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SPECIFICATIONS OF SIGNALLING SYSTEM No. 7

USER-NETWORK-INTERFACE TO USER-NETWORK-INTERFACE COMPATIBILITY TEST SPECIFICATIONS FOR ISDN, NON-ISDN AND UNDETERMINED ACCESSES INTERWORKING OVER INTERNATIONAL ISUP

ITU-T Recommendation Q.788

(Previously "CCITT Recommendation")

FOREWORD

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

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation Q.788 was prepared by ITU-T Study Group 11 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 7th of February 1995.

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NOTE

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

CONTENTS

SUMMARY

This Recommendation contains the User-Network-Interface (UNI) to UNI testing principles and test specifications for interworking ISDN, Non-ISDN, and Undetermined accesses over international ISUP. The test specifications are based upon Recommendations Q.699 (*Blue Book*), Q.767, Q.931 (*Blue Book*), and the Q.950-Series of Recommendations (1992 versions).

USER-NETWORK-INTERFACE TO USER-NETWORK-INTERFACE COMPATIBILITY TEST SPECIFICATIONS FOR ISDN, NON-ISDN AND UNDETERMINED ACCESSES INTERWORKING OVER INTERNATIONAL ISUP

(Geneva, 1995)

1   Introduction

This Recommendation contains User-Network-Interface (UNI) to User-Network-Interface test specifications required to verify the overall compatibility of ISDN, non-ISDN and undetermined accesses interworking over international ISUP between two networks.

For the purposes of this Recommendation, the following definitions apply:

1.1   ISDN access: Access using DSS 1 interworking directly with ISUP.

1.2   non-ISDN access: Access using any signalling protocol other than DSS 1 interworking directly with ISUP.

1.3   undetermined access: Any type of access (ISDN or non-ISDN) interworking with ISUP over a non-ISDN network.

UNI to UNI testing will assure that for each bit and octet of feature request that passes between an ISDN subscriber and the local exchange equivalent information must be passed across the international Q.767 interface. Therefore, the compatibility testing boundaries are extended beyond the existing ISC's international ISUP (see Recommendation Q.767) interfaces as currently specified in Recommendations Q.784 and Q.785. Furthermore, those Recommendations do not cover the interworking between ISDN, non-ISDN and undetermined access signalling. As ISUP (see Recommendation Q.767) is implemented, testing to ensure the integrity of undetermined access and other embedded capabilities is also required.

The test specifications in this Recommendation do not attempt to verify the interoperability of Terminal Equipment (TE) or to replace End-to-End service testing.

It is assumed that DSS 1 and ISUP customer acceptance, and protocol validation testing (see Recommendations Q.784 and Q.785 for ISUP) of each network have been successfully completed. ISC to ISC circuit supervision testing per Recommendation Q.784 is also a prerequisite to these UNI to UNI compatibility tests.

A given test specification from this Recommendation is only applicable when both networks can provide the information requested by the test. Otherwise, the test is limited to verifying the proper call disposition.

2   Objective of the test specification

The objective of these test specifications is to assure the compatibility of the protocol mappings and call control in a user-to-user ISDN/non-ISDN/undetermined access signalling relation, i.e. Network A access (ISDN, non-ISDN, undetermined), Network A transit ISUP (see Recommendation Q.764 or equivalent), International ISUP (see Recommendation Q.767), Network B transit ISUP (see Recommendation Q.764 or equivalent), and Network B access (ISDN, non-ISDN, undetermined). These test specifications are based on Recommendations Q.699 (*Blue Book*), Q.767, Q.931 (*Blue Book*), and the Q.950-Series of Recommendations (1992 versions). Call control and transmission, as well as signalling protocols, are integral parts of the tests.

As currently specified, the ISUP protocol contains many implementation choices, with optional parameters and even within mandatory parameters. Given that it is unlikely that two Administrations have made the same implementation choices, testing must be performed to check the compatibility of the implementations. The national access protocols can be even more disparate. Many administrations have access protocols based on earlier versions of Recommendations Q.931-Q.932. The mapping of signalling information from UNI to UNI to meet Recommendation Q.767 and to accommodate interworking signalling protocols is partially addressed in Recommendation Q.699.

In order to ascertain that these test specifications meet the above objectives, the following criteria are used:

1) All tests should add value in meeting the objective above. For examples, the testing of timers of which the only function is to alert maintenance staff on expiration may not be useful.

2) These test specifications are not intended to provide exhaustive testing of all aspects of the signalling relation.

3) The proposed compatibility test specifications for interworkings between ISDN, non-ISDN, and undetermined accesses over international ISUP assume that each DSS 1 access implementation is equivalent to Recommendation Q.931, each transit ISUP implementation is modelled after Recommendation Q.764, and the International ISUP follows Recommendation Q.767.

4) Test specifications are arranged in four sections. The first section contains ISDN basic call control. The second section contains ISDN supplementary services. The third contains undetermined access interworking. The last section contains non-ISDN access interworking.

3   Scope of UNI to UNI compatibility testing

The compatibility testing principle is to test from UNI to UNI. It verifies that signalling information is mapped correctly octet by octet during interworking between national accesses, national networks, and international network protocols. See Figure 1.
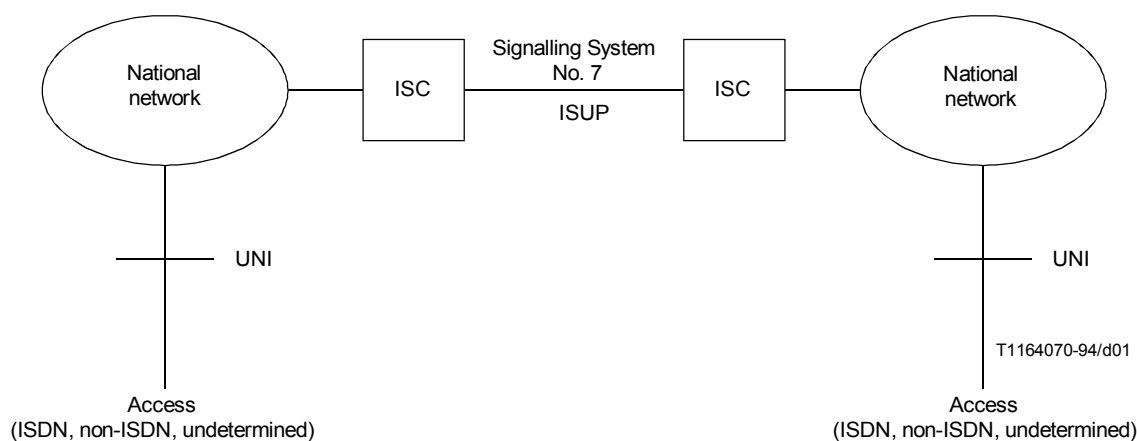

FIGURE 1/Q.788

Model UNI to UNI test network

The testing is initiated by generating appropriate stimuli by an access tester at the UNI (e.g. DSS 1 S/T interface) and monitoring resulting message signalling unit traffic on each of the components of the signalling relation. Simulators or TE may be used to generate the appropriate stimuli needed for each test.

When there are multiple possible message flows for a test, the possible variations are labelled case a, case b, etc.

4 Test environments

This clause shows the six test configurations referenced in the individual test specifications.

In each figure above, * indicates a component of the signalling relation where ISUP/DSS 1 messages can be verified. (*) indicates a component of the signalling relation where DSS 1 messages may be verified.
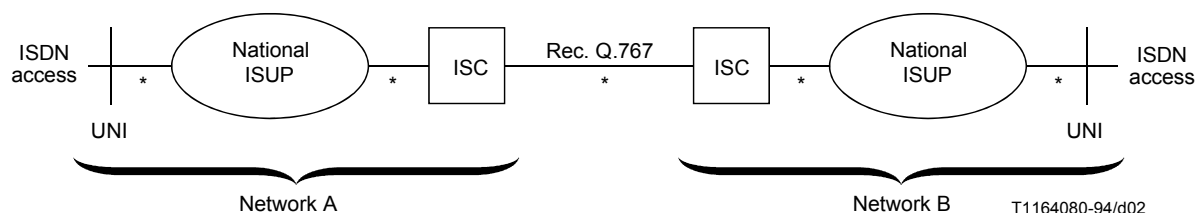

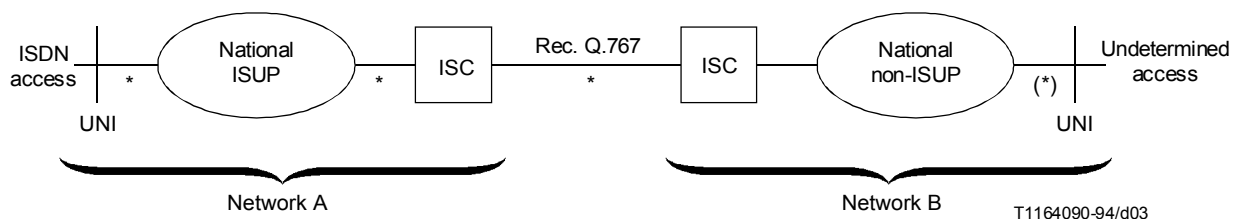FIGURE 2/Q.788

ISDN access to ISDN access test environment

FIGURE 3/Q.788

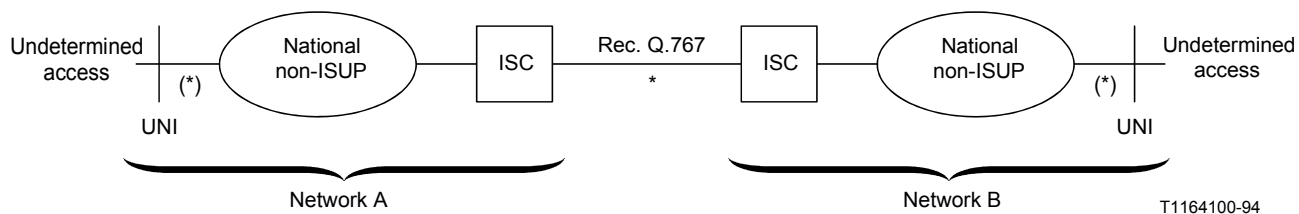**ISDN access to undetermined access test environment**

FIGURE 4/Q.788

Undetermined access to undetermined access test environment
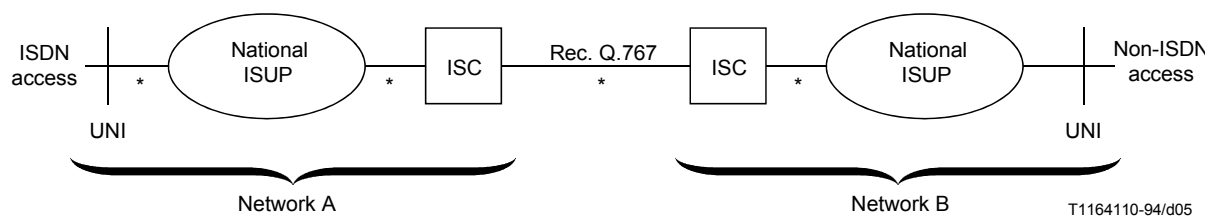

FIGURE 5/Q.788

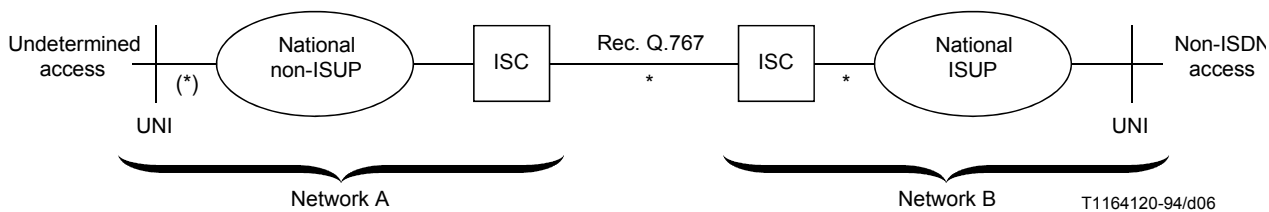**ISDN access to non-ISDN access test environment**

FIGURE 6/Q.788

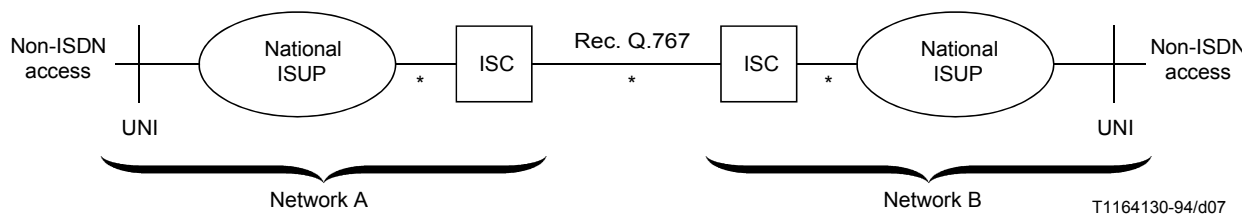**Undetermined access to non-ISDN access test environment**

FIGURE 7/Q.788

Non-ISDN access to non-ISDN access test environment

5   UNI to UNI Compatibility Test List

1   ISUP/ISDN Basic call control

    1.1   Successful Call Set-up

        1.1.1   Basic Call Set-up (BC)

        1.1.2   Transport of Progress Indicator information element

            1.1.2.1   SETUP

            1.1.2.2   PROGRESS/ALERT

            1.1.2.3   CONNECT

        1.1.3   Transport of BC/HLC/LLC information elements

            1.1.3.1   BC/HLC/ LLC Combinations

            1.1.3.2   BC: 64 kbit/s with rate adaptation

    1.2   Normal Call Release

        1.2.1   Calling party clears before answer

        1.2.2   Calling party clears after answer

        1.2.3   Called party clears after answer

    1.3   Unsuccessful Call Set-up

        1.3.1   All circuits busy at the destination network

        1.3.2   Dialling of an unallocated number

        1.3.3   No route to Destination

        1.3.4   Calling to a busy subscriber

    1.4   Abnormal Situation During Call

        1.4.1   No response from the called party

        1.4.2   No answer from the called party

2   ISUP/ISDN Call control with supplementary services

    2.1   User to User Signalling Service 1 – Implicit Request

        2.1.1   Successful – UUI in forward message

        2.1.2   Unsuccessful – Explicit network rejection

        2.1.3   Successful – UUI in the backward message

6   Glossary of Abbreviations and Acronyms

For the purposes of this Recommendation, the following abbreviations are used:

ACM   ISUP Address Complete Message

ANM   ISUP ANswer Message

BC   DSS 1 Bearer Capability information element

BCI   ISUP Backward Call Indicators parameter

CLI   ISDN Calling Line Identification supplementary service

CLIP   ISDN Calling Line Identification Presentation supplementary service

CLIR   ISDN Calling Line Identification Restriction supplementary service

COL   ISDN Connected Line identification supplementary service

COLP   ISDN Connected Line identification Presentation supplementary service

COLR   ISDN Connected Line identification Restriction supplementary service

CON   ISUP CONnection message

COT   ISUP Continuity Test message

CPG   ISUP Call Progress Message

CUG   ISDN Closed User Group supplementary service

FCI   ISUP Forward Call Indicators parameter

HLC   DSS 1 High Layer Compatibility information element

IAM   ISUP Initial Address Message

IE   DSS 1 Information Element

ISC   International Switching Centre

LLC   DSS 1 Low Layer Compatibility information element

NCI   ISUP Nature of Connection Indicators parameter

OFCI   ISUP Optional Forward Call Indicators parameter

PI   DSS 1 Progress Information information element

REL   ISUP and DDS1 RELease message

RLC   ISUP ReLease Complete message

SUS   ISUP SUSpend message

UNI   User-Network Interface

USI   ISUP User Service Information parameter

UUI   ISUP User-to-User Information parameter

UUS   ISDN User-to-User Signalling

TEST NUMBER: 1.1.1   **REF.:** D.2.1/Q.767, 4.5.5/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Successful Basic call set-up (BC).

PURPOSE: To verify that Basic calls can be set-up.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM ➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT ➔		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	ANM	
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL ➔		Cause Ind.: Normal call clearing (16), location user (0000)
	←	RLC	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI with PI.
2.   Clear the call from Network A's UNI.
3.   Repeat the test for speech and 3.1 kHz bearers.
4.   Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.1.2.1   **REF.:** 4.3.2/Q.767, 3.1.14/Q.931.

CONFIG.: ISDN Access→ISDN Access (see Figure 2).

TITLE: Normal call set-up – Transport of Progress indicator IE – SETUP.

PURPOSE: To verify that progress information can be successfully transported.

PRE-TEST CONDITIONS: Arrange the stimulus such that the IAM contains Progress Indicator information in the Access Transport parameter.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, ATP: Progress Indicator information (3)
	COT	➔	*Optional message*
case a	ACM	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	ANM	←	
case b	ACM	←	BCI: No indication (00), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	CPG	←	*Optional message* Event Info: alerting (0000001)
	ANM	←	
case c	CON	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	➔	Cause Ind.: Normal call clearing (16), location user (0000)
	RLC	←	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI with PI.
2.   Check the presence of the PI in the SETUP message at Network B's UNI.
3.   Clear the call from Network A's UNI.
4.   Repeat the test for speech and 3.1 kHz bearers.
5.   Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 1.1.2.2   **REF.:** 4.3.2/Q.767, 3.1.1/Q.931 and 3.1.8/Q.931.

CONFIG.: ISDN Access→ISDN Access (see Figure 2).

TITLE: Normal Call Set-up – Transport of Progress indicator information element – PROGRESS/ALERT.

PURPOSE: To verify that progress information can be transported correctly.

PRE-TEST CONDITIONS: Arrange the stimulus such that the ACM message contains Progress Information in the Access Transport parameter.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a	⬅ ACM		BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1) ATP: Progress information (3)
	⬅ ANM		
case b	⬅ ACM		BCI: No indication (00), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	⬅ CPG		*Optional message* Event Info: alerting (0000001) or progress (0000010), ATP: Progress information (3)
	⬅ ANM		
case c	⬅ ACM		BCI: No indication (00), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	⬅ CPG		Event Info: progress (0000010), ATP: Progress information (1)
	⬅ CPG		Event Info: alerting (0000001) , ATP: Progress information (3)
	⬅ ANM		
case d	⬅ CON		BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)

⬅ COMMUNICATION ⟹

	REL	➔	Cause Ind.: Normal call clearing (16), location user (0000)
	⬅ RLC		

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check the presence of the PI in the ALERT message at Network A's UNI.
3. Clear the call from Network A's UNI.
4. Repeat the test for speech and 3.1 kHz bearers.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 1.1.2.3   **REF.:** 4.3.2/Q.767, 3.1.3/Q.931.

CONFIG.: ISDN Access→ISDN Access (see Figure 2).

TITLE: Normal Call Set-up – Transport of Progress indicator information element – CONNECT.

PURPOSE: To verify that Progress information can be transported correctly.

PRE-TEST CONDITIONS: Arrange the stimulus such that the ANM message contains Progress Information in the Access Transport parameter.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
COT	➔		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	ANM	ATP: Progress information (3)
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	ATP: Progress information (3)
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1), ATP: Progress information (3)

⇐ COMMUNICATION ⇒

REL	➔		Cause Ind.: Normal call clearing (16), location user (0000)
	←	RLC	

TEST DESCRIPTION

1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check the presence of the PI in the CON message at Network A's UNI.
3.	Clear the call from Network B's UNI.
4.	Repeat the test for speech and 3.1 kHz bearers.
5.	Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 1.1.3.1   **REF.:** 4.3.3/Q.767, 4.5.5/Q.931, 4.5.17/Q.931 and 4.5.19/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Normal Call Release – BC/HLC/LLC Transfer and Disposition.

PURPOSE: To verify that BC/HLC/LLC can be transported correctly.

PRE-TEST CONDITIONS: Arrange the stimulus such that the USI(BC) = Speech and Access. Transport parameter contains HLC = Telephony; LLC = Speech.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary, ATP: HLC/LLC
	COT	→		*Optional message*
case a		←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
		←	ANM	
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
		←	CPG	*Optional message* Event Info: alerting (0000001)
		←	ANM	
case c		←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	→		Cause Ind.: Normal call clearing (16), location user (0000)
		←	RLC	

TEST DESCRIPTION

1.	Make a call from Network A's UNI to Network B's UNI with correct BC/HLC/LLC.
2.	Check the BC/HLC/LLC in the SETUP message at Network B's UNI.
3.	Clear the call from Network A's UNI.

4.	Repeat the test for at least the following BC/HLC/LLC combinations[1]
	     64/G4 Fax/64 64/Teletex/64 64/Videotex/64
	     64/Mixed-mode/64 3.1/G2-G3 fax/3.1

5.	Repeat steps 1-4 with Network A and B interchanged.

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[1] Other combinations mentioned in C.3.36/Q.767 may be considered.

TEST NUMBER: 1.1.3.2   **REF.:** 4.3.3/Q.767, 4.5.5/Q.931, 4.5.17/Q.931 and 4.5.19/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Normal Call Release – BC = 64 kbit/s with rate adaptation.

PURPOSE: To verify that BC = 64 kbit/s with rate adaptation can be transported correctly.

PRE-TEST CONDITIONS: Arrange the stimulus such that the USI(BC) = 64 kbit/s and user rate 1.2 kbit/s asynch.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
COT	→		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	ANM	
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

REL	→		Cause Ind.: Normal call clearing (16), location user (0000)
	←	RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI with correct BC.
2. Check the BC in the SETUP message at Network B's UNI.
3. Clear the call from Network A's UNI.
4. Repeat the test for the following user rates :   2.4 kbit/s asynch.   4.8 kbit/s asynch.   9.6 kbit/s asynch.   14.4 kbit/s asynch.   19.2 kbit/s asynch.   19.2 kbit/s synch.   56.0 kbit/s synch.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 1.2.1   **REF.:** D.2.3.1/Q.767, 5.3.3/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Normal Call Release – Calling party clears before answer.

PURPOSE: To verify that the calling party can successfully release a call prior to receipt of answer.

PRE-TEST CONDITIONS: Called termination is free.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	➜		*Optional message*
case a		⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
case b		⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		⬅	CPG	*Optional message* Event Info: alerting (0000001)
	REL	➜		Cause Ind.: Normal call clearing (16), location user (0000)
		⬅	RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Do not answer the call at Network B's UNI.
3. Clear the call from Network A's UNI.
4. Check that all the network resources and both end terminals are released.
5. Repeat the test for speech and 3.1 kHz bearers.
6. Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 1.2.2   **REF.:** D.2.3.1/Q.767, 5.3.3/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Normal Call Release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after answer.

PRE-TEST CONDITIONS: Called termination is free.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
COT	➔		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	←	ANM	
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

REL	➔		Cause Ind.: Normal call clearing (16), location user (0000)
	←	RLC	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Check the coding of USI and TMR.
3.   Check the propriety of digital data transmission or speech.
4.   Clear the call from Network A's UNI.
5.   Check that all the network resources and both end terminals are released.
6.   Repeat the test for speech and 3.1 kHz bearers.
7.   Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 1.2.3   **REF.:** D.2.3.2/Q.767, 5.3.3/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Normal Call Release – Called party clears after answer.

PURPOSE: To verify that a call can be successfully released in the backward direction.

PRE-TEST CONDITIONS: Called termination is free.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM →		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT →		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	←	ANM	
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	←	REL	Cause Ind.: Normal call clearing (16), location user (0000)
RLC →			

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Check the propriety of digital data transmission or speech.
3.   Clear the call from Network B's UNI.
4.   Check that all the network resources and both end terminals are released.
5.   Repeat the test for speech and 3.1 kHz bearers.
6.   Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 1.3.1   **REF.:** D.2.2/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call Set-up – All circuits busy at the destination network.

PURPOSE: To verify that the call will be successfully released when all circuits are busy.

PRE-TEST CONDITIONS: All circuits are busy in international, national, or access circuit groups.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: No circuit available (34), location transit network (0011) or public network serving remote user (0100) or private network serving remote user (0101) or international network (0111)
	RLC	→		
case b		←	ACM	BCI: No indication (00), interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		←	REL	Cause Ind.: No circuit available (34), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released.
3.	Repeat the test for speech and 3.1 kHz bearers.
4.	Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.3.2 **REF.:** D.2.2/Q.767, 5.3.4.1/Q.931

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call Set-up – Dialling of an unallocated number.

PURPOSE: To verify that the call will be successfully released when an unallocated number is dialled.

PRE-TEST CONDITIONS: Called number is an unallocated subscriber number.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: Unallocated number (1), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
		←	REL	Cause Ind.: Unallocated number (1), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released.
3.	Repeat the test for speech and 3.1 kHz bearers.
4.	Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.3.3   **REF.:** D.2.2/Q.767, Q5.3.4.1/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call set-up – No route to destination.

PURPOSE: To verify that the call will be successfully released when there is no route to destination.

PRE-TEST CONDITIONS: Called party number has invalid country or national destination code.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: No route to destination (3), location transit network (0011) or international network (0111)
	RLC	→		
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
		←	REL	Cause Ind.: No route to destination (3), transit network (0011) or international network (0111)
	RLC	→		

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat the test for speech and 3.1 kHz bearers.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.3.4   **REF.:** D.2.2/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call set-up – Calling to a busy subscriber.

PURPOSE: To verify that the call will be successfully released when dialling a busy subscriber.

PRE-TEST CONDITIONS: The called termination is busy.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: User busy (17), location user (0000) or public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
		←	REL	Cause Ind.: User busy (17), location user (0000) or public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat the test for speech and 3.1 kHz bearers.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.4.1   **REF.:** D.2.2/Q.767, 5.2.5.4/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call set-up – No response from the called party

PURPOSE: To verify that the call will be successfully released when there is no response to the SETUP message from the called party.

PRE-TEST CONDITIONS: Send no response to the SETUP message from called side.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s.
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: No user responding (18), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
		←	REL	Cause Ind.: No user responding (18), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→		

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released after time equal to twice T303.
3.	Repeat the test for speech and 3.1 kHz bearers.
4.	Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 1.4.2   **REF.:** D.2.2/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Unsuccessful call set-up – No answer from the called party.

PURPOSE: To verify that the call will be successfully released when the Q.118 wait for answer timer expires.

PRE-TEST CONDITIONS: Arrange the stimulus such that the wait for answer timer will expire.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
	COT	→		*Optional message*
case a		←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s
		←	CPG	*Optional message* Event Info: alerting (0000001)
	REL	→		Cause Ind.: No answer from user (19), location transit network (0011) or public network serving remote user (0100) or international network (0111)
		←	RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat the test for speech and 3.1 kHz bearers.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 2.1.1   **REF.:** E.2.2.1.2/Q.767, 1.5.2.1.1/Q.957.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: User-to-User Signalling service 1 – Implicit request – Successful – UUI in the forward messages.

PURPOSE: To verify information can be correctly transferred in the forward call control messages.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM and REL messages contain a UUI parameter.
2. Arrange exchange data such that the requested UUS is supported.

EXPECTED MESSAGE SEQUENCE:

	Network A		Network B	
	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, UUI present
	COT	→		*Optional message*
case a		←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		←	ANM	
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		←	CPG	*Optional message* Event Info: alerting (0000001)
		←	ANM	
case c		←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	→		UUI present, Cause Ind.: Normal call clearing (16), location user (0000)
		←	RLC	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Verify the UUI in the SETUP and IAM as in 1.1.1.1.1/Q.785.
3.   Check the propriety of digital data transmission or speech.
4.   Clear the call from Network A's UNI.
5.   Verify the UUI in the DISCONNECT and REL as in 1.1.1.2.1/Q.785.
6.   Check that all network resources and both end terminals are released.
7.   Repeat the test for speech and 3.1 kHz bearers.
8.   Repeat steps 1-7 with Network A and B interchanged.

TEST NUMBER: 2.1.2   **REF.:** E.2.2.1.4/Q.767, 1.5.2.1.4.1/Q.957.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: User-to-User Signalling service 1 – Implicit request – Unsuccessful – explicit network rejection.

PURPOSE: To verify that the UUS service 1 explicit network rejection can be correctly transferred.

PRE-TEST CONDITIONS

1. Arrange the stimulus such that the IAM generated contains a UUI parameter.
2. Arrange exchange data such that the requested UUS is rejected by the network.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, UUI: present
	COT	→	*Optional message*
case a	ACM	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, UUI network discard ind.: UUI discarded (1), Terminating access ISDN (1)
	ANM	←	
case b	ACM	←	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, UUI network discard ind.: UUI discarded (1), Terminating access ISDN (1)
	CPG	←	*Optional message* Event Info: alerting (0000001)
	ANM	←	
case c	CON	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary, UUI network discard ind.: UUI discarded (1), Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
	RLC	←	

TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Reject the UUS Service 1 in Network B's network.
3.	Verify that the call completes after UUI is discarded.
4.	Check the propriety of digital data transmission or speech.
5.	Clear the call from Network A's UNI.
6.	Check that all network resources and both end terminals are released.
7.	Repeat the test for speech and 3.1 kHz bearers.
8.	Repeat steps 1-7 with Network A and B interchanged.

TEST NUMBER: 2.1.3   **REF.:** E.2.2.1.6/Q.767, 1.5.2.1.1.1/Q.957.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: User-to-User Signalling service 1 – Implicit request Successful – UUI in the backward messages.

PURPOSE: To verify that the user-to-user information can be correctly transferred in the backward call control messages.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a UUI parameter.
2. Arrange the stimulus such that the backward message generated contains a UUI parameter.
3. Arrange exchange data such that the requested UUS is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, UUI: present
	COT	→	*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1), UUI: present
	←	ANM	UUI: present
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001), UUI: present
	←	ANM	UUI: present
case c	←	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary, UUI: present, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	←	REL	Cause Ind.: Normal call clearing (16), location user (0000), UUI: present
RLC	→		

	TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Verify the UUI in the SETUP, IAM, and all backward messages.
3.	Check the propriety of digital data transmission or speech.
4.	Clear the call from Network B's UNI.
5.	Verify the UUI in the DISCONNECT and REL.
6.	Check all network resources and both end terminals are released.
7.	Repeat the test for speech and 3.1 kHz bearers.
8.	Repeat steps 1-7 with Network A and B interchanged.

TEST NUMBER: 2.2.1 **REF.:** E.4.1/Q.767, 3.5.2.1.1.2/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Calling Line Identification – CLIP – network provided.

PURPOSE: To verify that CLIP (network provided) and calling party subaddress can be correctly transferred in the Calling Party Number and Access Transport parameters.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM contains the calling party subaddress.
2. Arrange exchange data such that the requested CLIP is network provided.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Calling party number: network provided (11), Presentation allowed (00), Calling party number present, ATP: calling party subaddress
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

	TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Verify the CLI and calling party subaddress in the SETUP message at Network B's UNI.
3.	Check the propriety of digital data transmission or speech.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.2.2   **REF.:** E.4.1/Q.767, 3.5.2.1.1.2/Q.951.

CONFIG.: ISDN Access→ISDN Access (see Figure 2).

TITLE: Calling Line Identification – CLIP – user provided, verified and passed.

PURPOSE: To verify that CLIP (user provided, verified and passed) and calling party subaddress can be correctly transferred in the Calling Party Number and Access Transport parameters.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a CLI coded user provided, verified and passed, and presentation allowed and a calling party subaddress.

2. Arrange exchange data such that the requested CLIP and subaddress are supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz not included (0) for 64 kbit/s, Calling party number: Presentation allowed (00), screening indicator user provided (01), calling party number present, ATP: calling party subaddress
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary, Terminating access ISDN (1)
		← ANM	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call release (16), location user (0000)
		← RLC	

	TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Verify the CLI and calling party subaddress in the SETUP message at Network B's UNI.
3.	Check the propriety of digital data transmission or speech.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.2.3   **REF.:** E.4.2.1/Q.767, 4.5.2.2.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Calling Line Identification – CLIR – network provided.

PURPOSE: To verify that CLIR (network provided)and calling party subaddress can be correctly transferred in the Calling Party Number and Access Transport parameters (but will not be presented at Network B's UNI).

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a CLI-network provided, presentation restricted and calling party subaddress.
2. Arrange exchange data such that the requested CLIR and subaddress supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM ➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Calling party number: presentation indicator restricted (01), network provided (11), calling party number present , ATP: calling party subaddress
	COT ➔		*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	ANM	
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	
case c	⬅	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⟸ COMMUNICATION ⟹

	REL ➔		Cause Ind.: Normal call clearing (16), location user (0000)
	⬅	RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Verify absence of CLI in the SETUP message at Network B's UNI.
3. Check the propriety of digital data transmission or speech.
4. Clear the call from Network A's UNI.
5. Check that all network resources and both end terminals are released.
6. Repeat the test for speech and 3.1 kHz bearers.
7. Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.2.4   **REF.:** E.4.2.1/Q.767, 4.5.2.2.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Calling Line Identification – CLIR – user provided, verified and passed.

PURPOSE: To verify that CLIR (user provided, verified and passed) and calling party subaddress can be correctly transferred in the Calling Party Number and Access Transport parameters (but not presented at Network B's UNI)

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a CLI-user provided, verified and passed, presentation restricted and calling party subaddress.

2. Arrange exchange data such that the requested CLIR and subaddress supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM ➜		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Calling party number: presentation indicator restricted (01), user provided, verified and passed (01), calling party number present, ATP: calling party subaddress
	COT ➜		*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	ANM	
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	
case c	⬅	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⟸ COMMUNICATION ⟹

	REL ➜		Cause Ind.: Normal call clearing (16), location user (0000)
	⬅	RLC	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Verify absence of CLI in the SETUP message at Network B's UNI.
3.   Check the propriety of digital data transmission or speech.
4.   Clear the call from Network A's UNI.
5.   Check that all network resources and both end terminals are released.
6.   Repeat the test for speech and 3.1 kHz bearers.
7.   Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.3.1 **REF.:** 4.3.2/Q.767, 3.5.2.1.1.2/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Subaddressing – Transport of called party subaddress.

PURPOSE: To verify that called party subaddress can be transferred in the Access Transport parameter.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains called party subaddresses.
2. Arrange exchange data such that the requested subaddress is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM ➜		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, ATP: called party subaddress
	COT ➜		*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	ANM	
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	
case c	⬅	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL ➜		Cause Ind.: Normal call clearing (16), location user (0000)
	⬅	RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Verify the subaddress in the SETUP message at Network B's UNI.
3. Check the propriety of digital data transmission or speech.
4. Clear the call from Network A's UNI.
5. Check that all the network resources and both end terminals are released.
6. Repeat the test for speech and 3.1 kHz bearers.
7. Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.1   **REF.:** E.8.1.1.1/Q.767, 5.5.2.1.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COL – Request.

PURPOSE: To verify that a request for COL can be correctly transferred in the Optional Forward Call Indicators parameter.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a request for COL.

2. Arrange exchange data such that the requested COL is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	➜	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	Connected Number: Presentation allowed (00), network provided (1), connected number present
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	Connected Number: Presentation allowed (00), network provided (1), connected number present
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Connected Number: Presentation allowed (00), network provided (1), connected number present, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	➜	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Verify the COL is requested in Optional FCI parameter in the IAM ('1').
3.	Check the propriety of digital data transmission or speech.
4.	Clear the call from Network A's UNI.
5.	Check that all the network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.2   **REF.:** E.8.1.1.1/Q.767, 5.5.2.1.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COLP – network provided.

PURPOSE: To verify that a COLP (network provided) and connected subaddress can be correctly transferred in the Connected Number and Access Transport parameters.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a request for COL.

2. Arrange the stimulus such that the ANM (CON) generated contains a COL – network provided, presentation allowed and connected party subaddress.

3. Arrange exchange data such that the requested COLP and subaddress are supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	➜	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	Connected Number: Presentation allowed (00), network provided (11), connected party number present, ATP: connected subaddress
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	Connected Number: Presentation allowed (00), network provided (11), connected party number present, ATP: connected subaddress
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Connected Number: Presentation allowed (00), Network provided (1), connected party number present, Terminating access ISDN (1), ATP: connected subaddress

⇐ COMMUNICATION ⇒

	REL	➜	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI .
2.	Check the propriety of digital data transmission or speech.
3.	Check the presence of COL and subaddress information at Network A's UNI.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the step for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.3   **REF.:** E.8.1.1.1/Q.767, 5.5.2.1.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connect Line Identification – COLP – user provided, verified and passed.

PURPOSE: To verify that a COLP (user provided) and connected party subaddress can be correctly transferred in the Connected Number and Access Transport parameters

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a request for COL.

2. Arrange the stimulus such that the ANM (CON) generated contains a COL – user provided, presentation allowed and connected party subaddress.

3. Arrange exchange data such that the requested COLP and subaddress are supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	Connected Number: Presentation allowed (00), user provided, verified and passed (01), connected party number present, ATP: connected party subaddress
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	Connected Number: Presentation allowed (00), user provided, verified and passed (01), connected party number present, ATP: connected party subaddress
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Connected Number: Presentation allowed (00), user provided, verified and passed (01), connected party number present, Terminating access ISDN (1), ATP: connected party subaddress

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

	TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check the propriety of digital data transmission or speech.
3.	Check the presence of COL and subaddress information at Network A's UNI.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.4 **REF.:** E.8.2.1/Q.767, 6.5.2.4/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COLR – network provided.

PURPOSE: To verify that a COLR (network provided) and connected subaddress can be correctly transferred in the Connected Number and Access Transport parameters.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a request for COL.
2. Arrange the stimulus such that the ANM (CON) generated contains a COL network provided, presentation restricted.
3. Arrange exchange data such that the requested COL is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	➜	*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	ANM	Connected Number: Presentation restricted (01), network provided (11), connected party number present, ATP: connected subaddress
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	Connected Number: Presentation restricted (01), network provided (11), connected party number present, ATP: connected subaddress
case c	⬅	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1), Connected Number: Presentation restricted (01), network provided (11), connected party number present, ATP: connected subaddress

⇐ COMMUNICATION ⇒

	REL	➜	Cause Ind.: Normal call clearing (16), location user (0000)
	⬅	RLC	

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check the propriety of digital data transmission or speech.
3.	Check the absence of COL and subaddress information at Network A's UNI.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.5   **REF.:** E.8.2.1/Q.767, 6.5.2.4/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COLR – user provided, verified and passed.

PURPOSE: To verify that a COLR (user provided) and connected party subaddress can be correctly transferred in the Connected Number and Access Transport parameters.

PRE-TEST CONDITIONS:

    1.   Arrange the stimulus such that the IAM generated contains a request for COL.

    2.   Arrange the stimulus such that the ANM (CON) generated contains a COL user provided, presentation restricted and connected party subaddress.

    3.   Arrange exchange data such that the requested COLR and subaddress are supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	Connected Number: Presentation restricted (01), user provided, verified and passed (01), connected party number present, ATP: connected party subaddress
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	Connected Number: Presentation restricted (01), user provided, verified and passed (01), connected party number present, ATP: connected party subaddress
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1), Connected Number: Presentation restricted (01), user provided, verified and passed (01), connected party number present, ATP: connected party subaddress

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION	
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check the propriety of digital data transmission or speech.
3.	Check the absence of COL and subaddress information at Network A's UNI.
4.	Clear the call from Network A's UNI.
5.	Check that all network resources and both end terminals are released.
6.	Repeat the test for speech and 3.1 kHz bearers.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.4.6   **REF.:** E.8.1.1.2/Q.767, 5.5.2.3.1.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COL – received but not requested.

PURPOSE: To verify that if a COL is received when it is was not requested, the call is not rejected.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated does not contain a request for COL.
2. Arrange the stimulus such that the ANM (CON) generated contains a COL.
3. Arrange exchange data such that the requested COL is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/
	COT	→	*Optional message*
case a	ACM	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	ANM	←	Connected party number present
case b	ACM	←	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	CPG	←	*Optional message* Event Info: alerting (0000001)
	ANM	←	Connected party number present
case c	CON	←	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1), Connected number present

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
	RLC	←	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check the propriety of digital data transmission or speech.
3. Clear the call from Network A's UNI.
4. Check that all network resources and both end terminals are released.
5. Repeat the test for speech and 3.1 kHz bearers.
6. Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 2.4.7   **REF.:** E.8.1.1.1/Q.767, 5.5.2.1.1/Q.951.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Connected Line Identification – COLP – not available.

PURPOSE: To verify that a COLP (not available) can be correctly transferred in the Connected Number parameter.

PRE-TEST CONDITIONS:

1. Arrange the stimulus such that the IAM generated contains a request for COL.
2. Arrange the stimulus such that the ANM (CON) generated contains COL not available.
3. Arrange exchange data such that the requested COLP is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: COL requested (1)
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	Connected Number: Address not available (10)
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	Connected Number: Address not available (10)
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Connected Number: Address not available (10)

⇐ COMMUNICATION ⇒

	REL	→	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check the propriety of digital data transmission or speech.
3. Check the absence of COL information at Network A's UNI.
4. Clear the call from Network A's UNI.
5. Check that all network resources and both end terminals are released.
6. Repeat the step for speech and 3.1 kHz bearers.
7. Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.5.1   **REF.:** E.3.2.1b)/Q.767, 5.1.2.1/Q.955.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Closed User Group – Decentralised – CUG call with outgoing access allowed (both networks have CUG).

PURPOSE: To verify that the parameters necessary for a CUG call with OFCI: Outgoing access allowed can be correctly transferred.

PRE-TEST CONDITIONS:

    1.   Both networks must support CUG.

    2.   Arrange exchange data such that the requested CUG is supported and the called party is in CUG.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: CUG Call Indicator (10) OFCI: Outgoing access allowed, CUG interlock code included
	COT	➔	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← ANM	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		← CPG	*Optional message* Event Info: alerting (0000001)
		← ANM	
case c		← CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	➔	Cause Ind.: Normal Call Clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check the propriety of digital data transmission or speech.
3. Clear the call from Network A's UNI.
4. Check that all network resources and both end terminals are released.
5. Repeat the test for speech and 3.1 kHz bearers.
6. Repeat steps 1-5 with a called party not in CUG.
7. Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.5.2   **REF.:** E.3.2.1b)/Q.767, 5.1.2.1/Q.955.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Closed User Group – Decentralised – CUG call with outgoing access allowed (one network with CUG).

PURPOSE: To verify that the parameters necessary for a CUG call with OFCI: Outgoing access allowed can be correctly transferred.

PRE-TEST CONDITIONS:

1. Only Network A supports CUG.

2. Arrange exchange data such that the requested CUG is supported and the called party is in CUG.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: CUG Call Indicator (10) OFCI: Outgoing access allowed, CUG interlock code included
	COT	➔	*Optional message*
case a		⬅ ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		⬅ ANM	
case b		⬅ ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		⬅ CPG	*Optional message* Event Info: alerting (0000001)
		⬅ ANM	
case c		⬅ CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL	➔	Cause Ind.: Normal Call Clearing (16), location user (0000)
		⬅ RLC	

	TEST DESCRIPTION
1.	Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.	Check the propriety of digital data transmission or speech.
3.	Clear the call from Network A's UNI.
4.	Check that all network resources and both end terminals are released.
5.	Repeat the test for speech and 3.1 kHz bearers.
6.	Repeat steps 1-5 with a called party not in CUG.
7.	Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 2.5.3   **REF.:** E.3.2.1a)/Q.767, 5.1.2.1/Q.955.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Closed User Group – Decentralised – CUG call with outgoing access not allowed, to a network offering the CUG supplementary service (called party in CUG).

PURPOSE: To verify that the parameters necessary for a CUG call with Outgoing access not allowed can be correctly transferred.

PRE-TEST CONDITIONS:

1. Both networks must offer CUG.

2. Arrange exchange data such that the requested CUG is supported and the called party is in CUG.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM ➡		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: CUG Call Indicator (11) Outgoing access not allowed, CUG interlock code included
	COT ➡		*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	ANM	
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	
case c	⬅	CON	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)

⇐ COMMUNICATION ⇒

	REL ➡		Cause Ind.: Normal call clearing (16), location user (0000)
	⬅	RLC	

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Check the propriety of digital data transmission or speech.
3.   Clear the call from Network A's UNI.
4.   Check that all network resources and both end terminals are released.
5.   Repeat the test for speech and 3.1 kHz bearers.
6.   Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 2.5.4   **REF.:** E.3.2.1a)/Q.767, 5.1.2.2/Q.955.

CONFIG.: ISDN Access →ISDN Access (see Figure 2).

TITLE: Closed User Group – Decentralized – CUG call with outgoing access not allowed, to a network offering the CUG supplementary service (called party outside CUG).

PURPOSE: To verify that the parameters necessary for a CUG call with Outgoing access not allowed can be correctly transferred.

PRE-TEST CONDITIONS:

1. Both networks must offer CUG.

2. Arrange exchange data such that the requested CUG is supported and the called party is not in CUG.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: CUG Call Indicator (11) Outgoing access not allowed, CUG interlock code included
	COT	➔	*Optional message*
case a		⬅ REL	Cause Ind.: user not member of CUG (87), location public network serving remote user (0100)
	RLC	➔	
case b		⬅ ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, Terminating access ISDN (1)
		⬅ REL	Cause Ind.: user not member of CUG (87), location public network serving remote user (0100)
	RLC	➔	

TEST DESCRIPTION
1. Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2. Check that all network resources and both end terminals are released.
3. Repeat the test for speech and 3.1 kHz bearers.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 2.5.5   **REF.:** E.3.2.3/Q.767, 5.1.2.1/Q.955.

CONFIG.: ISDN →ISDN (see Figure 2).

TITLE: Closed User Group – Decentralised – CUG call with outgoing access not allowed, to network not offering the CUG supplementary service.

PURPOSE: To verify that the parameters necessary for a CUG call with Outgoing access not allowed can be correctly transferred, to a network not offering the CUG supplementary service, and that the release can be accepted.

PRE-TEST CONDITIONS:

1.   Only Network A supports CUG.

2.   Arrange exchange data such that the requested CUG is supported.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary for speech and 3.1 kHz and not included (0) for 64 kbit/s, OFCI: CUG Call Indicator (11) OFCI: Outgoing access not allowed, CUG interlock code included
COT	➔		*Optional message*
	⬅	REL	Cause Ind.: User not member of CUG (87), location international network (0111)
RLC	➔		

TEST DESCRIPTION
1.   Make a 64 kbit/s call from Network A's UNI to Network B's UNI.
2.   Check that all network resources and both end terminals are released.
3.   Repeat the test for speech and 3.1 kHz bearers.

TEST NUMBER: 3.1.1.1   **REF.:** 3.3.2/Q.699, 5.1.6/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Normal call release – Calling party clears before answer.

PURPOSE: To verify that the calling party can successfully release a call prior to receipt of an answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
COT	→		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
case b	←	ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
	←	CPG	*Optional message* Event info.: Alerting (0000001)
REL	→		Cause Ind.: Normal call clearing (16), location user (0000)
	←	RLC	

TEST DESCRIPTION

1.	Make a speech call from Network A's UNI to Network B's UNI.
2.	Clear the call from Network A's UNI.
3.	Check that all the network resources and both end terminals are released.
4.	Repeat the test for 3.1 kHz bearer.
5.	Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 3.1.1.2   **REF.:** D.2.1.1.1/Q.767, 5.1.6/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully clear a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	➜	*Optional message*
case a		← ACM	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← ANM	
case b		← ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← CPG	*Optional message* Event info.: alerting (0000001)
		← ANM	

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	REL	➜	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION
1.   Make a speech call from Network A's UNI to Network B's UNI.
2.   Check the propriety of speech.
3.   Clear the call from Network A's UNI.
4.   Check that all network resources and both end terminals are released.
5.   Repeat the test for 3.1 kHz bearer.
6.   Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 3.1.1.3   **REF.:** D.2.1.1.1/Q.767, 5.1.6/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Normal call release – Called party clears after answer followed by calling party clearing.

PURPOSE: To verify that the called party can successfully release a call after answer prior to calling party clearing.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← ANM	
case b		← ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← CPG	*Optional message* Event ind.: alert (0000001)
		← ANM	

⇐ COMMUNICATION ⇒

		← SUS	Network initiated (1)
	REL	→	Cause Ind.: Normal call clearing (16), location user (00)
		← RLC	

TEST DESCRIPTION
1. Make a speech call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network B's UNI.
4. Clear the call from Network A's UNI.
5. Check that all the network resources and both end terminals are released.
6. Repeat the test for 3.1 kHz bearer.
7. Repeat steps 1-6 with Network A and B interchanged.

TEST NUMBER: 3.1.1.4   **REF.:** D.2.1.1.1/Q.767, 5.1.6/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Normal call release – Called party clears after answer – Q.118 expiration.

PURPOSE: To verify that the Q.118 resume timer works correctly.

PRE-TEST CONDITIONS: The calling party clears after the expiration of Q.118.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a	ACM	←	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
	ANM	←	
case b	ACM	←	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
	CPG	←	*Optional message* Event info.: alerting (0000001)
	ANM	←	

⇐ COMMUNICATION ⇒

	SUS	←	Network initiated (1)
	REL	←	Cause Ind.: Normal call clearing (16), location transit network (0011) or international network (0111)
	RLC	➔	

TEST DESCRIPTION
1. Make a speech call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network B's UNI.
4. Check that all network resources and both end terminals are released.
5. Repeat the test for 3.1 kHz bearer.
6. Repeat steps 1-5 with Network A and B interchanged.

TEST NUMBER: 3.1.2.1   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Unsuccessful call set-up – All circuits busy at the destination network.

PURPOSE: To verify that the call will be successfully released when all circuits are busy.

PRE-TEST CONDITIONS: All circuits are busy at Network B.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	→		*Optional message*
case a		←	REL	Cause Ind.: No circuits available (34), location beyond interworking point (1010)
	RLC	→		
case b		←	ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary for speech and 3.1 kHz
		←	REL	Cause Ind.: No circuits available (34), location beyond interworking point (1010)
	RLC	→		

TEST DESCRIPTION
1.   Make a speech call from Network A's UNI to Network B's UNI.
2.   Check that all the network resources and both end terminals are released.
3.   Repeat the test for 3.1 kHz bearer.
4.   Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.1.2.2   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Unsuccessful call set-up – Dialling an unallocated number.

PURPOSE: To verify that a call will be successfully released when dialling an unallocated number.

PRE-TEST CONDITIONS: Unallocated subscriber number in Network B.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	➜	*Optional message*
case a		← REL	Cause Ind.: Unallocated number (1), location beyond interworking point (1010)
	RLC	➜	
case b		← ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary for speech and 3.1 kHz
		← REL	Cause Ind.: Unallocated number (1), location beyond interworking point (1010)
	RLC	➜	

TEST DESCRIPTION
1.	Make a speech call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released.
3.	Repeat the test for 3.1 kHz bearer.
4.	Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.1.2.3   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Unsuccessful call set-up – No route to destination.

PURPOSE: To verify that a call will be successfully released when there is no route to the destination.

PRE-TEST CONDITIONS: Called party number has invalid country or national destination code.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
COT	→		*Optional message*
case a	←	REL	Cause Ind.: No route to destination (3), location beyond interworking point (1010)
RLC	→		
case b	←	ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary for speech and 3.1 kHz
	←	REL	Cause Ind.: No route to destination (3), location beyond interworking point (1010)
RLC	→		

TEST DESCRIPTION
1.   Make a speech call from Network A's UNI to Network B's UNI.
2.   Check that all the network resources and both end terminals are released.
3.   Repeat the test for 3.1 kHz bearer.
4.   Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.1.2.4   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Unsuccessful call set-up – Calling to a busy subscriber.

PURPOSE: To verify that the call can be successfully released when dialling a busy termination.

PRE-TEST CONDITIONS: The called termination is busy.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	➔		*Optional message*
case a		⬅	REL	Cause Ind.: User busy (17), beyond interworking point (1010)
	RLC	➔		
case b		⬅	ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
		⬅	REL	Cause Ind.: User busy (17), location beyond interworking point (1010)
	RLC	➔		

TEST DESCRIPTION
1.   Make a speech call from Network A's UNI to Network B's UNI.
2.   Check that all the network resources and both end terminals are released.
3.   Repeat the test for 3.1 kHz bearer.
4.   Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.1.3.1   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: ISDN Access →Undetermined Access (see Figure 3).

TITLE: Unsuccessful call set-up – No answer from called party – user alerted.

PURPOSE: To verify that the call can be successfully released when the Q.118 wait for answer timer expires.

PRE-TEST CONDITIONS: The called party doesn't answer.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
	COT	→		*Optional message*
case a		←	ACM	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
case b		←	ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
		←	CPG	*Optional message* Event Info: alerting (0000001)
	REL	→		Cause Ind.: No answer from user (19), location transit network (0011) or public network serving remote user (0100) or international network (0111)
		←	RLC	

TEST DESCRIPTION
1. Make a speech call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat the test for 3.1 kHz bearer.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.2.1.1   **REF.:** D.2.1.1.1/Q.767, 5.2.6/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Normal call release – Calling party clears before answer.

PURPOSE: To verify that the calling party can successfully release a call prior to receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a		⬅ ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
case b		⬅ ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
		⬅ CPG	*Optional message* Event Info: alerting (0000001)
	REL	➔	Cause Ind.: Normal call clearing (16), location beyond interworking point (1010)
		⬅ RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Clear the call from Network A's UNI.
3. Check that all the network resources and both end terminals are released.
4. Repeat steps 1-3 with Network A and B interchanged.

TEST NUMBER: 3.2.1.2   **REF.:** D.2.1.1.1/Q.767, 5.2.6/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	➔		FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
COT	➔		*Optional message*
case a	⬅	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	⬅	ANM	
case b	⬅	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	⬅	CPG	*Optional message* Event Info: alerting (0000001)
	⬅	ANM	

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REL	➔		Cause Ind.: Normal call clearing (16), location beyond interworking point (1010)
	⬅	RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network A's UNI.
4. Check that all network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 3.2.1.3   **REF.:** D.2.1.1.1/Q.767, 5.2.6/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Normal call release – Called party clears after answer followed by calling party clearing.

PURPOSE: To verify that the called party can successfully release a call after sending of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	ANM	
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
	←	CPG	*Optional message* Event Info: alerting (0000001)
	←	ANM	

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	←	REL	Cause Ind.: Normal call clearing (16), location user (0000)
RLC	➔		

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network B's UNI.
4. Check that all network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 3.2.2.1   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Unsuccessful call set-up – All circuits busy at the destination network.

PURPOSE: To verify that the call will be successfully released when dialling a busy destination.

PRE-TEST CONDITIONS: All circuits are busy at Network B.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a		⬅ REL	Cause Ind.: No circuits available (34), location public network serving remote user (0100) or transit network (0011) or international network (0111) or private network serving remote user (0101)
	RLC	➔	
case b		⬅ ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
		⬅ REL	Cause Ind.: No circuits available (34), location public network serving remote user (0100) or private network serving remote user (0101)
	RLC	➔	

	TEST DESCRIPTION
1.	Make a call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released.
3.	Repeat steps 1-2 with Network A and B interchanged.

TEST NUMBER: 3.2.2.2   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Unsuccessful call set-up – Dialling of an unallocated number.

PURPOSE: To verify that the call can be successfully released when dialling an unallocated number.

PRE-TEST CONDITIONS: Unallocated subscriber number in Network B.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: ISDN User Part not used all the way (0), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a	⬅ REL		Cause Ind.: Unallocated number (1), location public network service remote user (0100)
	RLC	➔	
case b	⬅ ACM		BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access ISDN (1), incoming echo control device as necessary
	⬅ REL		Cause Ind.: Unallocated number (1), location public network service remote user (0100)
	RLC	➔	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat steps 1-2 with Network A and B interchanged.

TEST NUMBER: 3.2.2.3   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Unsuccessful call set-up – No route to destination.

PURPOSE: To verify that the call can be successfully released when there is no route to destination.

PRE-TEST CONDITIONS: Called party number has invalid country or national destination code.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: ISDN User Part not used all the way (0), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
	COT	➜	*Optional message*
case a		⬅ REL	Cause Ind.: No route to destination (3), location transit network (0011) or private network serving remote user (0101) or international network (0111)
	RLC	➜	

TEST DESCRIPTION
1.   Make a call from Network A's UNI to Network B's UNI.
2.   Check that all the network resources and both end terminals are released.
3.   Repeat steps 1-2 with Network A and B interchanged.

TEST NUMBER: 3.2.2.4   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Unsuccessful call set-up – Calling to a busy subscriber.

PURPOSE: To verify that the call can be successfully released when dialling a busy termination.

PRE-TEST CONDITIONS: The called termination is busy.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
	COT	→	*Optional message*
case a		← REL	Cause Ind.: User busy (17), location user (0000) or public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, Terminating access ISDN (1)
		← REL	Cause Ind.: User busy (17), location user (0000) or public network serving remote user (0100) or private network serving remote user (0101)
	RLC	→	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check that all the network resources and both end terminals are released.
3. Repeat steps 1-2 with Network A and B interchanged.

TEST NUMBER: 3.2.3.1   **REF.:** D.2.1.1.1/Q.767, 5.3.4.1/Q.931.

CONFIG.: Undetermined Access →ISDN Access (see Figure 3).

TITLE: Unsuccessful call set-up – No response from called party.

PURPOSE: To verify that the call can be successfully released when the T303 timer expires.

PRE-TEST CONDITIONS: Called party does not respond.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	→		FCI: ISDN User Part not used all the way (0), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
COT	→		*Optional message*
case a	←	REL	Cause Ind.: No user responding (18), location public network serving remote user (0100) or private network serving remote user (0101)
RLC	→		
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), incoming echo control device as necessary, terminating access ISDN (1)
	←	REL	Cause Ind.: No user responding (18), location public network serving remote user (0100) or private network serving remote user (0101)
RLC	→		

	TEST DESCRIPTION
1.	Make a call from Network A's UNI to Network B's UNI.
2.	Check that all the network resources and both end terminals are released after twice times T303.
3.	Repeat steps 1-2 with Network A and B interchanged.

TEST NUMBER: 3.3.1.1   **REF.:** D.2.1.1.1/Q.767 and D.2.1.4.1/Q.767.

CONFIG.: Undetermined Access →Undetermined Access (see Figure 4).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	➔		FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
COT	➔		*Optional message*
case a	⬅	ACM	BCI: ISDN User Part not used all the way (0), NCI: Incoming echo control device as needed
	⬅	ANM	

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REL	➔		Cause Ind.: Normal call clearing (16), location beyond interworking point (1010)
	⬅	RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network A's UNI.
4. Check that all the network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 4.1.1.1   **REF.:** D.2.1.4.1/Q.767, 5.1.6/Q.931.

CONFIG.: ISDN Access →Non-ISDN Access (see Figure 5).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access ISDN (1), NCI: Outgoing echo control device as necessary
COT	→		*Optional message*
case a	←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (0), incoming echo control device as necessary
case b	←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (0), incoming echo control device as necessary
	←	CPG	*Optional message* Event ind.: alerting (0000001)
	←	ANM	

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REL	→		Cause Ind.: Normal call clearing (16), location user (0000) or private network serving remote user (0101)
	←	RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network A's UNI.
4. Check that all the network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 4.2.1.1   **REF.:** D.2.1.1.1/Q.767, 5.2.6/Q.931.

CONFIG.: Non-ISDN Access →ISDN Access (see Figure 5).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS: A non-automatic answer terminal is used.

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→		FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
	COT	→		*Optional message*
case a		←	ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access ISDN (1), incoming echo control device as necessary
		←	ANM	
case b		←	ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access ISDN (1), incoming echo control device as necessary
		←	CPG	*Optional message* Event Info.: Alerting (0000001)
		←	ANM	

⇐ COMMUNICATION ⇒

	REL	→		Cause Ind.: Normal call clearing (16), location user (0000)
		←	RLC	

TEST DESCRIPTION
1.	Make a call from Network A's UNI to Network B's UNI.
2.	Check the propriety of speech.
3.	Clear the call from Network A's UNI.
4.	Check that all the network resources and both end terminals are released.
5.	Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 4.3.1.1   **REF.:** D.2.1.1.1/Q.767 and D.2.1.4.1/Q.767.

CONFIG.: Undetermined Access →Non-ISDN Access (see Figure 6).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	→	FCI: ISDN User Part not used all the way (0), NCI: Outgoing echo control device as necessary
	COT	→	*Optional message*
case a		← ACM	BCI: Subscriber free (01), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (1), incoming echo control device as necessary
		← ANM	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (1) incoming echo control device as necessary
		← CPG	*Optional message* Event Ind.: alerting (0000001)
		← ANM	

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	REL	→	Cause Ind.: Normal call clearing (16), location beyond interworking point (1010)
		← RLC	

TEST DESCRIPTION
1.	Make a call from Network A's UNI to Network B's UNI.
2.	Check the propriety of speech.
3.	Clear the call from Network A's UNI.
4.	Check that all the network resources and both end terminals are released.
5.	Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 4.4.1.1   **REF.:** D.2.1.1.1/Q.767 and D.2.1.4.1/Q.767.

CONFIG.: Non-ISDN Access →Undetermined Access (see Figure 6).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➜	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
	COT	➜	*Optional message*
case a		← ACM	BCI: Subscriber free (01), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← ANM	
case b		← ACM	BCI: No indication (00), ISDN User Part not used all the way (0), incoming echo control device as necessary
		← CPG	*Optional message* Event ind.: alerting (0000001)
		← ANM	

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	REL	➜	Cause Ind.: Normal call clearing (16), location user (0000) or public network serving remote user (0100) or private network serving remote user (0101)
		← RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network A's UNI.
4. Check that all the network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.

TEST NUMBER: 4.5.1.1   **REF.:** D.2.1.1.1/Q.767 and D.2.1.4.1/Q.767.

CONFIG.: Non-ISDN Access →Non-ISDN Access (see Figure 7).

TITLE: Normal call release – Calling party clears after answer.

PURPOSE: To verify that the calling party can successfully release a call after receipt of answer.

PRE-TEST CONDITIONS:

EXPECTED MESSAGE SEQUENCE:

Network A   Network B

	IAM	➔	FCI: Interworking not encountered (0), ISDN User Part used all the way (1), Originating access non-ISDN (0), NCI: Outgoing echo control device as necessary
	COT	➔	*Optional message*
case a		← ACM	BCI: Subscriber free (01, Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (0), incoming echo control device as necessary
		← ANM	
case b		← ACM	BCI: No indication (00), Interworking not encountered (0), ISDN User Part used all the way (1), Terminating access non-ISDN (0), incoming echo control device as necessary
		← CPG	*Optional message* Event ind.: alerting (0000001)
		← ANM	

⇐ COMMUNICATION ⇒

	REL	➔	Cause Ind.: Normal call clearing (16), location user (0000)
		← RLC	

TEST DESCRIPTION
1. Make a call from Network A's UNI to Network B's UNI.
2. Check the propriety of speech.
3. Clear the call from Network A's UNI.
4. Check that all the network resources and both end terminals are released.
5. Repeat steps 1-4 with Network A and B interchanged.