a CIC relating to a circuit which does not exist, SP A will discard the message and alert maintenance personnel

PRE-TEST CONDITIONS:

circuit that does not exist between SP A and SP B

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

SP

<-----

IAM

TEST DESCRIPTION

1.

Arrange for SP B to send an initial address message.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

4.

CHECK C:

.

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE: Reset of circuits

SUBTITLE:

PURPOSE:
release guard signal

PRE-TEST CONDITIONS:
The circuit is idle

CONFIGURATION:

TYPE OF TEST:

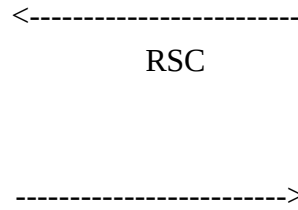
TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP
A

SP
B

RLG



TEST DESCRIPTION

1.

Arrange for SP B to send a reset-circuit signal.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

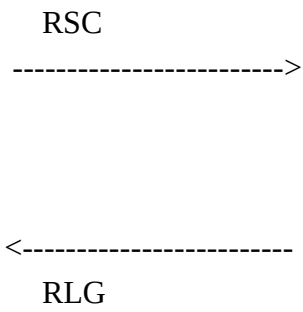
TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP
A

SP
B



TEST DESCRIPTION

1.

Arrange for SP A to send a reset-circuit signal.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE: To verify that on receipt of two circuit group reset messages within a period of 5 seconds, SP A will respond by sending a circuit reset acknowledge message

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP
A

SP
B

<-----
GRS

<-----
GRS

GRA

----->

TEST DESCRIPTION

1.

Arrange for SP B to send two circuit group reset messages within a period of 5 seconds.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

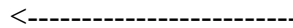
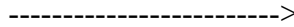
SP
A

SP
B

GRS



GRS



GRA

TEST DESCRIPTION

1.

Arrange for SP A to send two circuit group reset messages within a period of 5 seconds.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:
initiated

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP
A

SP
B

<-----

HGB

HBA

<-----
HGB

----->

<-----
HGU

<-----
HGU

HUA

----->

TEST DESCRIPTION

1.

Arrange for SP B to send two hardware failure oriented group blocking messages within a period of 5 seconds.

Record the message sequence using a signal monitor.

2.

CHECK A: VERIFY THAT A CALL CAN ONLY BE ORIGINATED FROM SP B ON THE CIRCUITS INDICATED BY THE RANGE FIELD IN THE HGB MESSAGE

3.

Arrange for SP B to send two hardware failure oriented group unblocking messages within a period of 5 seconds.

4.

CHECK B: VERIFY THAT A CALL CAN BE ORIGINATED FROM EITHER SP ON THE CIRCUITS INDICATED BY THE RANGE FIELD

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE: To verify that SP A is able to generate both hardware failure oriented group blocking messages and hardware failure oriented group unblocking messages

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

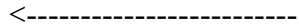
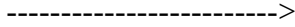
SP
A

SP
B

HGB

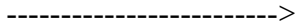


HGB

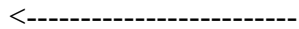
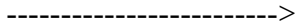


HGB

HGU



HGU



HUA

TEST DESCRIPTION

1.

Arrange for SP A to send two hardware failure oriented group blocking messages within a period of 5 seconds.

Record the message sequence using a signal monitor.

2.

CHECK A: VERIFY THAT A CALL CAN ONLY BE ORIGINATED FROM SP A ON THE CIRCUITS INDICATED BY THE RANGE FIELD IN THE HGB MESSAGE

3.

Arrange for SP A to send two hardware failure oriented group unblocking messages within a period of 5 seconds.

4.

CHECK B: VERIFY THAT A CALL CAN BE ORIGINATED FROM EITHER SP ON THE CIRCUIT INDICATED BY THE RANGE FIELD

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:
initiated

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP
A

SP
B

<-----
MGB

<-----
MGB

MBA

----->

<-----
MGU

<-----
MGU

MUA

----->

TEST DESCRIPTION

1.

Arrange for SP B to send two maintenance oriented group blocking messages within a period of 5 seconds.
Record the message sequence using a signal monitor.

2.

CHECK A: VERIFY THAT A CALL CAN ONLY BE ORIGINATED FROM SP B ON THE CIRCUITS INDICATED BY THE RANGE FIELD IN THE MGB MESSAGE

3.

Arrange for SP B to send two maintenance oriented group unblocking messages within a period of 5 seconds.

4.

CHECK B: VERIFY THAT A CALL CAN BE ORIGINATED FROM EITHER SP ON THE CIRCUITS INDICATED BY THE RANGE FIELD

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE: To verify that SP A is able to generate both maintenance oriented group blocking messages and maintenance oriented group unblocking messages

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

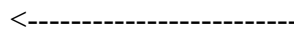
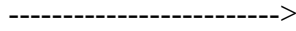
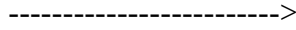
EXPECTED MESSAGE SEQUENCE:

SP
A

SP

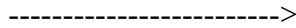
MGB

MGB

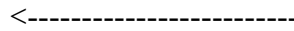
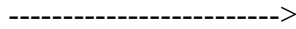


MGA

MGU



MGU



MUA

TEST DESCRIPTION

1.

Arrange for SP A to send two maintenance oriented group blocking messages within a period of 5 seconds.

Record the message sequence using a signal monitor.

2.

CHECK A: VERIFY THAT A CALL CAN ONLY BE ORIGINATED FROM SP A ON THE CIRCUITS INDICATED BY THE RANGE FIELD IN THE MGB MESSAGE

3.

Arrange for SP A to send two maintenance oriented group unblocking messages within a period of 5 seconds.

4.

CHECK B: VERIFY THAT A CALL CAN BE ORIGINATED FROM EITHER SP ON THE
CIRCUIT INDICATED BY THE RANGE FIELD

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

SP

<-----

BLO

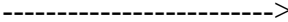
BLA

----->

<-----

UBL

UBA



TEST DESCRIPTION

1.

Arrange for SP B to send a blocking signal.
Record the message sequence using a signal monitor.

2.

CHECK A:

CIRCUIT

3.

Arrange for SP B to send an unblocking signal.

4.

CHECK B: VERIFY THAT A CALL CAN BE ORIGINATED FROM EITHER EXCHANGE
ON THIS CIRCUIT

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

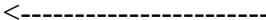
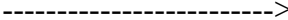
TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

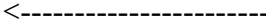
SP

BLO



BLA

UBL



UBA

TEST DESCRIPTION

1.

Arrange for SP A to send a blocking signal.
Record the message sequence using a signal monitor.

2.

CHECK A:

CIRCUIT

3.

Arrange for SP A to send an unblocking signal.

4.

CHECK B:

CIRCUIT

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

SP

BLO

----->

<-----

BLA

<-----

BLO

BLA

----->

UBL

----->

<-----

UBA

<-----

UBL

UBA

----->

TEST DESCRIPTION

1.

Arrange for SP A to send a blocking signal.
Record the message sequence using a signal monitor.

2.

CHECK A:

CIRCUIT

3.

Arrange for SP B to send a blocking signal.

4.

CHECK B:

EITHER SP

5.

Arrange for SP A to send an unblocking signal.

6.

CHECK C:

7.

Arrange for SP B to send an unblocking signal.

8.

CHECK D:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:
be sent

PRE-TEST CONDITIONS:
FDM

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

SP

BLO

----->

<-----

BLA

UBL

----->

<-----

UBA

TEST DESCRIPTION

1.

Arrange for the reception of the pilot signal at SP A to be interrupted more than 4–15 seconds.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

Arrange for the interruption of the pilot tone to be terminated.

4.

CHECK B: CONFIRM THAT A CALL CAN BE INITIATED BY EITHER SP AFTER A PERIOD OF 4-15 SECONDS

5.

CHECK C:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE: To verify th

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

SP

SP

< _____
CCR

|-----
Check tone

< _____
CLF

RLG

_____>

TEST DESCRIPTION

1.

Initiate the continuity test call procedure at SP B.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

TUP LEVEL 4 TEST SPECIFICATION

TEST NUMBER:

REFERENCE:

TITLE:

SUBTITLE:

PURPOSE:

PRE-TEST CONDITIONS:

CONFIGURATION:

TYPE OF TEST:

TYPE OF SP:

EXPECTED MESSAGE SEQUENCE:

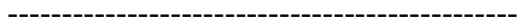
SP

SP

CCR



Check Tone



CLF



RLG

TEST DESCRIPTION

1.

Initiate the continuity test call procedure at SP A.
Record the message sequence using a signal monitor.

2.

CHECK A:

3.

CHECK B:

