ANNEX H

Technical Manual

CONTENTS

1 Introduction

This Manual is a description of those features of the GO Network that are relevant to an operator seeking Interconnection. It describes the various Network elements and the services that are supported/offered by these elements as part of the RIO.

This Manual does not describe the details of any network that may result from an Interconnection with an operator. These details are contained in the Network Plan at Annex E of the Interconnection Agreement. Furthermore, this Manual does not describe the operation processes which underline the provision, operation or maintenance of the Interconnection Network provided to another Operator. These are contained in the Operations and Maintenance Manual.

Due to the nature of transmission, switching and Signalling, the network is continually evolving to support new features and functionality. Enhancements which are material to the information in this Manual will result in a revised issue.

2 Scope

This Manual describes the essential network functionality required to facilitate the planning and execution of an efficient Interconnection with an operator.

3 Symbols & Abbreviations

For the purposes of this Manual, the abbreviations contained herein shall have the meaning assigned to them in Annex A of the Interconnection Agreement.

4 Definitions

For the purposes of this Manual the words and expressions in this Manual shall have the meaning assigned to them in Annex A of the Interconnection Agreement.

5 GO Switching Network

5.1 General Network Description

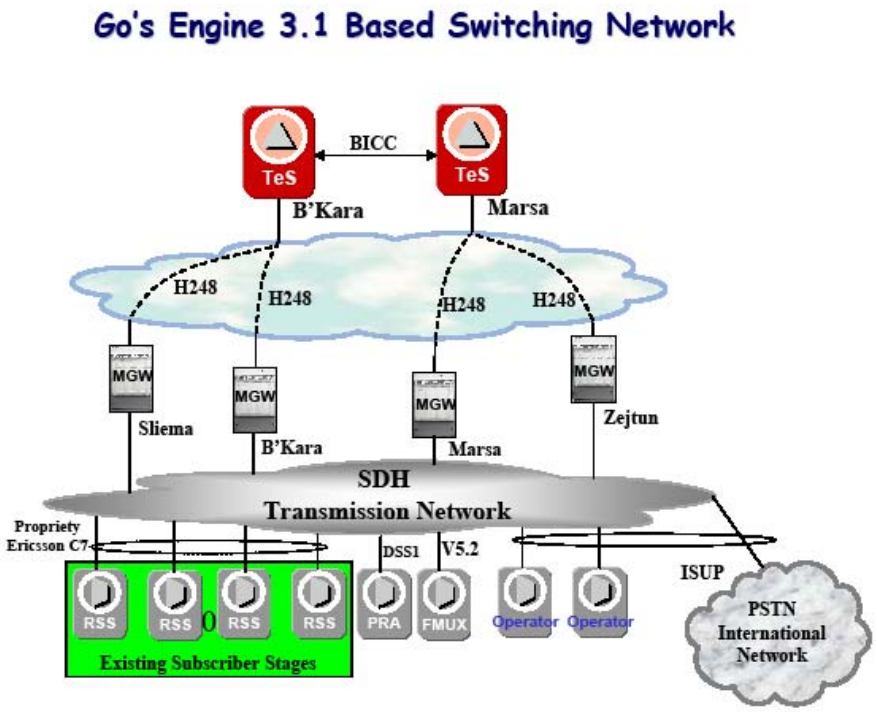
GO's switching network is based on a two domain configuration using two Telephony Server nodes (TeS) with two multi-service gateways (MSG) per telephony server as per diagram below.

The telephony servers are situated at B'kara and Marsa while the MSGs are at B'kara, Marsa, Zejtun, and Sliema.

Operator interconnection with the GO network is via the MSGs at STM-1 over SDH. Operator E1 links are aggregated over STM-1 links and carried over SDH.

Depending on the number of E1s between GO and Operator, E1 links with Operator will be distributed equally between all MSGs for a better conveyance of traffic within the GO Network.

The diagram below is a high-level illustration of GO's network.



5.2 Traffic routing

Principles of traffic routing to and from Operator Interconnection Nodes are described in Annex E of the Interconnection Agreement.

5.3 Numbering

All numbering plans will be in line with the National Numbering Plan as issued by the Malta Communications Authority.

6 Signalling Network

6.1 Introduction

This section primarily contains information on GO's Signalling network - SS7 parameter settings, B-number format, Announcements, Call Diversion and Calling Party Categories.

6.2 Signalling System description

6.2.1 MTP

GO's MTP implementation complies with the following standards:
ITU-T White Book (1993) Message Transfer Part (MTP) Q.701-Q.704, Q706-Q.710
ETSI Message Transfer Part (MTP) ETS 300 008, 2nd edition

6.2.1.1 Signalling link/linksets

Interconnection of two Interconnection Nodes will require a single Linkset (LS) containing one or two Signalling Links (SLs). In the latter case there will be load sharing across these SLs. The SL shall occupy timeslot 1 of the 2Mbit PCM (see figure 6a).

Each SL shall operate in the associated mode.

6.2.1.2 Network indicator

The Network Indicator in the SIO of the routing label should be set to "national network".

6.2.1.3 Policing

GO may implement policing to restrict the routing of messages to specified destination point codes i.e. those point codes accessible from the particular Interconnection Node and as contained in the Network Plan for Operator.

6.2.2 ISUP

GO's ISUP implementation complies with the following standards:
ITU-T White Book (1993) ISDN User Part (ISUP) Q.761-Q.764, Q.766, Q.767
ETSI ISDN User Part (ISUP) version 2 ETS 300 356, part 1 to 19

GO reserve the right to implement ISUP screening masks to reduce the level of ISUP supported on an interconnection to that required by the commercial interconnection agreement.

6.2.2.1 Call control procedures

6.2.2.1.1 Digit sending

GO has a known number length and will accordingly use en-bloc sending.

6.2.2.1.2 Circuit Identification Code (CICs)

CIC values shall be allocated according to timeslot, and not Circuit Number (See Recommendation Q.723 section 2.2.3 and the Figure below).

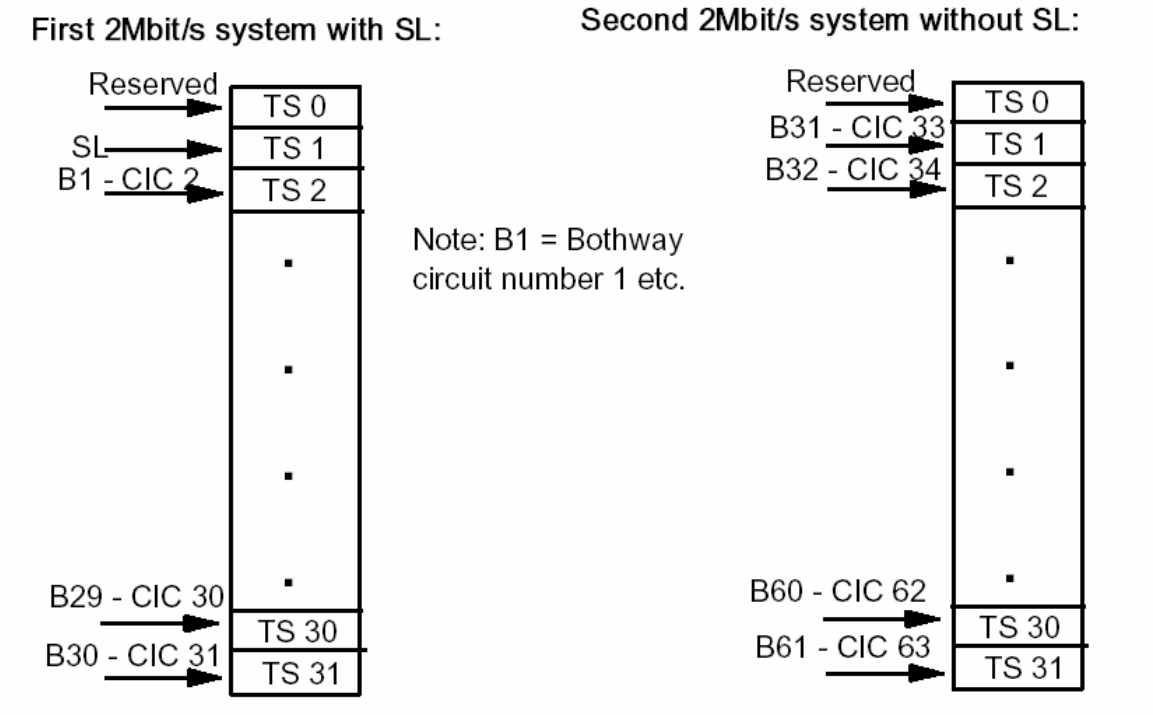


Figure 6(a): Signalling Link and CIC allocations on 2 Mbit/s Connections

6.2.2.1.3 Dual seizure

The higher point code controls the even numbered circuits (CIC's) and the lower point code controls the odd numbered circuits, in the event of dual seizure. The non-controlling point code will reattempt on another circuit (ITU-T Q.764, 1993).

6.2.2.1.4 Hunting

In order to reduce the occurrence of dual seizure, both parties shall agree on the trunk hunting method to be used on bothway routes, i.e. either the random method or the ascending/descending method.

6.2.2.1.5 Continuity Checks

Not used nationally.

6.2.2.1.6 DCME

Not used nationally.

6.2.2.1.7 Satellite

Not used nationally

6.2.2.1.8 Echo Cancellation (EC)

OHEC (Outgoing Half EC) and IHEC (Incoming Half EC) procedures will be used only for International calls and are enabled at the International gateways. They may be used towards mobile operators if required.

6.2.3 Call Diversion

The presence of redirection information (including diversion hop counter), original called number and redirecting number in the ISUP IAM identifies the call as a diverted call. Currently only **five call diversions** are allowed on any call in GO's Network.

Calls that are diverted are labelled as such in the optional parameter 'redirection information', field of the IAM, when sent to GO's network. GO will identify diverted calls outgoing to other Operators in a similar way.

Call-looping resulting from call diversions across the interconnection link/s is prohibited.

6.2.4 Calling party categories

The Table below lists the defined CPC values for the GO Network. Operators may use CPC values other than those listed below to support a particular service only after explicit prior agreement with *GO*.

CATEGORY	ISUP CPC VALUE
Unknown	0000 0000
Operator	0000 0010
Ordinary Calling End-Customer	0000 1010
Pay Phone	0000 1111

Table 6(a): ISUP Calling Party Categories

6.2.4.1 Called party number formatting

6.2.4.1.1 Outgoing calls from GO Network

The Called Party Number parameter shall be coded as defined in Q.763. The relevant fields (NAI, Numbering plan) shall be coded as described in Table 6b. In particular, the following association between address signals and NAI shall be adhered to;

NAI value	Address signals
National	Calls to users located within Malta. Address signals shall commence with the STD code of the addressed user without any leading zeros.
International	Calls to international destinations only. Address signals shall commence with the county code of the addressed network e.g. '44' for UK.

Table 6(b): NAI and address format of the Called party number parameter

6.2.4.1.2 Incoming calls to the GO Network

The format of the Called Party number parameter fields shall be as defined in Table 6(b). Additional NAI values from the range reserved for national use (i.e. 1110000 to 1111110) may be specified in future in relation to specific services.

6.2.4.1.3 Examples of calls Incoming from Operators to GO

- For a local number '21444444': send '21444444' with NAI=National (significant) number;
- For an international number '00 1 671 4444 444': send '1 671 4444 444' with NAI=International number;

6.2.5 Announcements

An announcement shall always return an Address Complete (ACM) message.

6.2.5.1 GO announcements to an incoming call from another Operator

GO do not send back an Answer (ANM) message for a call failure announcement (e.g. for unallocated number etc.). ANM is returned for some service announcements (e.g. for talking clock).

6.2.5.2 Other Operators announcements to GO

ANM should not be returned to GO when playing an announcement, e.g. call failure or busy.

7 Communication services supported

This clause lists the telecommunication services supported by the interconnection signalling system. Operators are required to select the various services that they require so that the technical implementation of the interconnection matches the commercial interconnection agreement.

7.1 Bearer services

- 64kbit/s unrestricted digital information;
- speech;
- 3.1 kHz audio;

7.2 Teleservices

- Telefax (Group 4)
- Telefax (Group 3)
- Telephony 7KHz
- Telephony 3.1KHz
- Teletex
- Videotelephony
- Videotex
- Euro File Transfer
- File Transfer and Access Management (FTAM)

7.3 Supplementary Services

- Call Forwarding on Busy
- Call Forwarding on No Reply
- Call Forwarding Unconditional
- Call Hold

- Call Waiting
- CLIP
- CLIR
- Conference Call (3 Party)
- Malicious Call Identification
- Sub-Addressing
- Terminal Portability
- Closed user group
- Call Deflection
- User to User Signalling

8 Service Quality

8.1 Grade of Service from and towards GO Interconnection Nodes

All Interconnection Paths between the GO and the Operator Interconnection Nodes will be dimensioned based on expected bothway busy hour offered traffic and a grade of service of 0.002 or better (i.e. 0.2% of offered calls across this link will experience congestion). Traffic which has been blocked on the first choice routes will overflow on the other routes in the interconnection network, from both sides.

The network will offer high quality of service under normal conditions and will offer a degraded service to Operator under bursty/failure conditions, such that the majority of call attempts will be successful.

In case of failure of a single Interconnection Node or Transmission system, a reduced grade of service may be used.

8.2 General Quality of Service Parameters

The following service quality parameters are applicable to both GO's and Operators Network. The parameters represent a minimum set, to be measured and recorded by both parties.

The current state of implementation of systems to measure and report on these parameters shall be confirmed between GO and Operator. Both Parties shall agree on the timetable for the introduction of the measurements of these parameters.

Additional service quality parameters may be introduced in line with the development of systems to gather and process the appropriate data.

8.2.1 Traffic Performance Parameters

Trk Grp Id	The ID number of the trunk group
Ccts. available	The total number of circuits available on the trunk group
Actual ccts.	The actual number of circuits in service at the time of measurement
Time	The time of day at which the busy hour commences
(Busy Hour) Traffic	The total traffic intensity carried by the trunk group, measured in Erlangs during the busy hour
ASR%	The answer seizure ratio, defined as the number of answered seizures to total seizures ie. ASR% = answered seizures x 100% Total seizures

9 Test Requirements

9.1 Introduction

Testing is an essential part of the interconnection process. This clause describes the methodology applied by GO to testing and the various types of test that will be applied.

9.1.1 Testing and Bringing Into Service

Both parties shall agree a test plan which shall define the relationship between individual tests and the timeframe for the carrying out the tests. A separate test plan shall be defined for each new or additional service supplied.

9.1.1.1 Transmission tests

These tests shall have the objective of proving the error-free transport of information between the switching elements of the GO Network and the Operator Network in accordance with the Transmission test document at Appendix A.

These include the testing of:

- Power Supply Alarms
- Lasers
- Clock Reference Unit (CRU)
- Bit error rate (BER)

9.1.1.2 Switching and Signalling tests

The switching and signalling tests shall be in accordance with the Appendix B SS7 Network National Interconnection Test Specification of this Annex which amongst other things specifies the SS7 compatibility tests, ISDN end-to-end tests, CLI tests, route commissioning tests and billing tests to be performed.

The end-to-end tests have the objective of proving the correct operation of a set of supplied services between the two parties. These tests shall examine the correct operation of:

- network routing and routing to the correct number ranges;
- any number translation or Service features invoked;

- the correct operation of any specific end-to-end bearer services, supplementary services or teleservices used;

- billing interfaces;

- any other specific testing that may be necessary.

The test plan agreed between GO and Operatorat the start of the provisioning process, shall define which of the specific tests defined in Appendix B SS7 Network National Interconnection Test Specification, will be carried out. These tests selected depend on the type of service being supported over the interconnection.

9.1.2 Billing tests

Test will be carried out to:-

a) Verify call records.

b) Validate both Operatorbilling/invoicing procedures/systems.

This will be achieved by generating a controlled set of test calls. The associated Call records generated by each Party for each call type will be checked to ensure they are correct in all details. The invoice produced by both Parties will then be compared for final verification of both Billing Systems.

A test document will be produced for each Party. An example test list is contained in Appendix B, Annex 6.

9.1.2.1 Testing Methodology:

Testing will be carried out over an agreed test period. This should be agreed by testing personnel and documented in the test sheet summary in Appendix B, Annex 6. During the test period all successful calls made to the Operator Network will generate CDRs.

The testing methodology will consist of the steps detailed below.

9.1.2.1.1 Call Generation

This step involves test personnel at GO and Operator making a series of test calls over the Interconnection Links. The details of these calls will be recorded manually on test recording sheets.

Before the commencement of testing, watches should be synchronised with GO's interconnection exchange clock. One recording sheet should be used for each individual call. Call duration should be timed using a stopwatch.

For a successful call, the duration of the call will be timed from the start of conversation to call hang up.

NOTE: The hang up time may be different for each end of the call. Both parties should time independently of each other, and complete the appropriate test recording sheet.

9.1.2.1.2CDR production and extraction at GO mediation Site

All call records generated during the testing period will be collected from the GO mediation sites and transferred to the GO billing centre. A copy of CDR's will be translated into an ASCII comma separated file for later reconciliation.

9.1.2.1.3CDR production and extraction at the OperatorNetwork

The Operator will collect CDRs for the duration of the testing period. These call records will be made available as an ASCII comma separated text file. The call records produced shall contain as a minimum the following fields.

- A number
- B number
- Call Start Time
- Call Duration

9.1.2.1.4 Invoice Production at GO

The GO billing system will produce an invoice for all calls made during the test period. This will be presented to Operatorfor information purposes only.

9.1.2.1.5 Reconciliation of Calls

Copies of the test recording sheets will be exchanged between GO and Operator. The details of the test calls will be compared and both parties will produce a report outlining any discrepancies or anomalies.

9.1.2.1.6 Invoice Verification

The Operator will examine the trial invoice produced and return their comments to GO.

9.1.2.2 Acceptance Sign-Off

When both parties have reached agreement on the two aspects of the testing

Part A.....Manually generated calls

Part B.....Invoice Production

An overall sign-off to the test will be completed.

9.1.3 Principles

This section describes the following:

- interconnection scenarios that will be presented to GO and Operator.
- tests to be completed for each scenario.

9.1.3.1 1st Interconnection Scenario

This scenario involves Operator's first interconnection to one of GO's media gateway as illustrated in figure 9(a) below:

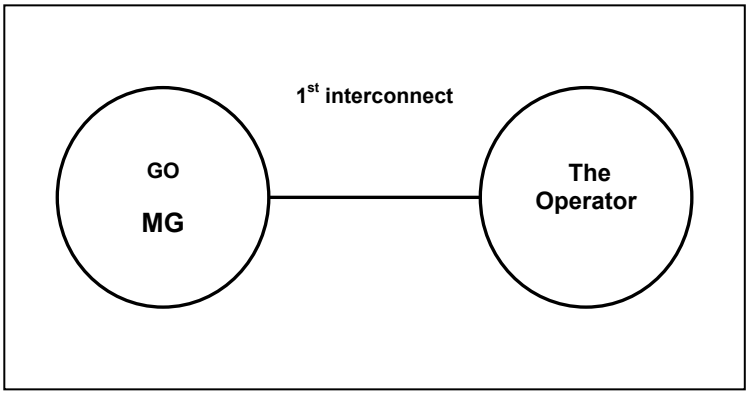


Figure 9(a): 1st interconnection Scenario

Interconnection	Tests	Appendix B
1st Interconnection	MTP Compatibility Test List	Annex 1
	ISUP Compatibility Test List	Annex 2
	ISDN End-to-End Test List	Annex 3
	CLI Tests	Annex 4
	Route Commissioning Tests	Annex 5
	Billing Tests	Annex 6

Table 9(a): Test list to be completed on the first interconnection to a one of GO's media gateways.

9.1.3.2 Additional Interconnection Scenarios

When opening an additional interconnection path, two new scenarios are possible:

a) further interconnections are provided to Operator from a different GO media gateway, see Figure 9(b);

b) a new but identical node is introduced by Operator and this node is interconnecting to a similar GO media gateway type as the first interconnection, see Figure 9(c);

The prerequisite before the commencement of these tests is the completion of the test cases specified in Table 9(a).

Interconnection	Tests	Appendix B
2nd Interconnection (a)	MTP Compatibility Test List	Annex 1
	ISUP Compatibility Test List	Annex 2
	Route Commissioning Tests	Annex 5
2nd Interconnection (b)	MTP Compatibility Test List	Annex 1
	ISUP Compatibility Test List	Annex 2
	Route Commissioning Tests	Annex 5
	Billing Tests	Annex 6

Table 9(b): Test list to be completed on additional interconnections to two of GO's media gateways.

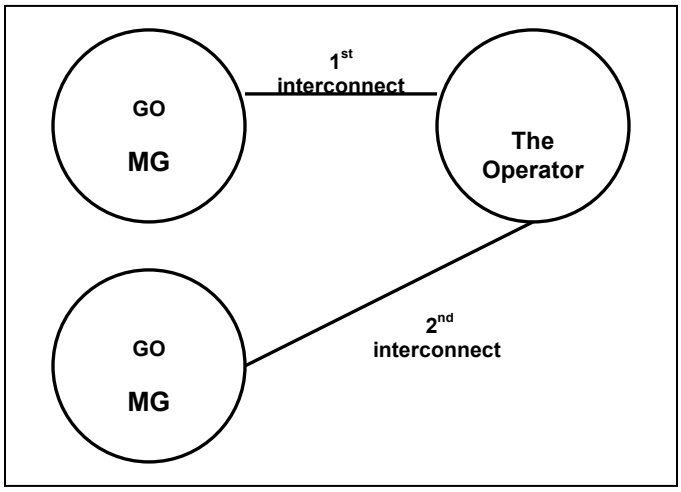


Figure 9(b): 2nd interconnection scenario (a)

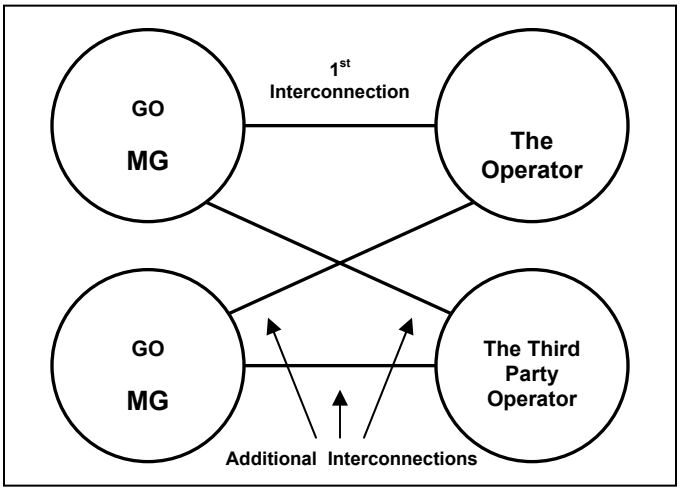


Figure 9(c): 2nd Interconnection scenario (b)

10 APPENDIX A – TRANSMISSION INSTALLATION AND TEST DOCUMENT

10.1 Introduction

This document outlines the standalone commissioning tests performed on an STM-1 SDH Add Drop Multiplexer (ADM). The same tests can be carried out on an STM-4 and STM-16 SDH Add Drop Multiplexer.

10.2 Safety Instructions

10.2.1 Optical Hazards

Extreme caution should be observed when undertaking any work related to either an optical board itself, or any component associated with the board, including the fibre to which it is connected. The following is a non exhaustive list of safety precautions that need to be taken when working on optical networks.

In normal working conditions, the **laser shutdown function should be active**. Avoid looking into the laser at all times, even when it is supposed to be shutdown.

Ensure that unterminated optical connectors are always covered.

Use the appropriate tools for cleaning fibres.

Damaged fibre must be discarded in a safe manner.

10.2.2 Electrical Hazards

The system uses a hazardous voltage, so electrical safety procedures must be observed at all times. The following is a non exhaustive list of safety precautions that need to be taken when working on equipment connected to hazardous voltage/s .

Extreme caution should be taken when power is being extended to the rack.

The rack must be bonded to the building earth in accordance with the current edition of the applicable IEE Wiring Regulations for Electrical Installations.

Certain units contain electrostatic sensitive devices which may be susceptible to damage if incorrectly handled. Due care should be taken when boards are handled. As a minimum elasticized antistatic band should be worn around the wrist at all times when work is being carried out on the system. This should be connected to the appropriate earthing point on the rack.

Ensure that electrostatic sensitive items that are being transported are enclosed within an antistatic package which provides ESD protection.

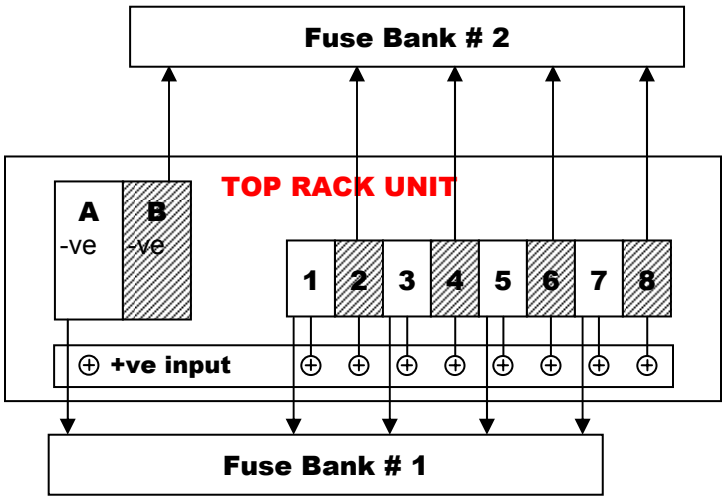
10.3 Mechanical and Electrical Installation

10.3.1Rack Fastening

Fasten the rack using expansion bolts onto concrete floors. Adjust perpendicularly the rack by using the levelling screws at the base of the rack. Verify the correct perpendicularity of the rack by using the spirit level. There is a danger of racks tipping over. Thus apart from being anchored to the floor, racks should also be secured to ceilings or grid systems, depending on the infrastructure.

The rack must be grounded before any electrical connections are made. The rack is grounded to the station through a 16mm² green-yellow cable (1) terminated onto a cable terminal lug (2). Fix the cable terminal to the rack by inserting screws (3) into the hole (4) of the rack cover.

10.3.2 Wiring the Top Rack Unit



Confirm that the station power is – 48V.

Run the appropriate power cable to the rack. Normally 10mm for distance less than 50m, otherwise use 16mm cable.

Ensure that main negative feeds A and B are fed from different Exchange Distribution fuses.

Connect adjacent fuses within the same fuse bank using the connections provided within the top rack unit. Loop cords must not be used.

Remove fuses from the appropriate fuse holders at the top rack unit before any new equipment shelf is being fitted.

10.4 Initial Turn-On, Test and Operation

10.4.1Switching-on the Equipment Shelf

Install equipment shelf with cards in the correct position inside the rack. Check that the switch on the power supply cards of the equipment shelf is in the **OFF** position.

Feed a dual supply via fuses from fuse bank #1 and fuse bank # 2 to each equipment shelf.

Insert the correct fuse (10A for 1641SM) in the appropriate fuse holder in the top rack unit.

Check input voltage on the power supply cards of the equipment shelf.

Set the switch on the power supply cards of the equipment shelf to the **ON** position.

10.4.2 Managing the Equipment Shelf

Connect the "F interface" cable from the serial port of the craft terminal (CT) to the connector located in the SMEC (Equipment controller card of the shelf).

Switch on the craft terminal. Select and open the Alcatel subwindow and select the NECTAS application icon.

Type the operator and password requested in the Login window.

Select the "Application_Choice" option. Select the following windows one by one:

"Equipment_Configuration"	Upload file, set the required configurations, save and send file).
"Connection_Configuration"	(Upload file, set the required configurations, save and send file).
"Local_Configuration"	(Upload file, set the required configurations, save and send file).

"Routing Table_Configuration" (Upload file, set the required configurations, save and send file).

"Alarms, Status & Remote Controls" (Check for any software version alarms, if in the affirmative download the appropriate software version).

Start measurements after **two** hours that the equipment has been powered on.

10.5 Standalone Commissioning Tests

10.5.1Test Instruments Required

- Digital Transmission Analyser
- Digital dc voltmeter
- Frequency counter
- Optical power meter (1300nm / 1550nm)
- Optical variable attenuator
- Optical fixed attenuators (10dB, 15dB, 20dB)
- Optical test patchcords
- DDF loop cables
- Craft Terminal and cable for F interface

10.5.2 Test Bench

Unless otherwise stated, the setup below will be used for all the coming tests. A typical connection is shown between a 2Mbit/s port on the Distribution frame and the transmission analyser. The aggregates are looped utilizing fibre patchcords for optical units and coaxial jumpers for electrical units. The Analyser is preset to transmit a signal with the following requirements:
Bit rate = 2048Kbit/s, Code = HDB3, and Pattern = $2^{15} - 1$ pseudorandom.

NOTE: The Tx and Rx of an electrical and short haul card can be directly connected without the use of an attenuator as shown in the figure below, however for a long haul card an optical attenuator (10dB) must be used.

10.5.3 Power Supply Alarms Check

The purpose of this test is to check the correct indication of power supply alarms and to verify that the equipment shelf was properly fed from different exchange distribution fuses.

TEST PROCEDURE		ALARMS ON SMEC	ALARMS ON CT	ALARMS ON RACK	PASS	FAIL
1	Leaving rack fuse B ON, switch OFF rack fuse A. Check that equipment shelf remains switched on.	NURG	NURG, OR-BAT	NURG		
2	Switch ON rack fuse A and switch OFF rack fuse B. Check that equipment shelf remains switched on.	NURG	NURG, OR-BAT	NURG		
3	Switch OFF rack fuses A and B. Check that equipment turns off. (This should only be performed if top rack unit has been newly installed).	Nil	NECTAS application closes	URG		
4	Switch OFF one power supply in the equipment shelf. Check that equipment shelf remains switched on.	NURG	NURG, power supply alarm	NURG		
5	Switch ON the power supply and repeat procedure for the other power supply. Check that equipment shelf remains switched on.	NURG	NURG, power supply alarm	NURG		
6	Switch OFF all power supplies in the equipment shelf. Check that equipment turns off.	Nil	NECTAS application closes	URG		

10.5.4 Automatic Laser Shutdown

(For Optical Aggregates and Optical Tributaries)

The purpose of the test is to verify the functionality of the optical protection (Automatic Laser Shutdown). This test should be performed for every optical card in the shelf.

TEST PROCEDURE		ALARMS ON CT	PASS	FAIL
1	Disconnect the optical fibre jumper on the card under test. Connect the optical power meter to the Tx side of the card under test. Verify that no power is measured.	LOS on the Rx side (URG)		
2	Push the button on front of the card for about 15 seconds. Check that now power is measured for about 90 seconds.	LOS on the Rx side (URG); AC for 90 seconds		
3	Wait few minutes. Detect the Automatic Laser Enabling (Laser ON for 2 seconds every 60 to 180 seconds).	LOS on the Rx side (URG); AC when laser is on		
4	Reconnect the optical fibre jumper on the card under test. All previous given alarms must have disappeared.	Nil		

10.5.5 Check on the Receiver Sensitivity

(For Optical Aggregates and Optical Tributaries)

Using the craft terminal (CT) create a bi-directional cross connection between the first 2Mbit/s port and the West Aggregate. Insert an optical variable attenuator between the Tx and Rx side of the optical aggregate.

The purpose of this test is to verify that the receiver sensitivity of the optical aggregates is the expected one. The test should be repeated for the East Aggregate.

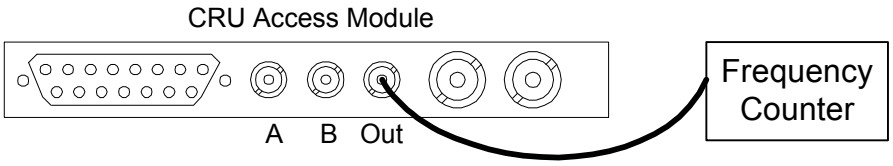
TEST PROCEDURE		**PASS**	**FAIL**
1	Pre-set the optical variable attenuator to 0dB at the Rx side of the West Aggregate. Connect the Digital Transmission Analyser to the Tx and Rx side of port 1 and verify the absence of errors.		
2	Disconnect the output of the optical variable attenuator from the Rx side of the Aggregate under test and connect it to the optical power meter. With the CT, "force the laser on" of the Aggregate under test. Read the value of the power received (Tx side of West Aggregate). Check that the value is within the range indicated in the table below. If otherwise, replace the unit.		
3	With the CT, set "ALS enabled" of the Aggregate under test. Reconnect the optical variable attenuator to the Rx side of the Aggregate under test. Increase the attenuation to 10dB and check that the Digital Transmission Analyser reads no errors.		
4	Gradually increase the attenuation until the Digital Transmission Analyser reads BER = 10^{-10}. Disconnect the output of the optical variable attenuator from the Rx side of the Aggregate under test and connect it to the optical power meter. With the CT, "force the laser on" of the Aggregate under test. Read the value of the power received (Tx side of West Aggregate). Check if the Rx optical power level on the Power meter is within the sensitivity level indicated in the table below.		
5	With the CT, set "ALS enabled" of the Aggregate under test. Reconnect the optical variable attenuator to the Rx side of the Aggregate under test. Increase the attenuation further until the Digital Transmission Analyser reads BER = 10^{-3} and monitor the alarms. An Excessive BER alarm is given followed by an AIS alarm and monitor the alarms. Increase further the attenuation and monitor the alarms. A loss of frame followed by a loss of signal is received.		

Type of Optical Interface	Mean Launched Power		Min. Sensitivity of Receiver	Min. Overload of Receiver
	Max	Min		
S 1.1	-8 dBm	-15 dBm	-28 dBm	-8 dBm
L 1.1	0 dBm	-5 dBm	-34 dBm	-10 dBm
STM-0	-8 dBm	-13 dBm	-34 dBm (BER<10^{-10})	-8 dBm

10.5.6 Testing of the Clock Reference Unit (CRU)

Using the craft terminal (CT) create a bi-directional cross connection between the first 2Mbit/s port and the West Aggregate. Configure EPS protection for the CRU cards and disable all reference inputs for the CRU and set T4=To. T4 is used to synchronise equipment which is outside the SDH network.

The purpose of this test is to:
- test the CRU in "Free Running" Mode;
- test the CRU in "Hold Over" Mode;
- verify the activation of the non-revertive protection on the CRU cards (EPS protection).



TEST PROCEDURE		PASS	FAIL
1	Connect the Digital Transmission Analyser to the Tx and Rx side of port 1 and check that no errors are received in 1 minute.		
2	Connect a frequency counter to the "Out" port as shown in the figure above. Verify that the frequency measured of the main CRU = 2048KHz ± 4.6ppm (i.e. from 2047990.58 to 2048009.42Hz). From the CT verify that CRU is in "Free running mode".		
3	Pull out the CRU card under test. Verify that some errors have been detected only during the switching. Check from the CT that a CRD MIS (card missing) alarm is present for the main CRU card and that the spare CRU card turned ACTIVE. Verify that the frequency measured of the spare CRU = 2048KHz ± 4.6ppm.		
4	With the CT enable a 2MHz signal at port A as a reference input. Insert signal and verify with the CT that no alarms are present. Wait for 30 minutes. Following this, disconnect signal at port A and verify with the CT that the CRU turned into "Holdover mode". Check that no errors have been detected on the Digital Transmission Analyzer.		

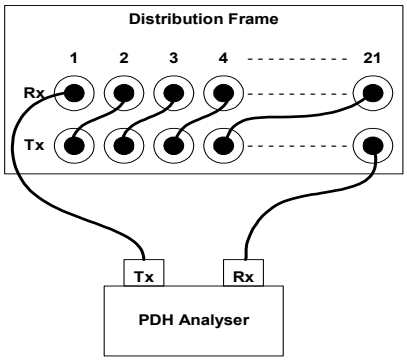
5	Connect a frequency counter to the OUT port as shown in the figure above. Verify that the frequency measured (from the Spare CRU) = 2048KHz ± 4.6ppm again.		
6	Reinsert the CRU card under test. Wait few seconds. Check from the CT that the spare CRU is still ACTIVE while the CRU under test turned STANDBY implying a non-revertive protection.		
7	From the CT force the CRU under test to ACTIVE. Verify that some errors have been detected during the switching. Check from the CT that the CRU under test turned to ACTIVE and FORCED. An abnormal condition (AC) alarm is received.		
8	From the CT send the command "clear force CRU". Verify that the AC alarm disappeared and that the CRU under test turned to ACTIVE and the spare CRU is set to STANDBY.		
9	Connect a frequency counter to the OUT port as shown in the figure above. Verify that the frequency measured (from the Main CRU) = 2048KHz ± 4.6ppm again.		

10.5.7 2Mbit/s Tributary BER Test

Using the craft terminal (CT) create a bi-directional cross connection between each 2Mbit/s port and the West Aggregate (main path) protected by the East Aggregates (spare path). Configure EPS protection for the 2Mbit/s tributary cards. This test should be performed for all 2Mbit/s tributary cards in the shelf.

The purpose of this test is to:

- check the cabling from the access module to the termination block on the DDF;
- test the 21 transmit and receive ports of the access module;
- test the 2Mbit/s tributary card;
- verify the SNCP (Subnetwork connection protection) functionality;
- verify the activation of the revertive protection on the tributary cards (EPS protection).



TEST PROCEDURE		PASS	FAIL
1	With the Digital Transmission analyser still disconnected and no loops present on the 2Mbit/s ports verify from the CT that a loss of signal (LOS) alarm is present on every port.		
2	Connect the Digital Transmission Analyser to the Tx and Rx side of port 1 and check that no errors are received in 1 minute. Verify from the CT that the LOS alarm for this port disappeared.		
3	Repeat test for the rest of the ports.		
4	Connect the ports in a daisy chain configuration as shown in the above figure. Verify that no errors are received on the Digital Transmission analyser.		
5	Disconnect the optical fibre jumper on the Rx side of the West Aggregate. Verify that some errors have been detected only during the protection switching. On the CT a loss of signal on the Rx side of the West Aggregate is received.		
6	Connect the optical fibre jumper on the Rx side of the West Aggregate. Check that no optical alarms indication are present. Verify that 2Mbit/s ports continue using the spare path since the protection is non-reversive.		
7	Pull out the tributary card under test. Verify that some errors have been detected only during switching. Check from the CT that a CRD MIS (card missing) alarm is present for the main tributary card and that the spare tributary turned ACTIVE.		
8	Reinsert the tributary card under test. Wait few seconds. Verify that some errors have been detected only during switching. Check from the CT that the spare tributary turned STANDBY while the tributary under test turned ACTIVE again.		

11 APPENDIX B – SS7 INTERCONNECTION TEST SPECIFICATION

11.1 Scope

- SS7 compatibility test cases for implementation between GO's interconnection exchange and Operator's node. The test lists are based on the ITU-T recommendations.
- ISDN end to end test cases for use between GO's interconnecting exchange types and Operator's node.
- CLI
- Route Commissioning tests;
- Billing Tests

Interconnect testing to GO switch is mandatory before introduction of service.

Contact names and test configurations will be agreed closer to the start of testing.

The signalling flows on the SS7 interconnection and where appropriate the SS7 traces should be monitored and stored for dissemination at the end of the test phase.

Disclaimer: GO *reserves the right to amend or extend this information if it deems necessary.*

11.2 ANNEX 1 – MTP COMPATABILITY TEST LIST

MTP Level One test

Test #	Description	Test Purpose
	24Hr BER test	DM: < 4% of 1 min intervals to have ber > 1.10-6
		SES: <.04% of 1 sec intervals to have ber >1.10-3
		ES: < 1.2% of 1 sec intervals to have errors

MTP Level Two tests Q.781

Test #	Description	Test Purpose
1. Link State Control - Expected signal units / orders		
1.1	Initialization (power up)	to check that Signalling terminal enters correct state on power up
1.2	Timer T2	to check not aligned timer T2
1.3	Timer T3	to check "aligned" timer T3
1.4	Timer T1 & Timer T4 (Normal)	To check "aligned ready" timer T1 and "proving period" timer T4 (Normal)
1.5	Normal alignment-correct procedure (FISU)	To check normal alignment procedure
1.19	Set emergency while in 'not aligned' state	to check that emergency alignment proving can be set during normal initial alignment
1.21	Both ends set emergency	to check emergency alignment procedure and T4
1.25	Deactivation during initial alignment	to test the response to receipt of the stop command while in the initial alignment state
1.29	Deactivation during link in service	to check deactivation of a SL from 'in service' state
1.32	Deactivation during proving period	to test response on receipt of SIOS during the proving period
3. Transmission Failure		
3.5	Link in service (break Tx path)	to test response to Tx failure when the link is in service
8. Transmission and Reception Control (Basic)		
8.1	MSU transmission and reception	to check basic MSU transmission and reception

MTP Level Three tests Q.782

Test #	Description	Test Purpose
1. Signalling Link Management		
1.1	First SL activation	to put into service a linkset with one SL
1.2	Signalling LS deactivation	to remove from service a linkset with one SL
3. Changeover		
3.16	Changeover to another linkset with adjacent SP available	to check that the system performs changeover to an alternative route when the last link of a linkset becomes unavailable
9. Signalling Route Management		
9.1.1	Sending TFP on an alternative route - failure of normal linkset	to check sending of TFP on an alternative route when the normal linkset becomes unavailable
9.2.1	Broadcast of TFP's - on one linkset failure	to check the broadcast of TFP's when one LS is inaccessible
9.4.1	Sending of TFA on an alternative route – recovery of normal linkset	to check sending of a TFA on an alternative route when the normal linkset becomes available
9.5.1	Broadcast of TFA's - on one LS recovery	to check the broadcast of TFP's when a destination becomes accessible
12. Signalling Link Test		
12.1	Signalling linkset test - after activation of a link	to check the SL test procedure after activation of a SL

11.3 ANNEX 2 – ISUP COMPATABILITY TEST LIST

ISUP Q.784.1

	Title/subtitle	Comments
1	**Circuit supervision and signalling supervision**	
1.3	**Blocking of circuits**	
1.3.1	Circuit group blocking/unblocking	
1.3.1.1	CGB and CGU received	
1.3.1.2	CGB and CGU sent	
1.3.2	**Circuit blocking/unblocking**	
1.3.2.1	BLO received	
1.3.2.2	BLO sent from one end	
1.3.2.3	Blocking from both ends; removal of blocking	
1.3.2.4	IAM received on a remotely blocked circuit	If possible
2	**Normal call setup – ordinary speech calls**	
2.1	**Both way circuit selection**	
2.1.1	IAM sent by controlling SP	
2.1.2	IAM sent by non-controlling SP	
2.2	**Called address sending**	
2.2.1	"*en bloc*" operation	
2.2.2	Overlap operation (with SAM)	
2.3	**Successful call setup**	
2.3.1	Ordinary call (with various indications in ACM)	
2.3.3	Ordinary call with CON	
2.3.4	Call switched via a satellite	
2.3.5	Blocking and unblocking during a call (initiated)	
2.3.6	Blocking and unblocking during a call (received)	
3	**Normal call release**	
3.1	Calling party clears before address complete	
3.2	Calling party clears before answer	
3.3	Calling party clears after answer	
3.4	Called party clears after answer	
3.5	Suspend initiated by the network	
4	**Unsuccessful call setup**	
4.1	Validate a set of known causes for release **Cause #1, "Unallocated (unassigned) number"** **Cause #16, "Normal call clearing"** **Cause #17, "User busy"** **Cause #19, "No answer from user (user alerted)"** **Cause #27, "Destination out of order"** **Cause #28, "Invalid number format (address incomplete)"**	
5	**Abnormal situations during a call**	
5.2	**Timers**	
5.2.1	T7: waiting for ACM or CON	
5.2.2	T9: waiting for ANM	
5.3	**Reset of circuits during a call**	
5.3.1	Of an outgoing circuit	

5.3.2	Of an incoming circuit	
6.2	**Automatic repeat attempt**	
6.2.1	Dual seizure for non-controlling SP	If possible
7	**Bearer services**	
7.1	**64 kbit/s unrestricted**	
7.1.1	Successful call setup	
7.2	**3.1 kHz audio**	
7.2.1	Successful call setup	
9	**Echo control procedure**	
9.1	**Echo control procedure according to Q.767**	
9.1.1	Q.767 echo control procedure for call setup(initiated in SP A)	

11.4 ANNEX 3 – ISDN END-TO-END TEST LIST.

NOTE:

An "x" in the column "ISUP'92" in the list below means that all of the involved networks (ISC, national network) use ISUP'92; in test cases with ISDN accesses and/or non-ISDN accesses, ISUP'92 is used between the involved local exchanges.

An "x" in the column "Comb" means that at least one of the networks (ISC, national network) uses ISUP'92 and at least one other network (ISC, national network) uses ISUP Recommendation Q.767 (*Blue Book*). In test cases with ISDN accesses and/or non-ISDN accesses this means that not all involved UNIs will receive information derived from ISUP'92 information.

UNI-UNI Compatibility test specification Q.788

Title				**ISUP'92**	**Comb**
1	**ISUP/ISDN Basic Call Control**				
	1.1	*Successful call set-up*			
		1.1.1	Basic Call set-up (BC)	x	x
		1.1.2	*Transport of Progress Indicator information element*		
			1.1.2.1 SETUP	x	x
			1.1.2.2 PROGRESS/ALERT	x	x
			1.1.2.3 CONNECT	x	x
		1.1.3	*Transport of BC/HLC/LLC information elements*		
			1.1.3.1 BC/HLC/LLC combinations	x	x
			1.1.3.2 BC ☐ 64 kbit/s with rate adaptation	x	x
			1.1.3.3 BC ☐ 56 kbit/s	x	x
		1.1.6	*Multirate connection types*		
			1.1.6.1 Successful call set-up	x	
			1.1.6.2 Unsuccessful call set-up	x	x
	1.2	*Normal call release*			
		1.2.1	Calling party clears before answer	x	x
		1.2.2	Calling party clears after answer	x	x
		1.2.3	Called party clears after answer	x	x
	1.3	*Unsuccessful call set-up*			
		1.3.1	All circuits busy at the destination network	x	x

		1.3.2	Dialling of an unallocated number	x	x
		1.3.3	No route to destination	x	x
		1.3.4	Calling to a busy subscriber	x	x
		1.3.5	Address incomplete	x	x
	1.4	*Abnormal situation during call*			
		1.4.1	No response from the called party	x	x
		1.4.2	No answer from the called party (T9/Q.764 expiration)	x	x
2	**ISUP/ISDN Call Control with supplementary services**				
	2.1	*Calling Line Identification (CLI)*			
		2.1.1	CLIP – network provided, without calling party subaddress	x	x
		2.1.2	CLIP – network provided	x	x
		2.1.3	CLIP – user provided, verified and passed	x	x
		2.1.4	CLIP – user provided, not verified	x	x
		2.1.5	CLIR – network provided, without calling party subaddress	x	x
		2.1.6	CLIR – network provided	x	x
		2.1.7	CLIR – user provided, verified and passed	x	x
		2.1.8	CLIR – user provided, not verified	x	x
	2.2	*Sub-addressing (SUB)*			
		2.2.1	Transport of called party subaddress	x	x
	2.3	*Connected Line Identification (COL)*			
		2.3.1	COL – request	x	x
		2.3.2	COLP – network provided	x	x
		2.3.3	COLP – user provided, verified and passed	x	x
		2.3.4	COLP – user provided, not verified	x	x
		2.3.5	COLR – network provided	x	x
		2.3.6	COLR – user provided, verified and passed	x	x
		2.3.7	COLR – user provided, not verified	x	x
		2.3.8	COL received but not requested	x	x
		2.3.9	COL not available	x	x
	2.4	*Closed User Group (CUG) – Decentralized*			
		2.4.1	CUG call with outgoing access allowed (both UNIs belong to the same CUG)	x	x
		2.4.2	CUG call with outgoing access allowed (called party not in a CUG)	x	x
		2.4.3	CUG call with outgoing access allowed (one network supports CUG)	x	x
		2.4.4	CUG call with outgoing access not allowed, to a network offering CUG (called party in same CUG)	x	x
		2.4.5	CUG call with outgoing access not allowed, to a network offering	x	x

			CUG (called party outside CUG)		
		2.4.6	CUG call with outgoing access allowed, to a network offering CUG (called party in a different CUG, no incoming access allowed)	x	x
		2.4.7	CUG call with outgoing access allowed, to a network offering CUG (called party in a different CUG, incoming access allowed)	x	x
		2.4.8	CUG call with outgoing access not allowed, to a network offering CUG (called party in same CUG, incoming calls barred at Network B's UNI)	x	x
		2.4.9	CUG call with outgoing access not allowed, to a network not offering CUG	x	x
		2.4.10	Non-CUG call towards a CUG destination with incoming access not allowed	x	x
		2.4.11	Non-CUG call towards a CUG destination with incoming access allowed	x	x
	2.5	*Malicious Call Identification (MCID)*			
		2.5.1	Successful request	x	
		2.5.2	Unsuccessful request, MCID information not available or not supported	x	
		2.5.3	Unsuccessful request, no response to IDR	x	x
	2.6	*Call Forwarding Busy (CFB)*			
		2.6.1	Call Forwarding Busy (network determined) – full notification	x	x
		2.6.2	Call Forwarding Busy (network determined) – no notification	x	x
		2.6.3	Call Forwarding Busy (user determined) – full notification	x	x
		2.6.4	Call Forwarding Busy (user determined) – Unsuccessful	x	x
	2.7	*Call Forwarding No Reply (CFNR)*			
		2.7.1	Call Forwarding No Reply (option A, late release) – full notification	x	x
		2.7.2	Call Forwarding No Reply (option A, late release) – no notification	x	x
		2.7.3	Call Forwarding No Reply (option B, immediate release) – full notification	x	x
		2.7.4	Call Forwarding No Reply (option A, late release) – Unsuccessful	x	x
		2.7.5	Call Forwarding No Reply (option B, immediate release) – Unsuccessful	x	x
	2.8	*Call Forwarding Unconditional (CFU)*			
		2.8.1	Call Forwarding Unconditional – Successful – full notification	x	x
		2.8.2	Call Forwarding Unconditional – Successful – no notification	x	x
		2.8.3	Call Forwarding Unconditional – Unsuccessful	x	x
	2.9	*Call Deflection (CD)*			
		2.9.1	Call Deflection during alerting (option B, immediate release) – full notification	x	x

		2.9.2	Call Deflection during alerting (option B, immediate release) – no notification	x	x
		2.9.3	Call Deflection immediate response (option B, immediate release) – full notification	x	x
		2.9.4	Call Deflection during alerting (option A, late release) – full notification	x	x
		2.9.5	Call Deflection during alerting (option B, immediate release) – Unsuccessful	x	x
		2.9.6	Call Deflection immediate response (option B, immediate release) – Unsuccessful	x	x
		2.9.7	Call Deflection during alerting (option A, late release) – Unsuccessful	x	x
	2.10	*Call Waiting (CW)*			
		2.10.1	Call Waiting successful	x	x
		2.10.2	Call Waiting rejection	x	x
		2.10.3	Call Waiting ignored	x	x
	2.11	*Call Hold (HOLD)*			
		2.11.1	Hold and Retrieve during waiting for ANM	x	x
		2.11.2	Hold call and clear before Retrieve during waiting for ANM	x	x
		2.11.3	Hold and Retrieve during active phase	x	x
		2.11.4	Hold during active phase; served user clears call during held state	x	x
		2.11.5	Hold during active phase; non-served user clears call during held state	x	x
	2.12	*Terminal Portability (TP)*			
		2.12.1	Successful	x	x
		2.12.2	Unsuccessful, Timer expiry	x	x
	2.14	*Three-Party Service (3PTY)*			
		2.14.1	Invocation and splitting of a Three-party conversation	x	x
		2.14.2	Served user disconnects one of the remote users	x	x
		2.14.3	Disconnect sent by one of the remote users	x	x
		2.14.4	Disconnect of the entire call	x	x
	2.15	*User-to-User Signalling service 1 (UUS1)*			
		2.15.1	Implicit request – Successful – UUI in the forward and backward messages	x	x
		2.15.2	Implicit request – Discard of UUI by the network	x	x
		2.15.3	Explicit request – Successful – UUI in the forward and backward messages	x	
		2.15.4	Explicit request (not-essential) – Implicit rejection by the network	x	x

		2.15.5	Explicit request (not-essential) – Explicit rejection by the network	x	
		2.15.6	Explicit request (essential) – Explicit rejection by the network	x	
		2.15.7	Explicit request (essential) – Explicit rejection by the called user	x	
3	**Undetermined Access Interworking**				
	3.1	*ISDN Access ☐Undetermined Access*			
		3.1.1	*Normal call release*		
			3.1.1.1 Calling party clears before answer	x	x
			3.1.1.2 Calling party clears after answer	x	x
			3.1.1.3 Called party suspends after answer	x	x
			3.1.1.4 Called party suspends after answer, expiry of T6	x	x
			3.1.1.5 Called party suspends after answer, expiry of T38	x	x
		3.1.2	*Unsuccessful call set-up*		
			3.1.2.1 All circuits busy at destination network	x	x
			3.1.2.2 Dialling of an unallocated number	x	x
			3.1.2.3 Calling to a busy subscriber	x	x
		3.1.3	*Abnormal situation during a call*		
			3.1.3.1 No answer from the called party – user alerted	x	x
	3.2	*Undetermined Access ☐ ISDN Access*			
		3.2.1	*Normal call release*		
			3.2.1.1 Calling party clears before answer	x	x
			3.2.1.2 Calling party clears after answer	x	x
			3.2.1.3 Called party clears after answer	x	x
		3.2.2	*Unsuccessful call set-up*		
			3.2.2.1 All circuits busy at destination network	x	x
			3.2.2.2 Dialling of an unallocated number	x	x
			3.2.2.3 No route to destination	x	x
			3.2.2.4 Calling to a busy subscriber	x	x
			3.2.2.5 Address incomplete	x	x
		3.2.3	*Abnormal situation during call*		
			3.2.3.1 No response from the called party	x	x
	3.3	*Undetermined Access ☐ Undetermined Access*			
		3.3.1	*Normal call release*		
			3.3.1.1 Calling party clears after answer	x	x

4	**Non-ISDN Access Interworking**				
	4.1	*ISDN Access ☐ Non-ISDN Access*			
		4.1.1	*Normal call release*		
			4.1.1.1 Calling party clears after answer	x	x
	4.2	*Non-ISDN Access ☐ ISDN Access*			
		4.2.1	*Normal call release*		
			4.2.1.1 Calling party clears after answer	x	x
	4.3	*Undetermined Access ☐ Non-ISDN Access*			
		4.3.1	*Normal call release*		
			4.3.1.1 Calling party clears after answer	x	x
	4.4	*Non-ISDN Access ☐ Undetermined Access*			
		4.4.1	*Normal call release*		
			4.4.1.1 Calling party clears after answer	x	x
	4.5	*Non-ISDN Access ☐ Non-ISDN Access*			
		4.5.1	*Normal call release*		
			4.5.1.1 Calling party clears after answer	x	x

11.5 ANNEX 4 – CLI TEST LIST

CLI Tests

Test No.	Description	Direction
CLI.1	CLIP: national significant number, network provided	*GO* – Operator
CLI.2	CLIP: national significant number, network provided	Operator - *GO*
CLI.3	CLIR: national significant number, network provided	*GO* – Operator
CLI.4	CLIR: national significant number, network provided	Operator - *GO*
CLI.5	CLI (address not available)	*GO* – Operator
CLI.6	CLI (address not available)	Operator - *GO*
CLI.7	CLI: international number	*GO* – Operator
CLI.8	CLI: international number	Operator – *GO*

Test Number	CLI.1	
Title	CLIP: national significant number, network provided	
Purpose	To verify that CLIP (network provided) is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition	(a) *GO* customer; (b)Operator customer	
Expected Message Sequence		
SP A		SP B
IAM	☐	
	☐	ACM
	☐	ANM
REL	☐	
	☐	RLC

Check Table		
IAM	A ☐ B	Calling Party Number parameter:
		Nature of Address Indicator = 0000011 (national significant number)
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))
		Calling Party Number Incomplete Indicator = 0 (complete)
		Presentation Indicator = 00 (presentation allowed)
		Screening Indicator = 11 (network provided)
		Address Information = the national number

Test Number		CLI.2	
Title		CLIP: national significant number, network provided	
Purpose		To verify that CLIP (network provided) is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a)Operator customer (b) *GO* customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Nature of Address Indicator = 0000011 (national significant number)	
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))	
		Calling Party Number Incomplete Indicator = 0 (complete)	
		Presentation Indicator = 00 (presentation allowed)	
		Screening Indicator = 11 (network provided)	
		Address Information = the national number	

Test Number		CLI.3	
Title		CLIR: national significant number, network provided	
Purpose		To verify that CLIR (network provided) is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a) *GO* customer (b)Operator customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Nature of Address Indicator = 0000011 (national significant number)	
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))	
		Calling Party Number Incomplete Indicator = 0 (complete)	
		Presentation Indicator = 01 (presentation restricted)	
		Screening Indicator = 11 (network provided)	
		Address Information = the national number	

Test Number		CLI.4	
Title		CLIR: national significant number, network provided	
Purpose		To verify that CLIR (network provided) is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a)Operator customer (b) *GO* customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Nature of Address Indicator = 0000011 (national significant number)	
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))	
		Calling Party Number Incomplete Indicator = 0 (complete)	
		Presentation Indicator = 01 (presentation restricted)	
		Screening Indicator = 11 (network provided)	
		Address Information = the national number	

Test Number		CLI.5	
Title		CLI (address not available)	
Purpose		To verify that an indication of calling party address not available can be correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a) *GO* customer (b) Operator customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Odd/even indicator = 0 (even number of address signals)	
		Nature of Address Indicator = 0000000 (spare)	
		Number Plan Indicator = 000 (spare)	
		Calling Party Number Incomplete Indicator = 0 (complete)	
		Presentation Indicator = 10 (address not available)	
		Screening Indicator = 11 (network provided)	
		Address signal: none	

Test Number		CLI.6	
Title		CLI (address not available)	
Purpose		To verify that an indication of calling party address not available can be correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a)Operator customer (b) *GO* customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Odd/even indicator = 0 (even number of address signals)	
		Nature of Address Indicator = 0000000 (spare)	
		Number Plan Indicator = 000 (spare)	
		Calling Party Number Incomplete Indicator = 0 (complete)	
		Presentation Indicator = 10 (address not available)	
		Screening Indicator = 11 (network provided)	
		Address signal: none	

Test Number		CLI.7	
Title		CLI: international number	
Purpose		To verify that CLI, international address is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a) international customer transiting via *GO* Network; (b) Operator customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Nature of Address Indicator = 0000100 (international number)	
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))	
		Presentation Indicator = 00/01 (presentation allowed / restricted)	
		Screening Indicator = 11/01 (network provided/user provided verified and passed)	
		Address Information = CC + SN	

Test Number		CLI.8	
Title		CLI: international number	
Purpose		To verify that CLI, international address is correctly sent and received in the Calling Party Number Parameter of the IAM;	
Pre-Test Condition		(a) international customer transiting via the Operator Network; (b) *GO* customer;	
Expected Message Sequence			
SP A			SP B
IAM		☐	
		☐	ACM
		☐	ANM
REL		☐	
		☐	RLC
Check Table			
IAM	A ☐ B	Calling Party Number parameter:	
		Nature of Address Indicator = 0000100 (international number)	
		Number Plan Indicator = 001 (ISDN (Telephony) numbering plan (Rec. E.164))	
		Presentation Indicator = 00/01 (presentation allowed / restricted)	
		Screening Indicator = 11/01 (network provided/user provided verified and passed)	
		Address Information = CC + SN	

11.6 ANNEX 5 – ROUTE COMMISSIONING TEST

Circuit Identification Codes

This test is to verify that the CIC codes are aligned at either end of the route.

Make a successful call on the first and last CIC in each 2Mbit/s bearer between two exchanges.

Overflow and Rerouting

1. Block the outgoing route under test
2. Make a call to this route
3. Confirm that the call is set up on the next alternative route.

Bothway Routes tests for recovery from dual-seizure

Both interconnection nodes send an IAM with incomplete numbering information in them, so that they will not receive an ACM, the IAM message on both ends should be trying to seize the same circuit (CIC). A check should be made to ensure that there is an IAM from the GO on the signalling link, as well as an IAM from the Operator end under test.

Check whether the CIC numbers the same in both IAM's.

For an even CIC: check whether the exchange with the higher point code successfully seize the circuit .

For an odd CIC: check whether the exchange with the lower point code successfully seize the circuit .

In both cases, check whether the non-controlling exchange re-attempts connection immediately on another circuit.

11.7 ANNEX 6 – BILLING TESTS

TESTING PERIOD			
Start Date	**Start Time**	**End Date**	**End Time**

Test #	Description	Initials
Test 1	Call from *GO* B'Kara TeS node, Simultaneous Hang up.	
Test 2	Call from *GO* B'Kara TeS node, A party Hang up.	
Test 3	Call from *GO* B'Kara TeS node, B Party Hang up.	
Test 4	Call from *GO* B'Kara TeS node, B Party does not answer	
Test 5	Call from *GO* B'Kara TeS node, 5 minute call simultaneous hang up	
Test 6	Call from *GO* B'Kara TeS node, B party Busy	
Test 7	Call from *GO* B'Kara TeS node, Unallocated B number	
Test 8	Call from *GO* Marsa TeS node, Simultaneous Hang up.	
Test 9	Call from *GO* Marsa TeS node, A party Hang up.	
Test 10	Call from *GO* Marsa TeS node, B Party Hang up.	
Test 11	Call from *GO* Marsa TeS node, B Party does not answer	
Test 12	Call from *GO* Marsa TeS node, 5 minute call simultaneous hang up	
Test 13	Call from *GO* Marsa TeS node, B party Busy	
Test 14	Call from *GO* Marsa TeS node, Unallocated B number	
Test 15	Call to *GO* B'Kara TeS node, Simultaneous Hang up.	
Test 16	Call to *GO* B'Kara TeS node, A party Hang up.	
Test 17	Call to *GO* B'Kara TeS node, B Party Hang up.	
Test 18	Call to *GO* B'Kara TeS node, B Party does not answer	
Test 19	Call to *GO* B'Kara TeS node, 5 minute call simultaneous hang up	
Test 20	Call to *GO* B'Kara TeS node, B party Busy	
Test 21	Call to *GO* B'Kara TeS node, Unallocated B number	
Test 22	Call to *GO* Marsa TeS node, Simultaneous Hang up.	
Test 23	Call to *GO* Marsa TeS node, A party Hang up.	
Test 24	Call to *GO* Marsa TeS node, B Party Hang up.	
Test 25	Call to *GO* Marsa TeS node, B Party does not answer	
Test 26	Call to *GO* Marsa TeS node, 5 minute call simultaneous hang up	
Test 27	Call to *GO* Marsa TeS node, B party Busy	
Test 28	Call to *GO* Marsa TeS node, Unallocated B number	

Test 29	Call to emergency number 112.	
Test 30	Call to international test number	